

Addressing Infrastructure Crisis in Indian Cities: A Comprehensive Economic Model of Value Increment Financing

A dissertation submitted to the University of Hyderabad in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY
IN
ECONOMICS

BY

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December, 2023**



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(For Ph.D. Dissertation)

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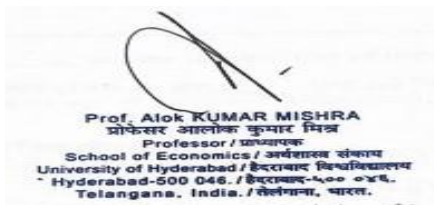
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DECLARATION

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Dedicated to My Parents

For their endless love, support and encouragement.

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Abbreviations

AMC	Ahmedabad Municipal Corporation
AMRUT	Atal Mission for Rejuvenation of Urban Transformation
ASCI	Administrative Staff College of India
AUDA	Ahmedabad Urban Development Authority
BART	Bay Area Rapid Transit
BLOT	Build-Lease-Operate-Transfer
BLT	Build-Lease-Transfer
BMC	Brihanmumbai Municipal Corporation
BMRL	Bangalore Metro Rail Corporation Limited
BOO	Build-Own-Operate
BOOT	Build-Own-Operate-Transfer
BTL	Build-Transfer-Lease
BTO	Build-Transfer-Operate
CAB	Climate Awareness Bond
CBD	Central Business District
CFC	Central Finance Commission
CITBs	City Improvement Trust Boards
CRISIL	Credit Rating Information Services of India Limited
CSR	Corporate Social Responsibility
DBFM	Design-Build-Finance-Maintain
DBFO	Design-Build-Finance-Operate
DCMF	Design-Construct-Manage-Finance
DDA	Delhi Development Authority
DFI	Development Financial Institution
DIF	Development Impact Fees

DMRC	Delhi Metro Rail Corporation
DRC	Development Right Certificate
EAV	Equalized Assessed Values
ECBs	External Commercial Borrowing
EPC	Environmental Planning Collaborative
ETF	Exchange-Traded Fund
EWS	Economically Weaker Sections
FAR	Floor Area Ratio
FPI	Foreign Portfolio Investment
FSI	Floor Space Index
GDP	Gross Domestic Product
GHMC	Greater Hyderabad Municipal Corporation
GNN	Ghaziabad Nagar Nigam
GSDP	Gross State Domestic Product
GST	Goods and Services Tax
HAM	Hybrid Annuity Model
HPEC	High Powered Expert Committee
HUDCO	Housing and Urban Development Corporation Limited
ICRIER	Indian Council for Research on International Economic Relations
IDO	International Development Organizations
IFC	Industrial Finance Corporation
IIFCL	India Infrastructure Finance Company Limited
InvITs	Infrastructure Investment Trust
ITS	Intelligent Transport System
JDM	Joint Development Mechanism
JICA	Japan International Cooperation Agency
JNNURM	Jawahar Lal Nehru Urban Renewal Mission

LAMTA	Los Angeles Metropolitan Transportation Authority
LIG	Low-Income Groups
LPS	Land Pooling Scheme
LVIT	Land Value Increment Taxes
LVT	Land Value Tax
MARTA	Metropolitan Atlanta Rapid Transit Authority
MMRDA	Maharashtra Metropolitan Region Development Authority
MoHUA	Ministry of Housing and Urban Affairs
NaBFID	National Bank for Financing Infrastructure and Development
NAREB	National Association of Real Estate Boards
NBFCs	Non-Banking Financial Company
NCT	National Capital Territory
NE	Negotiated Exactions
NGOs	Non-Government Organizations
NIIF	National Infrastructure Investment Fund
NIP	National Infrastructure Pipeline
NPA	Non-Performing Assets
NPV	Net Present Value
NSE	National Stock Exchange
NUPF	National Urban Policy Framework
OECD	Organisation for Economic Co-operation and Development
PCMC	Pimpri Chinchwad Municipal Corporation
PFDF	Pooled Finance Development Fund
PFI	Private Finance Initiative
PPI	Private Participation in Infrastructure
PPP	Public-Private-Partnership
PSU	Public Sector Undertaking

RBI	Reserve Bank of India
REIT	Real Estate Investment Trust
RTO	Regional Transport Office
SAD	Special Assessment District
SDG	Sustainable Development Goals
SFC	State Finance Commission
SPV	Special Purpose Vehicle
TDR	Transferable Development Rights
TIF	Tax Increment Financing
TOD	Transit Oriented Development
TPS	Town Planning Scheme
TUF	Transportation Utility Fees
UAC	Unit Area Value
ULB	Urban Local Bodies
UNDP	United Nation Development Programme
VAT	Value Added Tax
VCF	Value Capture Finance
VIF	Value Increment Financing
WASH	Water, Sanitation and Hygiene
WEB	Wider Economic Benefits
WHO	World Health Organisation
WMATA	Washington Metropolitan Area Transportation Authority

Chapter 1

Anatomy of Fiscal Stress and Infrastructure Crisis in Indian Cities

1.1 Indian Cities: Growth and Status of Urban Finance

India is witnessing an urban revolution. A revolution that is stronger than the Industrial and Agricultural revolutions. A revolution that has the ability to transform the nation via cities. India is amongst the fastest urbanising countries. India's population increased from 286 million in 2001 to 377 million in 2011. The urban population will more than double in the next three decades. It is projected to increase to around 820 million in 2051 (United Nations 2015). The World Bank's agglomeration index indicates that 55.3 percent of the Indian population resided in areas with characteristics resembling urban centres in 2010. The World Urbanization Prospects 2018 report predicts that India's urban sector will surpass the rural sector in terms of population by the year 2045-46. While the rate of urban population growth differs among regions, India is projected to transition into a country where the majority of its population resides in urban areas within one generation. For the first time in history, India will have five large states where the majority of the population will be living in cities (Tamil Nadu, Maharashtra, Gujarat, Punjab and Karnataka).

Urbanisation trends position cities and towns as the focal point of India's development strategy. The importance of cities can be understood by the fact that the top 600 urban centres in the world, with a fifth of the world's population, generated around 60 percent of the world's GDP in 2007. The share is expected to have increased to almost 70 percent by now. If the five largest cities of the US are treated as a single

country, it could be ranked as the fourth-largest economy in the world. (World Bank 2009). Similarly, in India, the cities and towns contributed around 65 percent of the country's GDP, and the share is expected to rise to 75 percent by 2030. (Planning Commission, 2008). Urban India is expected to contribute 70 percent of the new jobs generated over the period 2010-2030 and increase the per capita income by manifolds. A strong positive relationship can be seen between urbanisation and per capita income across countries. A correlation coefficient of 0.85 is observed between urbanisation and GDP per capita. In 2008, Indian cities accounted for 80 percent of the country's tax income, and this proportion is projected to increase to 85 percent by 2030 (McKinsey, 2010). City activities generate the most buoyant taxes, such as income tax, corporation tax and goods and services tax (GST). The increasing proportion of urban regions necessitates that cities fund the nation's progress.

Cities can generate resources for all three tiers of the government to finance socio-economic development and poverty alleviation programs. In addition to generating resources for urban centres, cities have the ability to finance rural development programs as well. Sustainable funding of rural development is possible only if cities create growth and generate resources. Generally, a correlation indicates that states with a greater proportion of urban state domestic product tend to exhibit higher per capita income and lower poverty rates. A time-series regression has confirmed a positive association of urbanisation and GDP per capita with central direct tax revenue, personal income tax, total indirect tax and other central taxes. A similar cross-section analysis suggested that urbanisation and state GDP per capita contribute to the tax bases of the state government, such as stamp duty, registration tax, motor vehicle tax, etc. Along with generating finance, the process of tax collection is much more efficient and more straightforward in urban areas than in villages. The primary

reason behind the higher resource generation by the cities is the effect of agglomeration economies.

Cities are not just places with geographical boundaries. They are areas where people live and work together. Cities lead to an accumulation of physical, human and social capital. They tend to consolidate expertise and resources, transforming into hubs of knowledge and ingenuity. The close proximity of companies and individuals leads to the emergence of agglomeration economies, which are further enhanced by increasing urbanisation and localization. This concentration of firms and individuals reduces transportation and transaction costs and facilitates the utilization of a collective workforce and shared resources, resulting in a dynamic and thriving economy driven by knowledge. The information spillover between firms and individuals improves the skills of the workers and makes the cities a centre of technological innovation. While agglomeration economies are a desirable outcome, cities might lead to congestion if the infrastructure and essential services are insufficient to meet the increasing demands caused by urbanisation. While agglomeration can boost productivity, generate employment, and drive growth, congestion can stop the cities from reaching their full economic potential. The achievement of economic potential will rely on the interaction between agglomeration economies, congestion forces and the government policies impacting them.

Cities must serve as the catalysts for the nation's economic expansion. To prepare the cities to deal with congestion and promote them as investment hubs and drivers of economic growth, there is an immediate need to invest heavily in infrastructure development and the provision of basic amenities. The rising pressure of the increasing population has led to the proliferation of slums, urban sprawl, lack of

affordable housing, environmental challenges, lack of sewage and waste disposal facilities, shortage of water, etc. The global liveability index ranked 140 cities (New Delhi and Mumbai from India) in terms of security, affordability, education, healthcare, infrastructure and urban lifestyle. New Delhi was ranked 112 and Mumbai 117 in the 2018 index. The current trends of urbanisation and the condition of existing infrastructure call for immediate measures to restructure and rejuvenate the old cities and set up new cities. To support the existing infrastructure and to meet the backlog, current and future needs of the rising urbanisation, huge investment is required to sustain the cities and prepare them for future challenges. However, the expenditure on infrastructure in India has been inadequate and inefficiently spent in the past. India spends \$50 per capita on urban infrastructure, according to McKinsey (2010). This is 14% of China's \$362 per capita, 10% of South Africa's \$508, and 3% of the UK's \$1,772. In 2011-12, India spent around 0.5 percent of its GDP on infrastructure while the expenditure by the Government of India on subsidies for fertilizers and petroleum products was 2 percent of the GDP in the same year.

While the investment required for developing the required infrastructure is enormous, the revenues and proceeds are small and dwindling. According to the constitution, the main authority responsible for city infrastructure is the local government or the Urban Local Bodies (ULBs). However, the ULBs in India are not even in a condition to cover their basic revenue expenditure. The major source of funds for the ULBs are the transfers and grants-in-aid that they receive from central and state governments. The own revenue of the municipalities has been low and has further worsened over the years. The major taxes of the local bodies, such as octroi, advertisement tax, etc., have been subsumed with the introduction of GST. The local bodies are now left with only one major tax source, i.e., the property tax. Various

studies have indicated that property tax collection in India is hardly 10-20 percent of its potential. The major reasons behind the shortfall are the old methodology used to calculate the base value, lack of technology to identify the base and the excessive interference of the state governments in the finances of ULBs. State authorities have put ceilings on the rate and have given exemptions to various buildings for different reasons. Along with this, the state governments have taken over other taxes like motor vehicle tax, stamp duty, etc. which should accrue to the local authorities. Most of the states do not transfer the required amount to the local authorities.

Due to the continuous rise in the expenditure requirements to provide the infrastructure to sustain urbanization, along with the decline in the revenue of the local bodies, the fiscal gap has grown enormously. Bahl and Linn (1992) provide an analytical approach to address the fiscal gap:

$$\text{Required Expenditure} = \text{Unit cost} \times \text{Quantity of service required to be provided per capita as per service norm} \times \text{Population}$$

$$\text{Revenues} = \text{Own taxes} + \text{User charges and fees} + \text{Transfers (assigned revenues and grants)} + \text{Loans}$$

$$\text{Transfers} = \text{State including State Finance Commission Transfers} + \text{Centre including Central Finance Commission Transfers}$$

$$\text{Fiscal Gap} = \text{Required Expenditure} - \text{Revenues}$$

Significant steps need to be taken to reduce the expenditure and boost the revenues to address the fiscal gap. While the expenditure requirement is expected to increase further in the future, steps are required to improve the revenues of the municipalities. Immediate measures are required to cover the fiscal gap to avoid any

shortage in the supply of the investments needed to finance infrastructure and other basic facilities. Any delay in providing the basic requirements to support the ongoing urbanization process might force India to lose the opportunity for a structural transformation. On the infrastructure front, there is an enormous shortage of funds to cover for the backlog, current and future growth needs. Sustainable national development and economic growth are not feasible without resource-generating areas. While both rural and urban have growth needs, it is the cities that have the capability to generate and mobilize resources for their own growth as well as for the socio-economic development of rural areas.

Though India is urbanizing rapidly, rural-urban migration contributes only 20 percent to the growth of the urban population. Thus, India will face the dual challenge of urban and rural development for decades. It brings along an opportunity to eradicate poverty from both rural and urban areas. While both areas have growth needs and requirements, the government cannot subsidize both. The urban areas have the capacity and ability to finance development. Jane Jacobs (1984) believed cities to be 'the greatest yielders of revenue in a nation or empire'. The author warns that a country must first establish and cultivate prosperous urban areas before it can allocate resources to essential programs or financial assistance, such as those aimed at helping impoverished rural communities. With this background, it becomes of utmost importance to develop cities to become the engine for the nation's development. However, with the massive demand for expenditure, narrow revenue base and almost inflexible and non-buoyant tax sources, the local bodies are under acute pressure. The Indian municipalities are not only financially feeble but also experience a gradual decline in their fiscal independence.

1.2 State of Municipal Finances in India

Indian municipalities face a gross mismatch between increasing expenditure due to the added responsibilities and deteriorating finances. When it comes to economic autonomy and the ability to provide basic services and civic infrastructure, Indian local bodies are among the world's lowest. The municipal revenue/expenditure in India has been stagnant at around 1 percent of GDP for over a decade now. The major reason is the lack of capacity in the ULBs due to the unsystematic implementation of the 74th Amendment Act, 1992. The amendment immediately shifted the civic responsibilities to the local bodies without looking at their economic base and revenue-generating capacity. While the responsibilities were shifted to the ULBs swiftly, the constitutional provision for devolution has not been considered seriously. The current devolution structure is ineffective and the existing provisions have not been put into practice. The hierarchical structure established according to the country's fiscal federalism framework has significantly contributed to the issue of city finances. The implementation of this framework has compelled Urban Local Bodies (ULBs) to rely on higher levels of government, resulting in significant financial strain on Indian cities. As a consequence, the infrastructural systems have been deteriorating, negatively impacting economic growth. Jane Jacobs (1984) asserted that the origins of the afflictions that afflict a nation can be attributed to the condition of their urban areas.

The Indian municipalities have limited and ineffective sources of their own revenue, with a narrow and non-buoyant tax base. Additionally, implementing the Goods and Services Tax (GST) in 2017 resulted in the elimination of significant taxes like octroi, entry tax, and advertisement tax. The municipal finances were severely hit by this structural reform. Prior to this reform, the local bodies have already lost access

to the entertainment tax, motor vehicle tax, profession tax, etc. over the years. Only a few states have enabled the local bodies to access stamp duty on the registration of properties. ULBs are now left with property tax as their only major tax. However, due to various political and economic factors, this land-based revenue source remains unexploited. Moreover, the tax is subject to multiple control by state authorities. Despite having an economic foundation of significant size, cities are not equipped with instruments that tap their revenue potential. Prior to the implementation of GST, states and local entities possessed autonomous authority to levy taxes and generate their own sources of revenue through applicable legislation. The independent powers were augmented by the transfer of cash from higher-level administrations to address the vertical and horizontal imbalance. With the implementation of GST, the local authorities no longer have their own sources of revenue and do not receive any compensation from the central or state government for the loss of revenue.

At present, property tax continues to be the primary source of revenue that ULBs generate on their own. In the fiscal year 2017-18, the proportion of India's gross domestic product (GDP) derived from property tax revenue was a mere 0.15 percent. This figure is significantly lower than the estimated 1 percent level observed in OECD countries for recurrent taxes on immovable properties. In advanced nations such as Canada and the United States, property tax constitutes approximately 3 to 4 percent of the Gross Domestic Product (GDP), according to the OECD in 2010. The municipal revenue as a percentage of GDP decreased to 1% in 2017-18 from 1.05% in 2012-13 and 1.08% in 2007-08. The proportion of "own revenues" in the overall municipal revenues declined from 63.48 percent in 2002-03 to 50.29 percent in 2012-13, and further dropped to 42.7 percent in 2017-18. This component has not shown any buoyancy and has been declining, reaching a figure of 0.4 percent of GDP in 2017-18.

The tax revenue component of the total revenue decreased from 42.5 percent in 2002-03 to 30.88 percent in 2012-13, and 25.02 percent in 2017-18. This declining trend has put the local bodies in various states at a high risk of maintaining their identity as the third tier of the government financially. Non-tax own revenues formed 21.23 percent of the total municipal revenues in 2002-03 which declined to 19.41 percent in 2012-13, and 17.69 percent in 2017-18. All the critical municipal fiscal autonomy indicators like own revenues-GDP ratio, property tax-GDP ratio, own taxes-GDP ratio, etc., increased marginally between 2002-03 and 2007-08, but then declined significantly till 2017-18. (ASCI, 2014; Mohanty, 2016; ICRIER, 2019).

While GST has led to the erosion of tax revenues of the municipalities, the trend was no different before the introduction of the common tax. The share of municipal taxes in the combined state and central taxes dipped from 2.11 percent in 2007-08 to 1.79 percent in 2012-13 (Mohanty, 2016). The share of municipal revenues in combined state and central revenues also decreased from 3.92 percent in 2007-08 to 3.62 percent in 2012-13 (Mohanty, 2016). Non-tax revenue, which comprises user charges, fees, rentals from the municipal property, etc., had a share of 33 percent in the own revenue of municipalities in 2007-08, which has increased significantly to 41 percent in 2017-18. On the expenditure side, the municipal sector accounted for a mere 0.78 percent of the GDP in 2017-18, decreasing from 1.09 percent in 2007-08 (Mohanty, 2016; ICRIER, 2019). The municipal expenditure component in the combined expenditure of the state and centre also fell from 2.11 percent in 2007-08 to 1.79 percent in 2012-13 (Mohanty, 2016). The major part of the municipal expenditure was spent towards paying the staff salaries, pensions and operational expenses. The existing revenues of municipalities are insufficient to cover salaries and operational expenses. The local authorities lack the capacity to fulfil the substantial financial needs

for capital expenditure. Urban areas require an annual expenditure of 3-5 percent of their GDP only for satisfying infrastructure needs (Ingram et al., 2013).

While Indian municipalities are financially weak and crumbling to support the basic infrastructure facilities, municipalities across the world are leading the development path for their nation. In contrast with the local expenditure-GDP ratio of less than 1 percent in India, the same ratio in 2010 was 7 percent in Belgium, 7.9 percent for Germany, 8.2 percent in Austria, 22.6 percent for Finland and 37.1 percent for Denmark (Mohanty, 2016). India's municipal revenue to GDP ratio was 1.03% in the fiscal year 2012-13. In comparison, Brazil had a ratio of 7.4%, South Africa had 6%, the United Kingdom had 13.9%, and Norway had 14.2% in 2010, according to the OECD in 2012. Due to the transfer of revenue and taxation powers to higher-level governments, intergovernmental transfers to urban local governments are anticipated to increase in India. Nevertheless, the transfers constitute a minuscule and diminishing fraction of the Gross Domestic Product (GDP). When comparing the percentage of GDP allocated to transfers, Denmark allocates 2.1 percent, Norway allocates 6 percent, Italy allocates 7.8 percent, and the United Kingdom allocates 9.9 percent. In contrast, India only allocates a tiny 0.45 percent of its GDP to transfers (Mohanty, 2016). A survey by the World Bank found that India's average collection from property taxes as a percentage of GDP is lower compared to both the OECD and BRICS nations, indicating an unfavorable comparison. In 2016, the average tax revenue collection in India was 0.2 percent, which is much lower compared to the average of 1.1 percent in OECD countries and approximately 3 percent in Canada, the United Kingdom, and the United States.

Indian municipalities and their revenues vary based on the states in which they are located and the population of the respective city/urban agglomeration. The bigger cities and municipalities are expected to be in a better financial position and more effective in terms of tax collection and accountability. There are 53 urban centres in India with more than one million people as per Census 2011. A study conducted by ICRIER in 2019 with data from 37 municipal corporations out of the 53 urban agglomerations found that the property tax revenue as a percent of GDP reduced from 0.086 percent in 2012-13 to 0.084 percent in 2017-18 while its share in own revenue increased from 26 percent in 2012-13 to 36 percent in 2017-18. A major reason for the rise in the share of property tax is the introduction of GST as all other major local taxes were abolished. The elimination of octroi, entry tax, advertisement tax, and other similar taxes resulted in a significant decrease in the proportion of "local taxes other than property tax" in municipal revenue. This proportion declined from 23 percent in 2012-13 to 8.5 percent in 2017-18 for the 37 municipal corporations. Forty percent of all the property taxes collected in India came from just six agglomerations: Mumbai, Hyderabad, Bengaluru, Chennai, Ahmedabad and Kolkata.

The self-generated income of these 37 municipal corporations, expressed as a percentage of the Gross Domestic Product (GDP), significantly decreased from 0.33 in the fiscal year 2012-13 to 0.23 in the fiscal year 2017-18. Their aggregate revenues as a percentage of GDP fell from 0.49 in the fiscal year 2012-2013 to 0.45 in the fiscal year 2017-2019, while their portion of India's overall municipal revenues dropped from 46.4 percent in 2012-2013 to 44.7 percent in 2017-2018. The proportion of non-tax revenue as a percentage of GDP decreased from 0.13 percent in 2012-13 to 0.11 percent in 2017-18. The non-tax revenue consists of user charges and fees for basic services. These charges and fees are intended to cover the costs of operation and

management, and preferably create additional revenue. However, the charges and fees accounted for only 27 percent of the cost of the services in these 37 municipal corporations. Following the implementation of GST, the proportion of the transfer from the central government to local bodies, as a percentage of GDP, experienced a slight increase from 0.026 in 2012-13 to 0.027 in 2017-18 for the chosen municipal corporations. The transfers from the state government experienced a rise from 0.10 percent of GDP in 2012-13 to 0.15 percent of GDP in 2017-18. For urban local bodies, excluding municipal corporations, the state's transfer as a percentage of GDP decreased from 0.23 in 2012-13 to 0.17 in 2017-18. The proportion of municipal expenditure relative to GDP fell from 0.44 percent in 2012-13 to 0.37 percent in 2017-18. The poor creditworthiness of these corporations has made it difficult for them to borrow in the capital market, and hence, borrowing constitutes a negligible portion of the finances (ICRIER, 2019).

The fund mobilization capacity of the local bodies in India remains low. Only about 1 percent of the ULBs have an investment-grade credit rating of A- and above (MoHUA, 2017). Even those who have the capacity to borrow and tap the capital markets for funds prefer to choose an easy way. The local bodies prefer to rely on transfers and grants-in-aid from the higher-level governments and adjust their expenditure accordingly. The excessive dependence on grants was a major reason behind the failure of the municipal bond initiative. Most of the local bodies' tax sources have been abolished and the remaining have not been exploited by the authorities. Property tax is a prime example of a tax that can generate huge finances. Still due to poor technology, interference by state authorities and a non-buoyant tax base, ULBs in India are collecting less than 20 percent of the tax potential. Vacant land tax is another source of taxation that the ULBs can levy in some states in India but

most of the states do not have any legal provision to collect this tax. Earlier, the stamp duty rates in India were significantly elevated, frequently surpassing 10 percent, in contrast to other nations where the prices were below 5 percent. This resulted in the underreporting of poverty figures and reduced revenue from property taxes and capital gains tax. While the majority of municipalities in India mostly rely on property tax for their tax collections, cities worldwide have access to a wider range of taxes such as sales tax, VAT share, income tax, registration tax, and vehicle tax. Municipal income sources in China encompass a variety of taxes, such as company taxes, real estate tax, resources taxes, urban land use taxes, and taxes on vehicles.

While the finances of municipalities are already dwindling, the situation is bound to worsen shortly owing to the Covid-19 pandemic. This pandemic has opened up avenues for a new lifestyle and lifestyle supported by technological developments. Work from home and study from home have become a normal way of life in most households. The corporates are extending this routine which has made the major cities witness a large-scale reverse migration. While the poor went back home due to lack of resources to survive in the city, the educated ones returned to their homes with the luxury of working from home. The culture has been accepted worldwide, and the post-Covid world might never see the return to pre-Covid era. Many corporates have given their employees a choice to choose for a permanent work from home option. This saves time and energy for the employee and the employer saves the money of running an office. Thus, the post-Covid world could see a collapse of many economic activities that might die due to this trend change.

With the economic activity coming down, the taxes of all tiers of the government are bound to come down. The closure of businesses, loss of jobs, and other

economic consequences have resulted in a decrease in tax revenues. The World Bank and UN institutions suggested that local governments may experience an average decline of 15 percent to 25 percent in their revenue in 2021. Since the people prefer to stay in their hometowns, the property demand has gone down in major cities leading to a fall in property and land values. Most of the migrant workers stay on rent in cities but with the reverse migration, the rental income has been tremendously hit. With the norms of social distancing and the new habit of buying products online, the local markets and retail shops have been affected and are witnessing reduced daily sales. Many sectors were linked with the corporate structure itself. The food contractors who run the canteens, the cab operators and the food joints in corporate centres like the city centre in Gurgaon are a few examples of the sectors that have taken a major impact due to the changing routine. Thus, all tiers of the government are bound to witness a fall in revenues with a major hit coming to the municipalities. While the central and state governments have different sources and mechanisms to boost and cover the fall in revenues, the municipalities do not have any autonomy to undertake new measures to cover the gap.

The twenty-first century belongs to the cities, and if India wants to reap the benefits of urbanization, it needs to bring reforms to restructure India's fiscal federal structure. An expansion or improvement of cities can expand the tax base and help in increasing the tax revenue which in turn can be used for expenditure on planned development in urban and rural areas. A mechanism to capture this rise in value and collect incremental taxes will be crucial for development. Along with tax revenues, grants play a vital role in development by acting as seed money that can be used by the ULBs to generate more funds. Moving in this direction, the Fifteenth Finance commission has taken several steps to improve the finances of the local bodies. The

commission announced a fixed grant of Rs. 4,36,361 crores for the period 2021-26 rather than a proportion of the total revenues. Of the total amount announced for local bodies, Rs. 1,21,055 crores were recommended for urban local bodies.

Considering the fast rate of urbanization and the future requirements of cities, the proportion of grants allocated to rural and urban local authorities will gradually shift from 67.5:32.5 in 2020-21 to 65:35 in 2025-26. The panel has proposed a grant of Rs. 8,000 crores to states for the establishment of new cities and Rs. 450 crores for the facilitation of shared municipal services. The fifty cities with populations above one million have been allocated a challenge money of Rs. 38,196 crores over a span of five years to enhance their fundamental municipal facilities. The commission recommended providing incentives for local bodies to improve facilities and increase their own source of revenue. Local bodies that demonstrate an augmentation in their own revenue and submit audited annual accounts will be entitled to apply for a 'performance grant'. The commission has advised that governments should actively engage in empowering local bodies to effectively manage and maintain infrastructure while implementing good governance practices to ensure the efficient and improved delivery of public services. To be eligible for funds for urban local bodies, states must duly notify minimum rates and demonstrate consistent enhancement in revenue collection in line with the state's own Gross State Domestic Product (GSDP) growth rate. (15th Finance Commission Report, 2020).

Despite taking several measures, the urban local bodies are far from achieving the required finances for the improvement of basic services and the development of infrastructure. There is a massive gap between the total expenditure requirements of the local bodies and the revenues they accumulate. Quick reforms are needed to boost

the own revenues of municipalities, increase the transfers from higher-level governments by making the local bodies shareholder in combined taxes like GST and make the municipalities creditworthy to raise resources from the capital market. However, at present, when the world is suffering from a pandemic and all tiers of the government are fiscally drained, the municipalities should not depend on the state and central governments. Thus, there is a need to explore innovative methods of financing infrastructure using the resources generated in the development process. The current financial crisis faced by cities has the potential to endanger significant investments in urban infrastructure and result in a reduction of public services, which would negatively impact larger efforts towards sustainable urban development. Enormous investment needs to be made to cover the infrastructure deficit which has been rising exponentially over the years owing to the huge budget constraint of the ULBs. The infrastructure deficit needs to be covered to support the rising urban population and to improve the civic amenities as it, in turn, helps boost the revenue sources of the municipalities through user charges and taxes.

1.3 Urban Infrastructure Crisis

The level and quality of infrastructure in Indian cities fails poorly compared to that in other developed and developing countries. Not only is the standard of infrastructure poor but the cities have also failed to provide basic facilities to the urban population, especially the poor. Politicians and decision-makers have not prioritized urban growth since independence, as over two-thirds of the population still resides in rural areas. It was in 2004 when the then Prime Minister first acknowledged the importance of urban areas in the growth of the Indian economy. Owing to this inattention in the policies and five-year plans of the government, infrastructure development lags far behind.

According to a report by McKinsey in 2010, India's yearly per capita expenditure on cities, which includes both construction and operational costs, is \$50. In comparison, China's expenditure is \$362, South Africa's is \$508, and the United Kingdom's is \$1772. India's per capita annual urban spending on capital investment is \$17, which is significantly lower compared to China's \$116, South Africa's \$127, and the United Kingdom's \$391. Owing to the lack of investments, the infrastructure and services provided by municipalities are inadequate and fall short of the norms set long ago by the Zakaria Committee (1963). The local bodies are inefficient in delivering services and face severe infrastructure deficits. Census (2011) states that only 70 percent of the urban households had tap water as the primary source of drinking water and only 33 percent had access to a piped sewer system. It is projected that by 2030, the demand for water will be twice the available supply, leading to severe water shortages in urban areas (NITI, 2018).

The shortage of infrastructure, especially public health, has also been highlighted in light of the recent pandemic. Covid-19 has reflected that our cities are not prepared to deal with such a crisis. This is not the first pandemic that the world has seen and is indeed, not the last one. In fact, top experts and scientists believe that the emergence of such pandemics could be recurring in a shorter period. While pandemics have changed their nature from cholera to plague and influenza and now Covid-19, the epicentre of maximum damage during all pandemics remain in cities. One of the major reasons is that cities across the globe, especially in India, are densely populated and act as central hubs for spreading the virus during pandemics. The lack of infrastructure to support this population is another major reason that causes these pandemics to be so fatal. The focus is on cities because while they are potential virus spreaders, they also have the potential to create social, economic and environmental prosperity, which

can help counter the spread of the disease. Some of the world's most urbanised cities have responded with relative success to the pandemics. They successfully contained the outbreak through the utilization of technology, transparent communication, comprehensive testing and contact tracking, and exceptional healthcare services.

The study of Indian cities in this context becomes essential because in the last three pandemics (1817-1920), the world lost 70 million people during pandemics where over 40 million deaths were reported in India. Cities in India have failed miserably to provide for public health facilities and medical infrastructure required to support and promote healthy community living. The Covid-19 pandemic has revealed the inherent weaknesses in healthcare systems that are unable to effectively manage a sudden increase in the number of cases. The limited availability of potable water and cramped living conditions rendered it impracticable for numerous individuals to comply with the preventive protocols of regular hand hygiene and maintaining physical distance. Thus, there is a need to design cities to be sustainable and resilient using a health lens. With the rapidly rising urban population and the changing nature of pandemics, hazards and technology, the requirements of the cities are dynamic and unlimited. Thus, the infrastructure development to build sustainable cities is an endless and non-negotiable process that has to respond to the dynamic demands of the cities and should not be limited to major cities. The pandemic is a lesson for all urban planners, designers, etc, to promote permanent interventions that respond to the threat of future pandemics. Governments, particularly at the local level, must engage in proactive planning and strategizing to effectively manage various dangers, such as pandemics. This involves identifying and rectifying any deficiencies in their preparedness measures and enhancing their ability to respond to such crises.

While pandemics hit the world after decades or even after centuries, there are calamities and natural disasters that affect every year. Floods have become one of the major challenges in India, especially in the major cities like Delhi, Hyderabad, Mumbai and Chennai. Many parts of the nation witness flood due to water levels in the rivers crossing the optimum mark during the monsoon or the melting of glaciers and land sliding in hilly regions. However, the floods in major Indian cities are largely an urbanisation problem and a result of improper and failed planning. A heavy rainfall for a day or two brings major cities like Delhi and Mumbai on a standstill, reflecting the poor infrastructure and capacity of cities. The result is visible with roads filled with water, local trains unable to operate, low-lying areas flooded, huge power cuts, waterlogging in hospitals and even airports. These massive urban floods also become a cause of fatalities every season. These disasters negatively impact the economy, the direct losses are estimated to be 2% of India's GDP and 12% of central government revenues.

These urban floods, more of a man-made disaster, are majorly due to haphazard urban growth, reflected in overburdened drainage, unregulated construction, buildings constructed without paying heed to the natural topography (wetlands, flood plains, etc.) and poor sewerage and unplanned solid waste management. Many studies have indicated that the new urban development (2000-2015) in India's most populous cities has been on low-lying areas that have witnessed multiple floods in the last few years. The expansion of cities has been at the cost of open areas and forests, which were the major drainage points in the past. Owing to this, flash floods have become a common phenomenon in major Indian cities. Different authorities take several steps every year to extend stormwater networks, clean the channels, separate sewage from the drains, etc. However, the repeated floods indicate that this planning and the available

infrastructure are insufficient. There is a need to revive the natural drainage systems. The ULBs have to play a critical role in cities' battle in such extreme weather conditions and build their overall resilience. This requires development of infrastructure to make cities sustainable with proper climate-proofing and disaster preparedness.

Pandemics and calamities affect everyone, but it is the poor and the marginalised that are affected the most. During pandemics, when cities became the hubs of the infection, it was the slums and the colonies of the poor and the marginalised communities that saw the maximum spread. Cities characterized by a large density of impoverished residents and significant disparities are more susceptible to vulnerability compared to cities that possess greater resources, lower population density, and a more inclusive environment. Urban study pertaining to past pandemics mostly concentrates on matters of inequities that render impoverished and marginalized communities more susceptible to the impacts of pandemics (Wade, 2020). The poor did not have the choice or luxury of working from home and had to go out to work even during the peak of the spread of the virus. The spread became worse, not at work, but when the workers returned home after catching the virus in the overcrowded apartments and slums. One person would infect many living in such conditions, further worsening the city situation. Due to insufficient medical facilities, they could not receive proper medical facilities and a huge number of fatalities were reported in such regions with maximum fatalities going unreported. The inadequate infrastructure and absence of WASH (Water, Hygiene, and Sanitation) services have disadvantaged the population and heightened their susceptibility to the transmission of the virus. An exemplary illustration to substantiate this assertion is the situation in New York City, where the

ZIP codes characterized by the lowest per capita income had the highest prevalence of both COVID-19 cases and fatalities during the initial phases of the pandemic.

Even during the previous pandemics like cholera and plague, the slums and the areas of the poor and the marginalised became the centre of infection with maximum case fatality ratio. Even during calamities, it is the poor that suffer the maximum brunt. The residential settlements for the poor and marginalised are usually at the periphery of the cities or at the marginal areas that are left vacant in the low-lying areas of the cities, Eg- Delhi's Yamuna Pushta area that has been built on floodplains that floods every year. The slum areas are one of the first to be affected during floods due to insufficient drainage and sanitation facilities in the area. Water accumulates in the areas, and despite the blockage, the municipalities engage their resources to clear other parts of the cities, neglecting the slums. This water logging circulates solid waste and faecal matter around the settlement, which leads to outbreak of malaria, dengue, diarrhoea, etc., for a much longer time than the season of rainfall. Thus, it becomes very important to design and plan cities that give equal importance to the lives of the poor. In the absence of inclusive cities, the consequences of future shocks could be as severe or even more severe than those experienced during current outbreaks. The cities should be inclusive and provide basic facilities and amenities to all without discriminating based on social status, income, caste, creed, location, etc.

Reducing inequalities is the foundation to ensure that the city is better prepared for future shocks and crisis. The trend of rural-to-urban migration in pursuit of improved livelihoods is expected to rise. However, the cities welcome them with sky-high prices of houses. This forces them to live in informal settlements or on the outskirts of the cities. The lack of affordable housing is the reason behind all cities

experiencing the proliferation of slums and haphazard expansion of city boundaries. Census (2011) states that more than 20 percent of urban households live in informal settlements. Housing for All should be the priority of the government as it helps in providing a dignified life to all and also proves to be helpful in times of pandemic and natural calamities by helping in controlling the damage. The houses and residential areas developed for the poor and those living in slums should be maintained with equal priority by the municipalities and they should provide proper drainage, sewerage, water, public health and all basic facilities. According to McKinsey's 2010 report, India will need to construct 700-900 million square meters of residential and commercial buildings per year until 2030. This amount is comparable to creating two cities the size of Mumbai or one city the size of Chicago every year. According to a report by a technical panel on Urban Housing shortfall in 2012, India currently has a shortfall of around 18.78 million housing units. Of this deficit, 95 percent is specifically for households categorized as Economically Weaker Sections (EWS) and Low-Income Groups (LIG). To connect these households, there is a need to build 20,000-25,000 km of road lanes and 350-400 km of new metros and subways every year (McKinsey 2010). The condition of public transport in cities is vulnerable. Only one-sixth of the required number of buses is available. An investment requirement of \$500 billion (3.6% of GDP) was estimated for ten years for the transport sector alone (Sivaramakrishnan 2011).

The High-Powered Expert Committee for Estimating the Investment Requirements for Urban Infrastructure Services in India (2011) recommended that India should invest Rs. 39.2 lakh crores, at 2009-10 prices, during the next 20 years to develop infrastructure. Rs. 34.1 trillion was allocated to create assets, Rs. 4.1 trillion for the renewal and development of various projects, including slums, and Rs. 1 trillion

for enhancing capacity. Eight core development sectors accounted for Rs. 31 lakh crores, of which major urban services, like sewerage, solid waste management, water supply, etc., accounted for 26 percent of the investment requirement. Investment in traffic support and urban transport constitutes the highest share of 17.7 percent of the Rs. 31 lakh crore investment. If operation and maintenance charges are added, the total investment requirement will rise by Rs. 20 lakh crores. If this amount is revised according to the current prices, the investment requirement of Rs. 39.2 lakh crores would translate into more than Rs. 65 lakh crores. Metropolitan cities, with a population over 1 million, require about 50 percent of the total spending. Another study by McKinsey (2010) projected the capital spending requirement for cities in India to be Rs. 53.1 lakh crores by 2030, where the major chunk will be spent on affordable housing followed by mass transit. If affordable housing is excluded from capital spending, the requirement of capital expenditure would still be Rs. 35.4 lakh crores. In total, India would need to allocate Rs. 97.4 lakh crores towards its cities during the specified time frame. In order to attain this objective, India must augment its expenditure from \$17 to \$134, thereby raising it from 0.5 percent of GDP to 2 percent of GDP annually (McKinsey 2010). Interestingly, both these studies were done more than a decade back and no new recent studies have been done to recheck this amount. Given the increasing migration in these cities and the changing requirements, the infrastructure deficit is expected to have shot up drastically. Further, these reports do not take into account the needs to make cities disaster-resilient and pandemic-proof. Thus, these numbers stated in the discussed reports are grossly underreported and the actual infrastructure deficit is much higher than this amount.

Despite various studies indicating the shortage of infrastructure and civic services and highlighting the dire need to invest heavily in urban development, no

major reforms have been undertaken to improve the condition of the local bodies. The cities need to be supported for backlog and current needs, and pandemic and disaster-proof infrastructure. As the previous section highlighted, the local bodies are fiscally drained and not in a position to cover even their revenue expenditures. The pandemic has fiscally drained all levels of the government. The central and state governments are still fighting for finances to recover and restore the economy to pre-pandemic levels. Many sectors of the economy and many communities in the society require financial assistance to get back up. The municipalities which are already fiscally stressed are moving to a poorer state. In such conditions, the ULBs have always looked up to state and central governments for transfers and grants. However, given the pandemic situation and the need to recover the economy, the higher tiers of the government will not be in a position to financially support the local bodies.

The current financial crisis faced by cities has the potential to endanger important investments in urban infrastructure and result in a reduction of public services, which would negatively impact larger efforts towards sustainable urban development. Cities may need to prioritize their investments and delay or cancel schemes considered less essential. Nevertheless, there is an urgent requirement to enhance the infrastructure and improve the delivery of services in metropolitan areas. If the investment in urban infrastructure falls short of the requirement, it will worsen the condition of basic services and civic amenities in the cities. If the services are not upgraded according to the increase in demand over the years, water supply would fall from 105 to 65 litres a day for an average citizen, close to three fourth of the sewage would be left untreated and a large section of the population would be left without any supply of potable water. The housing shortage will lead to further mushrooming of slums and uneven expansion of cities, and the transport shortage will lead to

congestion and urban gridlock. To avoid this congestion diseconomies arising from urbanization and to make use of agglomeration economies, it is essential to invest heavily to put in place a public service delivery system and provide basic urban infrastructure, urban transport in particular, and prepare the cities to be inclusive, affordable and efficient. Keeping these three basic tenets as a foundation, the government released the National Urban Policy Framework (2018) highlighting the importance of infrastructure development and the critical aspects of urban planning.

1.4 National Urban Policy Framework

The National Urban Policy Framework (NUPF) was released by the Ministry of Housing and Urban Affairs in 2018 outlining an integrated approach towards the future of urban planning in India. The framework is based on ten core sutras or principles, which are further applied to ten functional areas of urban planning and management. The ten functions are discussed in detail based on the challenges and the actions required to target the maximum number of the sutras.

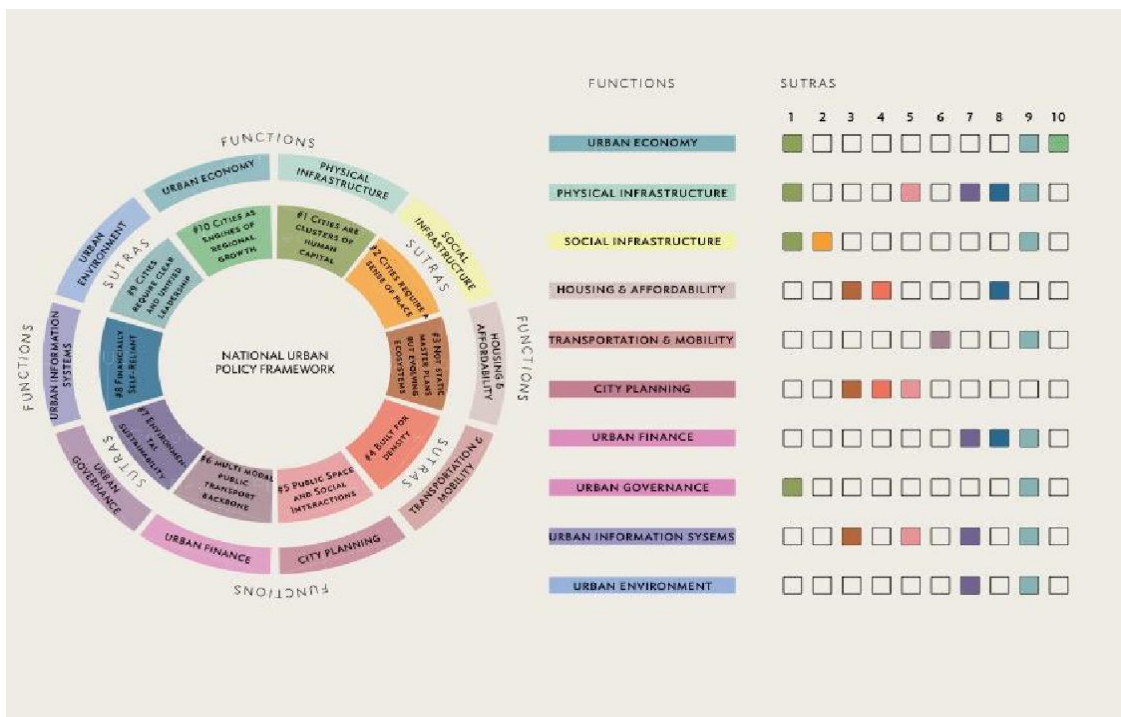
Table 1.1: Functions and Sutras in the NUPF 2018

<i>Ten Functions</i>	<i>Ten Sutras</i>
<i>City Planning</i>	<i>Cities are Clusters of Human Capital</i>
<i>Urban Economy</i>	<i>Cities as Engines of Regional Growth</i>
<i>Physical Infrastructure</i>	<i>Cities require a Sense of Place</i>
<i>Social Infrastructure</i>	<i>Public Space and Social Interactions</i>

<i>Housing and Affordability</i>	<i>Built for Density</i>
<i>Transportation and Mobility</i>	<i>Multi-modal Public Transport Backbone</i>
<i>Urban Governance</i>	<i>Cities Require Clear and Unified Leadership</i>
<i>Urban Finance</i>	<i>Financially Self-Reliant</i>
<i>Urban Environment</i>	<i>Environmental Sustainability</i>
<i>Urban Information System</i>	<i>Not Static Masterplans but Evolving Ecosystem</i>

Source: Authors' compilation

The functions specified in the NUPF are the areas that will be planned for and strategy will be formulated in order to impact more than one sutra. The Sutras that every function can impact are shown in the picture below.



Source: National Urban Policy Framework 2018

The first function focussed by the NUPF is '*City Planning*', which has become static and restricted to rigid land-use master plans. It has failed to address the complexity of growing cities and the demands of the rising population. The framework aims to incorporate it with economic and social planning, as well as housing, transport, and infrastructure planning, to develop a comprehensive and inclusive master plan that is adaptable. The concept involves periodically seeking input from the public and enhancing the efficiency of planning through the use of technology. The policy aims to implement significant changes in relation to Floor Area Ratio (FAR), sale of Transfer of Development Rights (TDR), delineation of the Business Improvement District (BID) or Tax Increment Financing (TIF) areas. It also seeks to facilitate the redevelopment of existing built-up areas and create new high-quality public spaces that are well-connected, able to adapt to disasters, and resistant to climate change. The second function is '*Urban Economy*', where the framework considers the economic potential of urbanization, which is dependent on agglomeration effects and congestion forces. To reap the benefits of urbanization, it is important to promote a balanced hierarchy of settlements and the idea of a rural-urban continuum. National and state-level policies, including strengthening of ULBs, are required for urban economic development. '*Physical Infrastructure*', the framework's third purpose is dedicated to creating infrastructure and public services that are sustainable in terms of the environment, economy, and society. This includes ensuring access to safe drinking water, basic sanitation, sewage systems, and proper management of solid waste. Major barriers to the development of required infrastructure are due to the gap between revenues and costs and the lack of public services giving rise to environmental and social challenges. NUPF highlights the need to introduce administrative reforms to

improve infrastructure delivery and develop policies and strategies to enhance the efficiency of urban infrastructure systems.

The fourth function, '*Social Infrastructure*', deals with social programs like education, health and poverty alleviation. Investment in social infrastructure is investing in the city's human capital, which boosts economic growth and decreases poverty in the long run. The major focus of this function is to provide benefits to the most vulnerable groups of the urban poor, such as women and girls, and make sure that government schemes reach them through direct benefit transfer and better facilities of education and health are made more accessible to them. Another function, '*Housing and Affordability*', highlighted the complex problem of housing shortage for the urban poor which cannot be addressed by the private or the state sector. There is a need for a multi-dimensional and multi-actor approach to consider housing options, especially to cover the most disadvantaged groups, and explore financing instruments and cost-saving mechanisms. '*Transportation and Mobility*' is the sixth function in the framework that aims to reduce urban congestion and make public transport more accessible, efficient, and affordable for all. To reduce congestion, last-mile connectivity should be provided to all modes of transportation and be designed to ensure accessible transit for commuters switching modes. Intelligent Transport System (ITS) should be used to monitor bus performance and revenue generated and provide bus route information and running to commuters.

'Urban Information Systems' constitute another key function of the new framework. Digital technology has the potential to create solutions using the hidden value of interactions that take place across different "systems" in a city which the conventional approaches have ignored. It can address urban mobility issues by

utilizing ITS, implementing ICT-based solid waste management systems, deploying SCADA systems for smart metering solutions and water quality monitoring, enabling smart electricity grids and implementing smart metering for electricity, gas, and water to decrease energy usage. Additionally, it can provide a digital platform for delivering e-governance services to citizens and utilize ICT applications for Intelligent LED Street Lighting and Surveillance, as well as networking safety and security systems and disaster mitigation and management. Another dominant function of NUPF is '*Environment and Sustainability*', which has become a key element of sustainable urbanization through multiple international agreements. Cities are the major contributors of environmental problems and require long-term integrated solutions, by taking measures to improve the urban air quality and developing water management plans to ensure a safe and reliable source of water supply. The framework highlights the path for better solid waste management, disaster risk reduction and resilience, and an action plan to meet net-zero energy consumption. The ninth function, '*Urban Governance*', calls attention to the functionally fragmented and operationally inefficient ULBs that have been overloaded with responsibilities but not strengthened with powers and financial assistance. The roles of a mayor should be made more transparent with higher-level devolving the required funds and getting involved only if the local government fails to maintain efficiency and accountability.

The last and one of the major functions is '*Urban Finance*' which binds and facilitates the other functions of the NUPF 2018. The 74th Amendment of the constitution laid out the roles of the local bodies and extended the responsibilities of the ULBs. While major duties have been assigned to the local bodies, no specific '*Municipal Finance*' list has been provided in the constitution to provide resources to the ULBs for the smooth implementation of the government schemes and the provision

of basic facilities. The issue of municipal finance was left over to the state governments which have to provide them grants and allow them to collect specific taxes based on the recommendations of the State Finance Commission (SFC). However, most of the states have not formed the SFCs on time and their reports and suggestions have usually been ignored. The Central Finance Commission (CFC) has to make recommendations for supplementing the resources of local bodies based on SFC reports, but due to the delay in reports and unaccountable financial reports, the CFC lacks the required information to make accurate decisions. The recommendations of CFC and SFC become extremely essential as the grants from central and state governments and transfers from state governments form a major chunk of municipal finances. The municipal finance forms the backbone of infrastructure development and provision of basic services and affects the ‘three sutras’ of the NUPF as shown in the picture below.



Source: National Urban Policy Framework 2018

The overarching objective of the framework is to enhance the financial stability of municipalities and foster their self-sufficiency. There is no benefit in transferring the responsibilities to the local governments if they do not have the required resources to effectively fulfil those duties. The framework recommends various legislative and policy changes, like strengthening the SFCs along with setting them up in time so that the CFC can make recommendations based on their reports. A draft for a revenue mobilization plan has also been discussed to make the cities independent. Property tax needs to be made more comprehensive by removing the exemptions and reducing the interference of state governments. ULBs should be given complete control over profession tax and the ceiling should be reviewed. The user charges should be reorganized to ensure adequate coverage of costs, and the implementation of the value capture finance (VCF) framework is necessary to retain the value generated by infrastructure development. Better laws for the imposition of fines by the municipalities should be drafted by avoiding the lengthy proceedings in petty matters and ULBs should be encouraged to collect parking fees effectively with higher rates to promote public transport. Clear guidelines for using Public-Private-Partnership (PPP) should be laid down and cities should be encouraged and incentivized to borrow money for development activities. The state governments must provide guidance and technical assistance to remove the hurdles in borrowing. Higher levels of government must support the municipal bonds market. Assets lying idle can also be used to generate money by either selling or leasing or by using it as collateral to raise funds from foreign and private investors.

With these ten functions and the ten core sutras, NUPF 2018 believes that the purpose of a city lies in the social and economic agglomeration. Contradictory to the older approach which believed in decongesting the cities, the framework plans to build

for density to support housing and movement of people to, within and between cities along with providing basic amenities. The successful implementation of this framework necessitates a clear vision at the regional level and a cohesive urban leadership, coupled with the capacity of cities to utilize local resources to achieve fiscal autonomy. The new strategy necessitates increased involvement and a more profound comprehension of the changing dynamics of the city, in contrast to the previous model, when local governments were provided with a predetermined set of regulations to adhere to from higher authorities. The state and municipal governments must enhance their urban planning capacities in order to assume the role of architects of a sustainable and inclusive urban future. Urban evolution is slow and will take time, but its impact will be felt for decades or even centuries. Overall, NUPF provides a foundation for every state to form its strategic urban policies depending on the availability of resources, and considering various socio-economic and political factors. Thus, among all, urban planning and urban finance are functions that lie at the centre of the remaining functions. The availability of urban finance can give way to the implementation of government plans and schemes to cover other functions. The next section talks in detail about the long-term solution to the urban finance problem and the different land-based taxes that can be utilised and explored by state and municipal governments.

1.5 Urban Finance Options

After the 74th Amendment to the constitution, Indian municipalities have been given an enormous task of developing and sustaining the cities with well-defined responsibilities. While the expenditure required to perform the duties and provide civic amenities for the smooth functioning of the cities is huge, there are no matching

revenue assignments for the ULBs. The municipalities lack a stable source of income, as their tax base is limited and the allocation of funding from the national and state governments is insufficient. The implementation of GST has exacerbated the condition of municipal budgets, as it has led to the abolition of taxes such as octroi, admission tax, advertisement tax, and others. The municipal authorities have gradually been deprived of revenue sources such as entertainment tax, motor vehicle tax, and profession tax. Despite all major direct taxes like personal income tax and corporation tax, and indirect taxes like motor vehicle tax, fuel tax, etc originating in cities, the ULBs are not a shareholder of the revenue generated from these taxes. Property tax continues to be the sole primary tax levied by municipalities. Recent research suggests that the tax has not been fully utilized due to a range of political and economic concerns. The municipal bodies do not charge for their services in a suitable manner. The user fees collected by the ULBs are insufficient to fully pay the costs associated with operating and maintaining their services. The cities are caught in a cycle of inadequate services and insufficient revenue. The services provided are insufficient to sufficiently incentivize the recipients to cover the total cost of the service. Due to the low rates collected, the local bodies do not receive sufficient cash to enhance or maintain the current level of services. Due to the poor revenue generation, lack of transparency in accounts and poor management of records, local bodies perform poorly on credit rating charts. Only 1% of the ULBs had a rating of A- and above (MoHUA, 2017).

Five major factors define the finances of the municipalities. First is the Improper Revenue Mix that has been mentioned in detail above. The revenue collection from user charges is low, local taxes have been submerged in central and state taxes, transfers are insufficient and the borrowing capacity is weak, which has

made the local bodies financially so poor that their existence has become a question. The second is the vertical imbalance that is built into India's fiscal federal structure. The state and central government do not transfer the required amount to the ULBs and the local bodies are not made a part of the revenue-sharing model. Another major factor is the horizontal imbalance observed in Indian cities. The needs of a city vary based on its population, services provided and the capability to raise "own" revenues. However, such indicators are not given much attention while distributing the funds among the local bodies. The fourth factor affecting municipal finance is the excessive State Government Control of local bodies in levying taxes, collecting charges and borrowing. The state governments interfere in the fiscal working of the ULBs for political reasons. ULBs in the majority of states are obligated to obtain authorization from the state government in order to secure funds from external sources and engage in PPP agreements. The last factor is Systematic Inadequacies because of unprofessional working staff, absence of robust human resource management, a framework for financial management and public accountability, high administration costs and inadequate participation of the community in service delivery. These factors have led to the inefficient and irregular performance of the ULBs in India.

The condition of municipal finances in India and the rising demand for services and infrastructure in India call for a long-term sustainable financing mechanism. The first step for providing a long-term solution to the revenues of urban local governments is by amending the constitution to make ULBs a partner in the revenue generated from total GST collections. Mumbai used to generate an annual revenue of Rs. 7,000 crores from the collection of octroi tax until its abolition in 2017. The burden post-GST has fallen majorly on the local bodies and hence they must be compensated. Apart from relying on transfers and grants, the solution lies in building the capacity of the ULBs.

The capacity needs to be expanded at all fronts and a mix of strategies needs to be explored to finance the urban infrastructure needs. According to the core financing principles, the ‘users’, ‘beneficiaries’, ‘polluters’, ‘congesters’ and ‘growth’ should pay for the services. Users and beneficiaries benefit from the services, while polluters and congesters make it difficult to provide the services and must compensate the service delivery authority. Based on these principles, reforms and legislations are required to (i) expand the revenue base for local taxes and improve the efficiency of collection, (ii) user charges need to be collected efficiently to ensure that at least operation and maintenance cost is covered, (iii) value capture instruments need to be explored including tax increment financing (TIF) strategy, (iv) equity financing mechanisms like joint development and PPP should be promoted and (v) debt financing should be encouraged. All the options and their instruments have been explained in detail below:

1.5.1 Local/Municipal Taxes- These are primarily based on the principle of ‘beneficiaries’ pay. Taxes under this category are collected either for activities arising in the cities using services provided by the local bodies or as a charge on the immovable land and property located in the jurisdiction area as its value increases due to the development in the area. Some of these taxes are:

Property Tax- This is the major tax of local bodies in India and is levied on residential and non-residential properties. However, the tax is highly inefficient as the tax base is small and many properties have been exempted from the tax due to the interference of state governments. As recommended by different CFCs, there is a need to establish the Property Tax Boards to ensure buoyancy in revenue. GIS technology should be used to track demand and the unit area value (UAC) method of assessing property values

should be adopted by all local bodies. Local bodies should be compensated for any exemptions recommended by the state governments.

Vacant Land Tax- This is a variant of property tax but is not used in the majority of the Indian states. Though the majority of Indian states lack a legal provision for collecting this tax, most of the countries levy the tax. The experience of the states, which have the provision to impose a vacant land tax, shows that a tax rate of 0.5 to 1 percent on the value of land could be a major source of finance to provide trunk infrastructure facilities. Also, the tax on vacant land can promote the construction of houses if the tax is lower on built-up land which would help in solving the housing shortage in the cities.

Profession Tax- Tax on profession and trade was reserved for local bodies in the GoI Act 1919. It is the only tax mentioned in the constitution of India in connection with local body affairs. It can be levied on salaried employees, professionals and self-employed persons and the employers are required to deduct the tax at source and pay on behalf of the employees. Profession Tax is allowed as a deduction from gross salary under the Income Tax Act with no monetary limit. However, not all states imposing profession tax share it with the local bodies. The tax should be reserved as local tax under the law and the ceiling of Rs. 2500 must be raised to Rs. 12,000, as recommended by previous CFCs. The other way is to set the ceiling as a percentage of the salary or payroll rather than a fixed amount.

Entertainment Tax- It was levied by the state governments and a share of it was given to the ULBs. This tax can be imposed widely on cable TV, internet cafes, pubs, clubs, gaming facilities, amusement parks, movie tickets, cinema halls, and major commercial shows. A solitary IPL match held in Chennai contributed to the municipal

corporation's collection of 1.25 crore rupees in entertainment tax. However, with the introduction of GST, this tax which has an enormous capacity to raise resources has been abolished.

Motor Vehicle Tax- This tax was also reserved for the municipalities under the GoI Act 1919. However, it was taken over by state governments over the years because of various challenges in revenue collection. Due to the absence of any constitutional mandate, only a few states are sharing the proceeds with the ULBs. This tax originates mainly in the urbanised areas and due to the activities arising from cities. Thus, local bodies must get a share of the revenues collected under motor vehicle tax, and it can be used to mitigate the problems of pollution, congestion, etc.

Stamp Duty- This tax is levied on the registration of land/property by the state governments and only a few states share the proceeds with the local bodies. Indian stamp duty rates in the past have been exceptionally high, almost double when compared with other countries in the world. This resulted in the underestimation of property values and reduced tax revenues. Some states have revised the rates downwards with the digitalisation of land and property records. The states should reserve the proceeds for local bodies as cities are responsible for the rising property values.

Business Licensing Tax- Municipalities in India have access to impose trade licencing fees for regulating dangerous and offensive (D&O) trades. Over the years, D&O has been expanded over many categories of business to cover traffic congestion, pollution and public safety. It is based on the premise of safeguarding the health and convenience of the community. Their base must be further expanded to cover all businesses adopting the 'nuisance' as well as 'benefit' doctrine.

Apart from these taxes, a few more taxes are a part of the municipal finance list in other countries and are supported by strong arguments as they are generated in the cities and because of the agglomeration economies of the urban areas. Income tax and corporation tax are two major sources of direct taxation in India. Both these taxes are generated in urban areas because of the activities of the cities. Since the development of a city can further expand the revenue collection from both these sources, the local bodies should be given a part of the proceeds generated under these heads. The local bodies can use it for further development to improve the agglomeration economies which can further help in increasing the revenues from these sources. Along with these, while octroi and advertisement tax have already been submerged into GST, various other taxes are a part of GST and are generated because of city activities. Sales tax, excise tax, business tax and other taxes that arise from manufacture, sale and consumption of goods and services are a part of the GST. Most of these activities are carried out in and around the cities and are supported by the infrastructure provided by the local bodies. Thus, the ULBs deserve to get a portion of the revenues generated from city activities and should be made shareholders in the division of GST revenues.

1.5.2 User Charges- These are prices of local goods and services which are in nature of private goods but are delivered by the local authorities. They differ from taxes as they are voluntarily paid in exchange for a benefit conferred on the payer. User charges mobilise resources for financing the civic services and infrastructure facilities, and also promote an efficient allocation of public services. The first golden principle of public finance states that when benefits are measurable and beneficiaries identifiable, user charges are the first best instruments for financing local public services. However, an inefficient collection of these charges due to various political and economic reasons

has led to inadequate public service delivery. This creates a vicious circle of poor services and poor charges collection. User charge collection lower than the operation and maintenance cost of the public facilities leads to inadequate public services. When the services fall short, either in quantity or in quality, there is resistance from citizens to pay the charges. Hence, the circle goes on. Thus, correctly pricing the municipal services is a major task for managing civic amenities. A few user charges and tariffs are mentioned below:

Water and Wastewater Tariffs- Efficient water pricing requires the charges to cover for water storage, transmission, treatment and delivery, and also appropriate amounts towards the capital, environmental, social and resource opportunity costs. Two types of tariffs are used across the world: single-part tariff and two-part tariff. Single-part tariff uses either a fixed/flat charge or a volumetric charge. A two-part tariff uses a combination of the two. Most practitioners in India prefer the two-part tariff as the fixed charge covers the administration, metering and billing costs while the volumetric charge is set equal to the short-run marginal cost, including O&M, environmental, social and resource opportunity costs. The two-part tariff theory is also supported by the golden principles of local public finance. The wastewater tariff and the sewage and drainage cost can be hooked onto the water charges. It can be fixed as a percentage of the water tariff.

Solid Waste Management Charge- To meet the costs of collection and disposal of solid wastes, including hazardous wastes, Indian municipalities use the conservancy tax component of the property tax. Though it is required to cover the entire costs, in practice, it only covers a small fraction due to free-ridership, inaccurate costing and improper disposal. Most of the time, the charge is levied by ignoring the huge amounts

required for sanitary disposals. Strict measures are required to correct the handling and disposal mechanism of the waste. This requires revisiting to check how waste disposal is handled and financed in Indian cities. Along with ‘segregation at source’ and ‘reduce-reuse-recycle’ paradigms, the ‘polluters pay’ principle must be adopted. The full costs of waste management operations must be recovered from the users enjoying the benefits.

Surcharges on Utilities- These charges are levied on the consumption of utility services like electricity, landline and telephone, cable television, etc. Most of the countries have used the surcharges on utility services to finance development projects. However, this has not been used in Indian cities, except in Rajasthan which had imposed a surcharge on electricity bills to cover the rising cost of street lighting in municipalities.

Vehicle Parking Fees- This can be seen either as a user charge or a charge on the concept of the ‘congesters pay’ principle. Parking fees is charged from people in residential and commercial complexes whenever they use public parking spaces, and in some places, it is imposed as a fine when the residential buildings do not construct the required parking spaces. The parking fee in India is meagre as compared to the other countries. The rates must rise to cover the cost of maintaining the parking facility and also to cover for the environmental and social damage that excessive traffic leads to. A high parking fee would discourage people from using private vehicles and promote urban public transport.

Urban user charges are not significant in India as they constitute a negligible part of the GDP. The low-cost recovery and poor service quality of the ULBs are connected, and it is extremely important for the ULBs to come out of this ‘poor service – poor charges’ trap. ULBs can also collect charges according to their requirements on

different services like gas supply, electricity, entry to parks and clubhouses in residential complexes, etc. An efficient revenue collection mechanism will not only help in covering the costs of the services provided, but will also mobilize resources for future development activities.

1.5.3 Value Capture Financing- Any infrastructure development or provision of basic facilities in an area or better connectivity of the area tends to increase the value of the land in that specific area. It leads to public-funded and community-created windfall gains for the owners of the land/property. Since the owners of the land benefit from the development projects without putting in any effort, they have a moral obligation to pay a share of the cost of the development project and/or fund the new capital works. The value capture mechanism can either be land-based, i.e., it captures the value increment in the land, or it can be non-land-based, i.e., by charging the developers based on the ‘beneficiaries pay’ principle. The payments can either be taken as a one-time or recurring charge like a tax, usually for a fixed duration of time. Generally, capturing unearned gains takes place over a long period so that a single generation is not overburdened with the costs. Value capture financing mechanism has the potential to complete big development projects by self-financing mechanism. Some of the most commonly used value capture tools are:

1.5.3.1 Land-Value Based

Leasing/Selling Project Land- This is one of the most successful methods of generating funds for financing the project. This method is possible when the government owns the land surrounding the development or the development is carried out on government land. The government can also buy the land at pre-development prices for the project. On the completion of the project, the land values will rise. In order to recover the cost

of the project or to pay back the debt related to the project, the government can sell a portion of the land or enter into long-term leasing contracts with developers or any private authorities. If the government buys the land at pre-existing prices and sells it post-development, the profit it gets post-development can be used to repay the debt undertaken to fund the cost of the project.

Lease/Sale of Development Rights- The land values change based on the use of the land and the different rules related to permissible construction on the land. Specific development projects and better land connectivity can lead to windfall gains. According to the theory of urban planning, higher-order land use should be done in a rationed manner as a “laissez-faire” policy can lead to net social disbenefit, leading to market failure. Specific policy reforms or development projects might support high-rise residential construction in the vicinity or allow for changing land use from agricultural to commercial. Similarly, if the area is converted into urban from rural or high density from low density, it will allow for large-scale land development and benefit the developer/ owner of the land. In this case, the ULBs can permit the sale of development rights. The authorities can impose conversion charges on changes in land use, sale of floor space index (FSI) for allowing high-rise buildings, density bonuses or can sell transferable development rights.

Sale of Developer Land- This financing method is usually used while developing new townships and residential complexes. The developers of the new townships are required to provide basic facilities like water supply, electricity, sewage facilities, waste disposal and other basic infrastructure. Other infrastructure facilities like road and rail transport and smooth connectivity with major city areas are added advantages that boost the price of the developer’s land. The local authorities should thus collect

the cost of internal and external development projects that boost the price of the land from the developer. This method has been implemented in various countries, and a few states in India have also tried to fund projects using this method.

Special Assessment District- The VCF tool has been widely utilized in the United States, Canada and Europe. The local authorities mark the boundaries of a district within which the taxes and fees are assessed on properties expected to rise in value because of new infrastructure development in the vicinity. In some countries, it is known as the Business Improvement District. The aim, however, remains the same: generating revenues to finance the capital expenditure in the region. The development project is usually financed by long-term borrowing and this mechanism is used to service the debt with the help of various taxes and levies.

Betterment Taxes- As the name suggests, this method is based on capturing the values of the land or the property that benefited from the betterment project. The history of urban land taxation suggests that land value increments due to public investment in infrastructure are enormous and existing taxes do not have the ability to capture the gains. Thus, increments in land due to special benefits provided call for a special tax to recover the cost. This method is used commonly in Latin American countries. To impose this tax, the local authorities need to effectively identify the quantifiable impact on the value of the land, the beneficiaries enjoying the benefits and a mechanism to implement the betterment tax. The government tries to cover the cost of the infrastructure project by imposing a betterment tax or charge on the beneficiaries of the public investment. It is usually a one-time payment contribution towards the project cost. However, it can also be recurring. It can be collected as a surcharge on

property tax after development. There are various other options of taxation available under this method.

Joint Development Mechanism- It is a funding mechanism that is also referred to as a public-private partnership (PPP). The government authorities work in partnership with private entities to develop a project, and the proceeds are shared based on the agreements. Most of the big projects require a huge amount of funding, which the public authorities are unable to lock in. Similarly, the proceeds or benefits from the infrastructure flow over a longer duration of time. A private entity is not interested in locking in its funds over a long-term period. Thus, this requires a coordinated effort between the private and public authorities to develop infrastructure projects. Both entities work together under a common umbrella by forming a Special Purpose Vehicle (SPV) and are engaged in financing, installing, operating and maintaining the project. Partnerships under this category usually fall under three categories: (a) donating public land to a private entity along with developing rights in return for private investment in a public infrastructure project, (b) selling the government land and development rights to private entities and the proceeds can be used for public infrastructure investment and (c) sharing the land value increments generated by investment in public infrastructure by charging the private landowners or by a voluntary gain-sharing agreement negotiated before the public investment is made in the project. The method differs from other value-capturing mechanisms as it avoids the inefficient taxing mechanism and the tiring process of assessing the direct and indirect impacts of the project as the private entities are identified before initiating the project. A PPP project can create a win-win situation for both entities if designed efficiently. The public sector benefits from the shared cost of the project and access to broader technical expertise. The private entity enjoys reduced risks and an assured potential customer base.

Land Readjustment- This financing mechanism calls for private landowners in a selected area to pool their land and hand it over to a public authority. The authority then develops and upgrades the land, sells a portion of it to recover the cost of development and hands over the remaining land to the original landowners in the same proportion. This mechanism has been followed widely in Germany, Taiwan, South Korea, etc. The Town planning scheme of Gujarat is also on the lines of the land readjustment mechanism. Once the authority receives the land from the private owners, it sets aside 33 percent of the land for streets, parks, schools and other public uses. The infrastructure cost is estimated and based on the market value of improved land sites; a percentage of the original area meant for development is then set aside to cover the infrastructure costs. This area is usually called the “cost equivalent area” and is usually about 10 percent of the total area. Thus, 43 percent of the land is required to support the land development project. Even though the landowners lose about 50 percent of their land area, the value of the developed land still exceeds the original holdings.

Monetization of Land- Government authorities in developing countries, including India, usually hold a large extent of unused or underused land in and around the cities. On the contrary, these cities face a vast shortage of infrastructure and civic amenities. Thus, many countries have advocated for selling or leasing the unused land to private owners and using the proceeds to develop basic facilities and infrastructure in the city region. The revenue generated from this method can be increased by rezoning the land and allowing higher FSI in that region to build for density. This method has the capability to ‘unlock’ the land values by productively using unproductive assets.

Air Right Sale- Residential and commercial buildings in India face severe restrictions with regard to the land use and height of the building. To construct an additional floor after the permissible limit, the owners must purchase ‘air rights’ from the government authorities. By allowing for further construction, the FSI is increased and the value of the land shoots up. Thus, the government captures this value increment using the sale of air rights, and the proceeds are used to develop the required infrastructure and improve the civic amenities in the area.

1.5.3.2 Non-Land Value Based

Developer Exactions- This method of funding infrastructure was introduced in the 1920s in the United States to cater to infrastructure and services for managing the urban sprawl and converting rural areas into urban subdivisions. The local authorities were required to build infrastructure and provide roads, parks, sewers, water lines, electricity, etc., to accommodate the new growth. To provide for all these facilities, the local authorities asked the developers of the area to contribute a piece of the land and share the cost of providing the public services. Developer exaction was used as a negotiating tool before providing the development approval to the developer. The method allows the local authorities to pass on a portion of the spending to the developer before the development begins, unlike the other methods where funds are raised after the infrastructure is completed.

Development Impact Fees- Impact fee is a one-time charge paid by the developer to the local authorities to pay a “fair share” of the cost of the public facilities and services provided for the new development. The primary distinction between impact fees and exactions lies in the fact that impact fees can be utilized to generate funds for the building or extension of capital facilities situated beyond the confines of the new

development (off-site) that provide advantages to the contributing development. It can be used to recover the cost of capital works or to fund the extension of current infrastructure systems. It makes the developer pay for the public infrastructure that will serve the new development before starting the development. The revenue mobilized using this method can be used to provide civic amenities, build infrastructure to support the density, improve public transport to allow better mobility and various other community facilities. While using this method of financing for off-site construction, the local authorities must explain the ‘need’ of the respective public facilities and highlight the ‘benefits’ to the assessed development. This method has been used by a few cities in India to fund development projects.

The non-land value capture mechanisms require developers to pay a share of the cost of the public facilities and infrastructure as a condition of getting development approval. In some cases, the developers are allowed to undertake public infrastructure developments directly rather than paying the local governments a charge for the services. In contrast, the land value capture mechanisms collect the charges and fees after developing the infrastructure. The land value capture mechanisms have been used in different cities in India but have not been adopted as national strategies. Similarly, the municipal taxes and user charges discussed in this section are successful practices that have been used in India and other countries. To strengthen these practices, reforms are required at the national level and the interference of state governments needs to be altered. The user charges and land value capture mechanism generate revenues after the completion of the infrastructure investment. Thus, to fund the project initially, the local authorities must borrow money using different debt financing options. The debt can then be paid off using the incremental revenues and funds generated because of the infrastructure development. One of the best repayment methods followed in

various countries is the Tax Increment Financing (TIF) mechanism. TIF uses the future revenues generated by the infrastructure to fund the project.

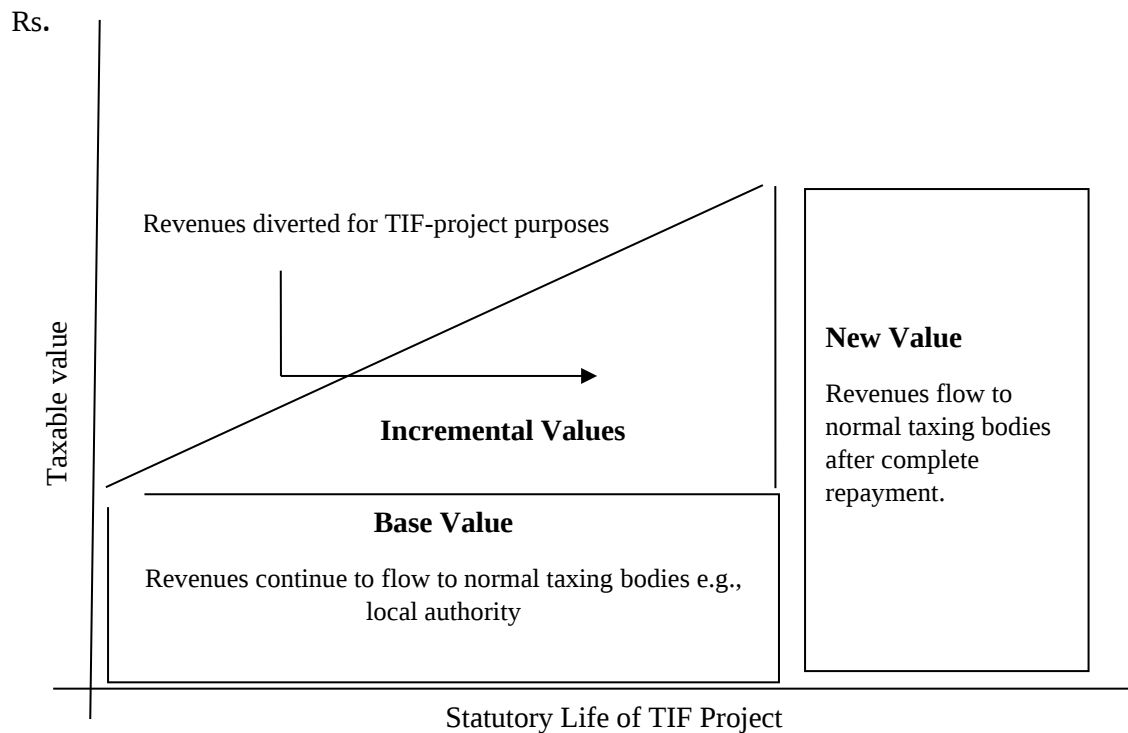
1.6 Tax Increment Financing

TIF is an instrument for financing infrastructure and services to accelerate urban development. It is based on the principles of ‘growth pays’ and ‘beneficiaries pay’. It is a value-capture mechanism tool that can be used alone or in combination with other taxing instruments. The TIF mechanism operates by escrowing the future increment in tax revenues generated from the particular project. The local authorities designate an area that is impacted by the development of the project. The authorities then earmark the whole or a part of the increment in revenue in that area to finance the planned development. This mechanism was first implemented in California in 1951 to raise local funds to match federal grants. The method soon became popular and spread to other parts of the United States. TIF soon became the most popular funding strategy in the United States, United Kingdom, Canada, Australia and many other countries. It is a generic framework and can be applied to various urban development, redevelopment, renewal and rejuvenation projects. TIF focuses on the value generated by the project, which is then used to finance the investment. The theory behind the TIF process can be understood with the following statement:

“In theory, the process is a closed circuit: the incremental revenues pay for the public expenditures, which induce private investment, which generates the incremental revenues, which pay for public expenditures. Eventually, the TIF program expires, the bond is paid off, and the district’s entire assessed valuation – base value and increment – becomes subject to taxation for the general purposes of all the local governments with jurisdictions over the area.” (Briffault 2010, p.68).

In simpler terms, the mechanism can be conceptualized as a cyclical process of generating, acquiring, and recycling value, ultimately ensuring continuous infrastructure investment financing. The TIF program starts with the local government first designating a TIF district impacted by the development project. The system subsequently calculates the inherent rate at which property taxes would have increased in the absence of infrastructure development. This yields an approximate "base value" for property tax within the TIF district. The local authority periodically compares this with the current TIF district assessment base, and the difference being generated is called the "incremental value" or "tax increment". Since the tax rate applied to the property is constant, but the tax revenue has increased because of the rise in assessment value due to the infrastructure development, the tax increments are escrowed for financing the infrastructure project, which has increased the assessment value. The incremental revenue is escrowed into a separate account used to repay the borrowings made for financing the project initially. The fund is escrowed into the account until the debt is serviced, which usually takes 20-25 years. Once the lifespan of the TIF district concludes, the tax base reverts to the initial taxing authority. If the project is successful, the local authority will experience a significant increase in its revenue base compared to the pre-development period. The mechanism can be understood from figure 1.1 given below.

Figure 1.1: The Tax Increment (TIF) Model



The TIF mechanism is simple and flexible. The mechanism encourages upfront investments on the guarantee of the stream of payments that will be generated using TIF. The initial funding requirements can be fulfilled by securing a loan using different debt-financing options. The repayment is made by an escrowing mechanism, usually based on incremental land values through property taxes. The scope of capturing incremental revenues must be expanded by using other taxes and charges that have increased or have been initiated due to the project development. If the proposed plan is developed well, it can ensure that the project is self-sufficient or possibly generate a surplus, particularly in urban areas experiencing increasing land values. TIF acts as a catalyst to raise money using municipal and other infrastructure bonds. Additionally, it facilitates private investments by leveraging governmental investments to bolster productivity and foster regional economic growth. The private investments stimulate growth, providing the necessary funding for public infrastructure investment. The TIF

principle can also be used for projects that operate under the PPP model. An alternative possibility is for a private developer to securitize loans using the government's guarantee of projected revenue and for the development to be carried out under the annuity model. Another option is for the government authorities to construct connected infrastructure while the private business undertakes the development project based on a revenue-sharing arrangement. The TIF mechanism offers flexibility in financing urban development projects by providing a range of options and combinations.

The TIF mechanism has various advantages. TIF's first and significant advantage is that it makes the new development pay for itself. Second, the development is done by creating and capturing the value even when the local authority faces a severe fund crunch. Third, the tedious and cumbersome process of collecting charges from developers for upfront investments can be avoided. Fourth, the mechanism recovers the cost by disseminating it over successive generations and ensuring that the recipients contribute their equitable portion. Fifth, the poor financial condition of the municipality does not hinder the development process in the region. Sixth, the mechanism can be used by the ULBs to generate revenues and come out of the vicious circle of 'no resource, no development, no increment, no development'. Seventh, the mechanism encourages the ULBs to maintain fiscal discipline and accountability to promote further development. Various other advantages are attached to the mechanism. TIF also faces certain limitations in its application. The major limitation surrounding the tool is the political repercussions, especially during periods of economic slowdown, as TIF might not generate the desired outcomes, which can further invite criticism on the efficacy and equitability of the mechanism. Second, the TIF mechanism requires some momentum for development in the project area, and it may not be efficacious in the most destitute regions of the city. Furthermore, applying

TIF in a static framework may not produce the expected outcomes. Fourth, the TIF project has the potential to generate tax increments that can be distributed among several levels of government. The local authority may be unable to obtain these increments due to the limitations imposed by fiscal federalism. Lastly, if the revenue generated falls short or the cost exceeds the planned amount, the financial feasibility of the project can be at risk, which can put an additional burden on the local authorities and affect the other planned expenditures of the ULBs.

Overall, the TIF mechanism is a versatile instrument for urban planning and financing services in cities, especially when municipal bodies are under extreme fiscal stress and unable to produce revenue surplus for infrastructure projects. The cash-strapped local bodies can raise their aspirations for development. Active planning and reforms at all levels of the federal structure are required to make TIF more successful. The efficiency of the tool is to capture the value generated by the development and recycle it to create further benefits for the community. This process can be accelerated by combining and using other instruments like impact fee, FSI, etc. along with property tax to make the mechanism more robust and surplus generating. It is also important to note that the benefits generated by TIF are not confined to local governments alone and generate wider fiscal benefits. The development creates incremental revenue for state government by implementing land-use conversion charges, impact fees, stamp duty and other taxes; and for the central government in the form of income and corporation tax, capital gains tax and service tax; and an incremental GST accruing to them both. Nevertheless, the local authority lacks access to all of these taxes. In a case where the status quo or no-TIF is maintained, no authority typically gains any advantages. However, the deployment of TIF produces benefits for all the stakeholders involved. Thus, a special body, usually called a Special Purpose Vehicle (SPV), must

be formed in collaboration with all the concerned authorities. This will enable the SPV to capture and recycle the value created at all levels of the government. Once formed by consultation with all the authorities, the SPV can issue bonds or raise other forms of debt to meet the initial investment requirements. Various options are available to secure long-term loans like provident funds, insurance funds, loans from central and state governments, financial institutions and foreign investors which have been highlighted in Chapter 4.

1.7 Research Objectives

The present thesis, Addressing Infrastructure Crisis in Indian Cities: A Comprehensive Economics Model for Value Increment Financing, is concerned with India's financial strategy towards investing in the infrastructure required for urban development to support the rapid urbanization process keeping in view the Sustainable Development Goals and the National Urban Policy Framework. The research work is based on five objectives:

First, it aims to study the tax increment financing model followed in various countries and evaluate the same for the Indian context: appreciating the literature, including theory and understanding the practice. The thesis includes desk research and also a case study approach. The study also includes research on the broader value-capture financing tools and explores the best practices in India.

Second, the study aims to understand the major flaws with the urban local bodies in India and the challenges in funding infrastructure in India for different tiers of the government. The study aims to interact with relevant stakeholders who are a

part of the infrastructure development process to understand the complexities of the system.

Third, debt-financing options have been explored along with alternate models of financing that may be used along with the value increment financing (VIF) model. All the debt, equity and hybrid models that can be used to fund infrastructure projects with VIF for debt repayment have been studied in detail.

Fourth, it aims to critically analyse how urban infrastructure projects can be structured in India following the VIF approach. The study focuses on analysing the values generated by infrastructure development, including those due to complementary policies such as land use changes, increase in Floor Space Index (FSI), Transferable Development Rights (TDR), etc. By understanding different markets and the direct, indirect, and induced effects of infrastructure development, the surplus values in different markets have been explained to understand the extent of value creation that can be captured and recycled.

Fifth, the thesis aims to present the way forward in financing urban infrastructure based on the results of case studies, interaction with experts and research on best international practices. The study suggests a comprehensive approach to VIF that extends the ambit of the principles of TIF and takes theory and practice into account. It suggests VCF tools and provides robust policy recommendations for smoothing out the process of urban and regional infrastructure financing in India.

1.8 Data and Methodology

Based on the research objectives, the thesis follows a two-pronged approach. First, it uses explorative research along with national and international case studies to critically

analyse the TIF framework, including theory and practice, to understand the implementation process. The study is combined with desk research to explore the various debt-financing options that can be used along with TIF to fund infrastructure development projects in urban areas.

Second, the study focuses on the Delphi method to understand the major challenges in funding infrastructure in India and the major roadblocks in the process. The study is based on primary data collected during the interaction with the experts and secondary data obtained from different government sources. Most of the data used in the case studies is from government websites and websites of different autonomous bodies of the government. Data has also been used to understand the trends and prospects of urbanization. Majority of the data is from Census 2011, Budget documents, Ministry of Housing and Urban Affairs, ICRIER 2019 Report, etc.

1.9 Organisation of the Thesis

The thesis has been divided into six broad chapters. Chapter 1, the present chapter, focuses on the need to develop the cities owing to rapid urbanisation and the condition of municipal finances in India. The chapter discusses the National Urban Policy Framework and the various financing mechanisms that can be used by the local bodies for funding infrastructure development. Chapter 2 discusses the literature concerning the TIF approach and critically evaluates the international practices while taking lessons for India. A few relevant TIF models have also been discussed briefly. Different case studies of the TIF mechanism followed in Chicago and California have also been discussed in the chapter. The chapter also focuses on the literature on various debt financing options and India's experience with long-term borrowing. Different value capture mechanisms being followed in India have also been discussed in the

chapter. Chapter 3 analyses the responses received during the interaction with the experts following the Delphi method. The chapter covers the major issues with the local bodies and highlights the policy issues with different institutions and practices relevant to infrastructure financing.

Chapter 4 analyses the various debt-financing options that can be combined with TIF as the escrowing mechanisms. The theory and implementation of all the methods have been discussed. Along with different bond markets for raising capital, different models of PPP, asset securitization and revenue sharing have also been highlighted. Chapter 5 discusses the issues with the existing TIF models and the challenges in implementing them in India. The chapter also discusses about the different kinds of values generated by infrastructure development projects and why it is essential to capture the value generated and recycle the same. The chapter further talks about quantifying these incremental values based on the surplus generated in different markets. The chapter talks about transforming the TIF model into a comprehensive Value Increment-based financing model for infrastructure development in India. The last chapter summarizes the discussion and draws conclusions from the study. Further, the chapter has provided policy recommendations for different tiers of the government to ensure a sustainable financing mechanism using a value increment financing approach.

Chapter 2

TIF Approach: Theory, Practice and Lessons for A Comprehensive Model for Value Increment Financing of Urban Infrastructure

2.1 Definition and Theoretical Framework

To put the current work into perspective, selected definitions of tax increment financing (TIF) are provided, and the theoretical framework of TIF is discussed in this section. Weber and Godderis (2007) described tax increment financing as technique local governments use to fund development projects. A local government chooses an area for improvement, demonstrating that it fits the state's enabling legislation's eligibility standards. It also creates a redevelopment plan outlining improvements it expects inside the TIF district's specified boundaries. The local government frequently subsidizes developers to undertake this development. As property values and taxes rise in the region, the provincial government leverages future tax revenues to pay for development expenditures. It is a simple way to use future earnings to pay for current expenses through value creation and capture.

Dye and Sundberg (1998) defined tax increment financing as “a policy tool that allows a municipality to designate an area for improvement and then earmark any future growth in property tax revenues to pay for economic development expenditures. Suppose the TIF-funded improvements clearly and fully cause the future growth in property taxes within the district. In that case, TIF is simply an accounting device wherein projects pay for themselves over time.”

Huddleston (1982) provided an economic description, “under tax increment financing, property tax revenues from numerous local taxing jurisdictions are diverted to a city or its designated development authority as partial repayment for development expenditures which have been made in specially designated TIF districts - districts which typically contain blighted or deteriorating property or possess unique development potential. Expenditures made within TIF districts commonly include the purchase, clearance, and assembly of land, street improvements, and construction of parking facilities. As property values increase within a TIF district over time, the property tax revenues of all local governments are partially diverted to the city as reimbursement for its development expenditures. Thus, county and school district property taxes are given to the city (in the form of “tax increments”) as partial repayment for the expenditures it made in the district. When the development expenditures have been completely recovered by the city (or for a period of up to 20 years in most states), the TIF district is terminated, and the tax base is returned to full use by all local governments.”

Brueckner (2001) refers to TIF as a unique aspect of local public finance, i.e., taxing the identical property-tax base through many overlapping jurisdictions. The paper provided the theoretical relationship between property values and the provision of public goods. It investigated the political motivations for TIF adoption and the viability of TIF of self-financing.

The author models a town with two neighbourhoods (A and B) and a co-terminus school district. Since residents can move, the increase in the value of immobile resources, such as real estate, directly corresponds to increased social welfare. Neighbourhood ‘A’ benefits from certain public goods specific to its locality

and does not directly affect neighbourhood 'B'. Investments in local public amenities will increase land prices in the neighbourhood 'A', thereby generating more property tax revenue for both neighbourhoods. To get the political backing of real estate proprietors in neighborhood 'B', any public investment on local goods in neighbourhood 'A' must be financially sustainable. The enhanced property values must generate sufficient funds, at the current tax rate, to cover the upgrade cost. So long as the annualized cost of marginal local public goods spending is less than the rent increase, it will improve welfare. According to Brueckner, certain local public-good expenditures that enhance welfare need an increase in the tax rate. Property owners in neighbourhood 'B' do not receive any advantages from the public goods provided in the neighbourhood 'A'. They may resist tax hikes even if the benefits outweigh the costs. Brueckner demonstrates that TIF allows the overlying school district to be exempt from revenue increases. This will result in a reduced distortion in the tax burden and enable higher spending on local public goods in neighbourhood 'A', which will be acceptable to inhabitants of neighbourhood B. This implies that, under the condition that all other factors remain constant, a municipality that adopts TIF will provide at least an equivalent amount of local public goods compared to one that does not. Implementing TIF will enhance the overall value of real estate properties because local public amenities increase land value.

Property owners located outside the impacted area are burdened with higher property taxes without receiving any corresponding benefits and are prone to oppose localized public improvements. TIF may overcome this obstacle by capturing tax revenue from overlapping jurisdictions, enabling the city to enhance public goods without raising its tax rate. A TIF may not always be a feasible financing alternative due to its potential inability to generate sufficient revenue. Practicality arises when

there is a significant lack of provision for the public good, and the initial level of provision is far lower than what is socially optimal. On the other hand, TIF fails in areas with little need for public improvement. The study demonstrated that the level of public goods decided under TIF is not required to be efficient, and it can result in both underprovision and overprovision.

Merriman (2019) defined tax increment financing as an economic development strategy to bring the public and private sectors together. TIF supports economic development projects in a specific area by setting aside the expected rise in property tax income (increment) that will result from the TIF investment, stimulating new development and increasing real estate value. A designated area with carefully defined geographic borders, a specified and restricted operation period, expenditures that foster economic growth, and real estate appreciation that generates additional property tax revenues are all core features of TIF.

The author found that TIF works best when the public and private sectors drive economic growth. The nature of TIF in many states leaves it subject to abuse by cities, which can profit from income that would otherwise go to overlaying governments, particularly school districts. TIF has primarily been implemented in areas already relatively prosperous within specific states and cities, and it has done little to drive growth in the most dismal areas. The causes for the disparity in TIF usage have not been thoroughly investigated. However, it is plausible that states' reactions to their neighbours' TIF use have contributed to this pattern of disparity. Transparency in TIF usage is a significant challenge, and state oversight of TIF use varies. TIF reporting in the city is likewise a mixed bag. Even in Chicago, where TIF is widely utilized, and a great deal of information has been made public, TIF transparency varies. Many

academic studies of TIF demonstrate that it frequently fails to generate economic development above and beyond what would have occurred otherwise. It may merely result in the relocation of economic activity. TIF use can have unforeseen consequences like reduced or redirected school funds and increased budget instability, particularly during volatile economic cycles. Paying more attention to TIF management and the types of spending within TIF districts could help researchers better understand why some TIF districts succeed while others fail.

The author suggested recommendations to improve tax increment financing and turn it into a beneficial tool for economic development that contributes to strong and fiscally viable communities. TIF usage should be tracked and monitored by states. States should revise their legislation to grant counties, school districts, and other local bodies the option to abstain from contributing to TIF districts. Local governments should provide comprehensive and readily accessible information regarding the utilization, income, and disbursement of TIF to the general public. Researchers ought to analyze, record, and elucidate the diverse outcomes of TIF utilization in different geographical locations in order to derive reproducible insights for achieving success.

Byrne (2005) examined TIF adoption decisions, considering the possibility of strategic interaction between municipalities when deliberating. The strategic interaction hypothesis is being examined to see whether TIF is primarily used to fund infrastructure construction or if its widespread use is due to competition among neighbouring municipalities for private development. He also examined whether TIF captures tax money from overlapping jurisdictions without appropriate justification.

When municipalities consider the adoption decisions of neighbouring cities, it results in a more realistic decision-making model. The findings revealed that

municipalities engage in strategic interaction when deciding whether or not to implement TIFs, implying that TIFs are utilized to compete for private development. Governments do not use TIF as a means to acquire funds from jurisdictions that overlap. Conversely, if a more significant proportion of a city's school district falls inside its boundaries, there is a higher likelihood of adopting TIF. The implementation of TIF is influenced by several factors, including the municipal tax rate, the percentage of the tax base comprised of non-residential property, the proportion of owner-occupied housing, and the influx of new residents.

Municipal authorities can employ Tax Increment Financing (TIF) to fund economic growth within a designated redevelopment area by redirecting a portion of the increased property tax revenue resulting from the district's reconstruction. The initial assessed valuation of the properties in the district remains constant during the district's existence. Taxes based on this assessment are then allocated to the taxing authorities responsible for the properties in the region. Meanwhile, the taxes produced from the gradual increases in property prices are reinvested in the local community. TIF funds are designed to reimburse developers for qualifying expenses, including land acquisition, site preparation, infrastructure construction, and the issuance of service bonds to facilitate public enhancements inside the district. When the TIF district expires, the taxes on the increment go back to the overlapping jurisdictions. (Weber et al., 2007)

TIF is based on the idea that when current revenues are under stress, a portion of the increased tax revenue from a certain area can be set aside to fund the development of physical infrastructure and other measures meant to stimulate

economic growth. These investments fuel economic expansion and wider benefits, generating the additional revenue needed to cover the cost of the programs.

Davis (1989) calls TIF as a straightforward concept. Local governments often use the increment in tax revenue that results from redeveloping a given region to offset some of the expense. All the properties in a TIF district have their equalized assessed values (EAV) compared to the initial base EAV calculated for the district, and the difference between the two is the TIF property tax increment. The TIF fund receives all the extra tax revenue generated by multiplying the increments with the annual tax rate.

Benefiting the city, TIF allows it to circumvent the bureaucracy and lengthy approval processes associated with intergovernmental aid and, in some situations, circumvent municipal debt restrictions and the necessity for voter approval. However, the fundamental benefit of TIF is that it allows cities to collect tax revenue that would otherwise go to other jurisdictions. The allocation process allows for this appropriation of funds since it is rationalized by the fact that the increases in the EAV of real property and the taxes resulting from them would not have happened without TIF money. City authorities frequently view it as unfair since the city bears all the redevelopment expenditures but receives only a small portion of the consequent tax revenue boost. Other taxing entities suffer no losses due to the TIF because they continue to receive the revenues generated by the EAV as of the date the TIF district is created. Few people realize that the base EAV can fall.

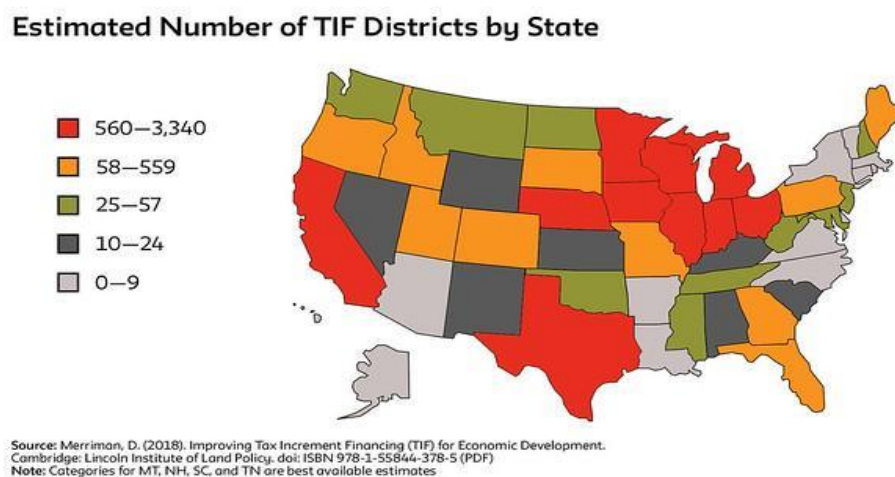
Unfortunately, the requirements for creating a TIF district are frequently broad enough to encompass neighbourhoods with few or no problems. Many taxing authorities raise objections to TIF because they fear the district will siphon off

revenues that should be theirs or because the TIF will lead to higher service demand without corresponding increases in tax revenue. Certain people believe that TIF is unfair because it benefits some property owners financially at the expense of others. TIF's tendency to emphasize brick-and-mortar developments is a significant drawback. By increasing tax revenue, TIF favours high-density, high-quality redevelopment over more modest improvements.

Anderson (1990) intends to present insight from an economic standpoint. This study examines city use of the TIF technique of financing economic development projects and offers tentative explanations for why governments adopt TIF programs. The question is whether or not there is a connection between the choice to embrace TIF and the expansion of the city's property tax base. A structural probit model shows the correlation between TIF implementation and rising property values.

Since its inception in the mid-20th century, TIF has flourished in the United States as a key source for financing new development. The state-wide adoption of TIF is shown in Figure 2.1.

Figure 2.1 United States: Estimated number of TIF Districts by State.



Source: Merriman (2018)

Empirical evaluation shows that TIF-adopting cities saw more extensive improvements in property values than non-TIF-adopting cities. Cities are more likely to approve a TIF plan if they expect greater appreciation in property value under the TIF regime. Indeed, TIFs are being used by several growing cities. That doesn't prove that TIFs are what sparked the growth. It's possible that city leaders can anticipate future growth and use the TIF mechanism to boost their coffers at the cost of school districts. This pessimistic take on the TIF process suggests it is a tool for budget manipulation rather than economic growth. Cities may decide to embrace the TIF mechanism if extra subsidies prove compelling enough despite the potential negative effects on taxpayer welfare. Opposition is not a limiting factor in TIF acceptance due to the higher transaction cost of such opposition from disgruntled parties. Although the magnitude of the subsidy offered depends on the relative municipal tax rate, it is nevertheless true that large subsidies are inherent in the TIF method of financing. These payments appear to be a powerful incentive for municipalities to implement TIF arrangements. To sum up, cities with higher economic growth rates are more likely to employ the TIF mechanism to finance local economic development initiatives. However, the potential of TIF to stimulate growth remains unknown.

Man (1999) investigates how municipalities' adoption of TIF influences local economic development. Here, "local economic development" refers to the amount of commercial activity in a certain area, typically quantified by the number of available jobs in that region. Using a cross-sectional time series regression model on a data set comprised of Indiana municipalities, this study analyzed the correlation between municipalities' implementation of TIF programs and local employment. Adopting TIF programs results in a 4 percent increase in job growth compared to non-TIF cities. This finding lends credence to claims that TIF programs significantly improve job

opportunities in TIF-adopting cities. Therefore, tax increment financing is useful for creating additional jobs and promoting local economic activity. Nevertheless, TIF's usefulness as a tool for economic development is a necessary but insufficient prerequisite for policy acceptance as neither efficiency nor equity condition is considered by this criterion.

2.2 Models of Tax Increment Financing

Some oft-cited theoretical models on tax increment financing (TIF) are presented below, followed by empirical case studies:

2.2.1 The Brueckner Model

One of the most widely used models of TIF was given by Brueckner (2001), where the author explains the theoretical connection between property values and public-good levels and agrees that TIF may not always be a viable option as it may not generate sufficient additional revenues. The analysis in the paper shows that TIF's viability is ensured only when the public good is at the least moderately underprovided relative to the socially optimum level.

The study is based on two neighbourhoods, a and b , with a single public good z divided among the two localities with levels denoted by z_a and z_b . The total cost of providing the good is given by $C_a(z_a) + C_b(z_b)$. The model assumes that all properties in the region are residential, with every house indexed as i and q_i denoting the vector of attributes of house i . The model also assumes that the households consume another public goods provided by a different district, referred to as the 'school district'. Then, the utility of the house i 's occupant is given by $U(x_i, q_i, z, s)$ where x_i is the consumption of private goods by the household and where $z=z_a$ is the household in

jurisdiction a . The model further assumes a common income of residents given by y and the rent payment shown by P_i for house i . We get a budget constraint given by $x_i + P_i = y_i$. Thus, we get a fixed utility level for households. $\underline{U} = U(y_i - P_i, q_i, z_a, s)$, making P_i a function of q_i, z_a and s . Thus, as public goods or housing attributes increase, the rent of houses increases. The study further assumes the housing attributes to be fixed, which gives us the total rent of a neighbourhood:

$$R_a(z_a) = \sum P_i(z_a); \text{ and similarly, } R_b(z_b) = \sum P_i(z_b)$$

Using the above equation, we can get the derivatives of the total rent in both areas:

$$R_a'(z_a) = \sum MRS_i^{z,x}; \text{ and similarly, } R_b'(z_b) = \sum MRS_i^{z,x}$$

Where $MRS_i^{z,x} = U_i^z / U_i^x$. Therefore, the total rent in the neighbourhood increases as its z level increases. The neighbourhood rent gain thus represents the marginal social benefit of the extra public good. According to the model, the value of houses in the city depends on the rents they generate and the property taxes they pay. The city levies property tax at the rate of T in both households, and the tax rate in the school district is given by t . Given that V_a and V_b provide the value of houses in both neighbourhoods, we can say that

$$V_a = \frac{R_a(z_a)}{T + \theta} \text{ and } V_b = \frac{R_b(z_b)}{T + \theta} \text{ where } \theta = t + r$$

The model further assumes that the districts and the school district depend entirely on property taxes to finance their expenditures. As a result, the budget constraint for both the districts is given by

$$\frac{T[R_a(z_a) + R_b(z_b)]}{T + \theta} = C_a(z_a) + C_b(z_b)$$

The budget constraint for the school district is given by $t(V_a + V_b) = K(s)$. Given both these equations, we can say that the total tax liability of all property is equal to the total public good cost. The total value can then be written as $[R_a(z_a) + R_b(z_b) - C_a(z_a) - C_b(z_b) - K]/r$. The first-order condition for z_a choice is $R_a'(z_a) = C_a'(z_a)$, which says that the marginal change in rent from an increase in z_a should equal the cost of the extra public good.

This means that a socially optimal public good level in a neighbourhood a is given by z_a^* , which satisfies $R_a'(z_a) = C_a'(z_a)$. Since $R_a'' < 0$ and $C_a'' \geq 0$ holds, under the provision of z_a implies $R_a' > C_a'$ and overprovision of z_a implies $R_a' < C_a'$. It is also clear that any increase in z_a will increase rents in neighbourhood a while rent in area b remains the same since z_b is constant. However, if the property rates, T , are changed in the city, both areas will be affected, and hence, the value of property in area b will decrease. Therefore, increasing property tax is not an ideal solution as it will make the people in the other areas worse off. However, the TIF model provides an alternative. First, it is important to understand the conditions under which an incremental T would be required to finance the improvement. For this, let us rearrange the budget constraint equation. This gives us:

$$T = \theta(C_a + C_b) / [R_a - C_a + R_b - C_b]$$

Differentiation then gives us: $\frac{dT}{dz_a} = \frac{(T + \theta)(C_a' - \frac{T}{T + \theta} R_a')}{R_a - C_a + R_b - C_b}$

Which means, $\frac{dT}{dz_a} < (>) 0$ as $\frac{T}{T + \theta} R_a' - C_a' > (<) 0$

It is important to note that the condition, $\frac{T}{T+\theta} R'_a - C'_a > (<)0$ changes sign only once, from positive to negative, as z_a increases by impacting T , R'_a and C'_a . Given this fact, it is either negative for all $z_a > 0$ or it changes from positive to negative at some 'T-critical level' $\hat{z}_a^T > 0$, in which case,

$$\frac{dT}{dz_a} < (>)0 \quad \text{as } z_a < (>) \hat{z}_a^T$$

The 'T-critical level' will always lie below the z_a^* , the socially optimal level of z_a , given by:

$\hat{z}_a^T < z_a^*$, which is established by noting that $\hat{z}_a^T$ satisfies the equation $\alpha R'_a(z_a) - C'_a(z_a) = 0$ where $\alpha = T/(T+\theta) < 1$ while z_a^* satisfies the same equation with α replaced by 1. Hence, since $\frac{dT}{dz_a} < 0$ holds only if $z_a < \hat{z}_a^T < z_a^*$ suggests that the tax rates can be reduced as the level of z_a rises only if the public good is seriously underprovided, with the initial level z_a^0 less than the socially optimal level. Hence, we can say that the property values in area a will continue to rise as long as $z_a < z_a^*$ and the tax rates will not increase only if z_a is seriously underprovided. To reduce opposition from residents of other districts, it is important to carry out public improvement projects without raising the tax rate. However, the city cannot keep T fixed and relies solely on the incremental tax revenue generated by higher rents caused by the improvement. This revenue is equal to $TR'_a/(T+\theta)$, which falls short of the improvement's cost when $z_a^0 > \hat{z}_a^T$. In other words, the incremental city tax revenue is less than the cost of public improvement if $z_a^0 > \hat{z}_a^T$.

Hence, it becomes important for the city to apply TIF authority with neighbourhood designated as the TIF zone. This will allow the city to capture the

incremental tax revenue generated in the school district due to the higher rents in the TIF zone and can be used to cover the improvement cost. Under the TIF condition, the budget constraint of the city can be written as:

$$\frac{T[R_a(z_a)+R_b(z_b)]}{T+\theta} + \frac{t[R_a(z_a)-R_a(z_a^0)]}{T+\theta} = C_a(z_a) + C_b(z_b)$$

the second term on the left represents the additional revenue generated by the school district. Hence, now we can say that the incremental tax revenue generated is given by $(T+t)R_a'/(T+\theta)$. For TIF to be a viable option, it must cover the cost of public improvement, which can be written as

$$\frac{T+t}{T+\theta} R_a' > C_a'$$

It is important to note that $(T+t)R_a'/(T+\theta) - C_a'$ changes sign from positive to negative as z_a increases at a critical value, $\hat{z}_a^{TIF}$ which is larger than the previous critical value $\hat{z}_a^T$. In other words, TIF holds when z_a is less than $\hat{z}_a^{TIF}$, which lies above $\hat{z}_a^T$. It is also known that the $\hat{z}_a^{TIF}$ lies below the socially optimum level z_a^* . Hence, incremental revenue covers the cost as long as $\hat{z}_a^T < \hat{z}_a^{TIF} < z_a^*$. To conclude, we can say that TIF is needed as city revenue cannot alone cover the cost of public improvement when $z_a^0 > \hat{z}_a^T$. TIF is viable when $z_a^0 < \hat{z}_a^{TIF} < z_a^*$. Hence, TIF is both needed and viable when the initial z_a level rises in the range of $[\hat{z}_a^T, \hat{z}_a^{TIF}]$.

2.2.2 Dye and Sundberg Model

The model by Dye and Sundberg studies the impact and viability of TIF by comparing the expected stream of fiscal and other benefits generated with and without TIF.

Assume that there is a school district S which has two towns, X and Y. Town X plans to implement a TIF project which is bound to increase property values, not just in X but also in S as the revenue in the school district is dependent on school tax rate and the property values in town X and Y. The model presents the present value of tax revenue generated by the municipal government of X and by school district S with and without TIF. The net present value of TIF is then calculated as the net present value of the difference in tax revenues with and without the TIF minus the project cost. When the TIF project is not followed, the property values in town X is given by V_x , and the municipal tax rate is t_x . So, the tax revenue is $t_x V_x$. Out of the total area in area X, the blighted area makes a fraction f ; hence, the total property value in this area is fV_x . The property value in the blighted area is expected to grow by g_b , and the value of the property in the remaining part of X is expected to grow at g_x while the discount rate is r . Hence, the present value of the revenue collections by X in the absence of TIF is given by

$$PV(T_x) = t_x V_x \left[\frac{f}{r-g_b} + \frac{1-f}{r-g_x} \right]$$

With the development projects, the property values in the blighted areas do not rise just once but can potentially be put on a higher growth path of the annual increase in the nominal property values g'_b . The project does not influence the growth path in the blighted areas alone but also has spillover effects on the other parts of area X, g'_x and can also affect the growth path of nominal property values in the nearby area Y, g'_y . Let the project cost be given by cfV_x , and the property values in the area increase immediately by A for every dollar spent on the project. Hence, $AcfV_x$ gives an on-time boost in property values in the first year. Thus, the present value of tax collection in the presence of TIF is given by

$$PV(T_x) = \frac{t_x(1-f)V_x}{r-g'_x} + \frac{t_x(fV_x + AcfV_x)}{(1+g'_b)(r-g'_b)}$$

The second part on the right-hand side of the above equation shows the present value of the future tax collections from the blighted area. The project's net present value is thus equal to the expected tax revenues with TIF minus the expected tax revenues without TIF and the town's share of the cost. Thus,

$$NPV(T_x) = \frac{t_x(1-f)V_x(g'_x - g_x)}{(r-g'_x)(r-g_x)} + \frac{t_x(fV_x + AcfV_x)}{(1+g'_b)(r-g'_b)} - \frac{t_x}{r-g_b}fV_x - \frac{t_x}{t_x + t_s}c fV_x$$

The paper further says that various other factors might affect town X either positively or negatively. The author adds another term to the above equation, NB_x , that signifies the present value of the net benefit created by the project for town X other than changes in the property tax revenues. However, while studying TIF's efficiency and financial viability, the author assumes NB_x to be 0 and that there is no impact on the property outside the TIF district.

2.2.3 Man and Rosentraub Model

Man (1998) studied the effectiveness of TIF programs in stimulating economic activity, especially property values. Since TIF is an infrastructure development method, the investment in the development may attract firms and households in the area and encourage growth. This may cause an expansion of the community's tax base, which could increase the value of all types of properties. Thus, for TIF to succeed, the public investment in infrastructure must increase property values in the district to generate additional tax revenues. The author assumes the property value V to be expressed as:

$$V = V(H, G, t, Y)$$

where H represents the vector of housing services, G represents the vector for public goods and services, t represents the taxes, and Y is the vector of income in each jurisdiction.

According to the model, the property value before the adoption of TIF modes can be modelled as:

$$\ln V_b = \beta_0 + \beta_1 X_{1b} + \dots + \beta_n X_{nb} + e_b$$

Where $\ln V_b$ is the log of observed property values for a city in the period before the adoption of TIF, X_{1b} through X_{nb} are various exogenous factors affecting property values, including provision of public services, β_0 to β_n are parameters and e_b represents normally distributed error terms. The same equation of property values after the adoption of the TIF program can be represented as:

$$\ln V_a = \alpha_0 + \alpha_1 X_{1a} + \dots + \beta_n X_{na} + \delta D + e_a$$

The subscript 'a' has been attached to all variables to differentiate the variables for the post-TIF adoption phase and α_0 to α_n are the parameters after TIF adoption. D is a dummy variable representing whether or not the jurisdiction has at least one or more TIF programs running in the after-TIF phase, and δ is the dummy variable's coefficient measuring TIF's impact on property values. The decision by a city government or district authority to decide whether TIF is required or not can be modelled as follows:

$$D^* = \gamma Z + u$$

Where $D=1$ if $D^*>0$ and $D=0$ otherwise. Here, Z is a vector of observed variables affecting TIF's adoption decision, and u represents unobserved variables and is assumed to be independently identically distributed. Now, the effects of the TIF program can be obtained by running the regression model on the difference of the pre and post-TIF equations mentioned above.

$$\ln V_a - \ln V_b = (\alpha_0 - \beta_0) + \delta D + (\alpha_{1a} - \beta_{1a})(X_{1a} - X_{1b}) + \dots + (\alpha_{na} - \beta_{na})(X_{na} - X_{nb}) + (e_a - e_b)$$

The percentage change in property values consists of a general inflation factor determined by $(\alpha_0 - \beta_0)$, the added change associated with the TIF program given by δ and changes in house characteristics and other socioeconomic factors. The model says that the change in economic activity due to the TIF program can be captured in the variation of these regional property values.

2.3 TIF: Some Case Studies

2.3.1 Chicago

Weber et al. (2007) utilized econometric analysis to see if TIF districts in Chicago affect home appreciation. Observations on owner-occupied residences in Chicago that sold more than once between 1993 and 1999 are included in the dataset. Data was gathered from obligatory real estate transfer forms, MLS records, and other sources. After controlling for TIF district, property, and neighborhood features, the paper quantified spillovers on surrounding residential property prices.

TIF has impacted residential homes and the value of houses in the neighbourhood. Expensive condominiums, large retail stores, and fashionable coffee

shops show increased development in and around Chicago's TIF zones. The TIF's impact raises doubts among supporters and critics due to its nature and scale. Mixed-use TIF districts promote the increase in the value of housing located in vibrant markets. There is insufficient data to establish that TIF is the main catalyst for neighbourhood transformation in Chicago. The study revealed a positive correlation between property appreciation and the presence of multiple bathrooms, a recently constructed building close to Lake Michigan, and an initially high household income level in the neighbourhood. However, the level of appreciation was greater in communities with a higher concentration of renters who had convenient access to public transit stations from the beginning. Buyers were willing to pay an additional amount for urban neighbourhoods with access to public transit and rental units that could be transformed into condominiums. The positive externalities typically have a limited impact in terms of magnitude. The threshold of home appreciation needed to displace a significant number of lower-income households will be considerably greater. Establishing TIF districts to attract industrial and commercial activities leads to a decrease in the value of nearby residential properties. Therefore, the apprehension of gentrification resulting from TIFs is ultimately contingent upon each specific district's anticipated and ongoing development.

Weber (2010) examined the instance of Chicago from 1996 to 2007 when the city administration used TIF to fund development projects using borrowed money. The utilization of TIF was initially implemented in Chicago during the early 1980s, a period marked by reduced federal and state assistance towards urban expansion. The origins of this phenomenon may be traced back to urban renewal legislation that allowed cities to demolish land and create new regions, resulting in decreased property values. Additionally, the fall of Fordist methods of production also played a role. The

Central Loop TIF district was established as the inaugural TIF district in 1984. In 1998, a series of TIF districts emerged, primarily focused on residential or mixed-use projects and supported by private developers. TIF was employed to support infrastructure development, acquisition of sites, assembly and preparation of land, and provide subsidized finance during both phases. TIF subsidies have provided significant financial support for numerous prominent real estate acquisitions. By the conclusion of 2008, Chicago had 160 TIF districts, encompassing over 30% of the city's total land area.

The City of Chicago assumed the risk of relying only on revenue growth within the TIF districts by issuing general obligation bonds and TIF revenue bonds to finance their initial establishment. TIF designations rapidly increased in the mid-1990s, following the recovery of property markets from the commercial real estate crisis that occurred earlier in the decade. The municipal authorities expressed a desire to safeguard the integrity of their bond ratings in light of the potential negative impact stemming from the TIF worries. In 1996, Chicago initiated an experimental implementation of a novel financial instrument called developer notes, sometimes recognized as "tax anticipation notes." Notes are a form of financing that has a higher level of risk. They are typically not assigned a rating and are provided to developers as a short-term instrument, usually lasting around five years. These notes have a higher interest rate and are secured by the project's incremental property taxes. From January 1997 to June 2006, Chicago provided initial funding for TIF projects through promissory notes in about 63 of the 171 deals it carried out.

Tax increment financing presents novel avenues for local governmental entities to allocate funds towards local real estate assets, contributing to the escalation of

property values. The system's dependence on this cyclical process - investment, securitization, appreciation, investment - gives rise to specific spatial planning strategies, including expanding TIF districts and developing regions to optimize incremental property tax revenues while minimizing valuation risk. The most significant surge of new TIF district designations occurred in the late 1990s, before the increase in property value following the 2003 assessments. Chicago was able to capitalize on the subsequent construction boom by utilizing TIF districts during a period of cheap property prices.

The administration implemented stringent regulations on the dimensions and placement of every TIF district to ensure a certain level of assurance that forthcoming revenue streams would be adequate to fulfil obligations to note holders and creditors. The initiative effectively decreased the likelihood of non-payment by directing attention towards areas inside the city's growth zones that had been previously neglected or where rent differences were increasing but had not yet reached their maximum. The expansion of TIF districts is undertaken to strategically manage the repayment streams by incorporating additional districts adjacent to an existing district. The municipality was granted legal authorization to transfer the increments accrued within a TIF zone to an adjoining district, a practice commonly called "porting." Chicago shifted about \$35 million between districts between 2000 and 2005. The city allowed larger-scale development projects, arguing that soft expenses could be spread more evenly. It also advocated site plans with more market-rate, owner-occupied apartments, retail space, and revenue-generating uses and ownership structures that appeal to the private sector.

Chicago exclusively collaborated with developers who showed reliability in executing projects within specified timelines and adhering to predetermined standards. This approach was justified by the city's emphasis on expeditiously completing tasks and generating increments within TIF regions, which pressured developers to meet these expectations. The lack of clarity over the specific amount of their respective TIF allocations and a lengthy and politically influenced application process dissuaded all but the most influential developers from engaging in TIF negotiations. The city's heavy dependence on well-established network connections resulted in barriers for new developers seeking to enter the local real estate market, fostering a culture of favouritism and crony capitalism. This reliance became apparent when developers demanded more funds from the city beyond those stated in their TIF agreements to ensure completion.

From 1996 to 2006, there was a notable rise in the volume of TIF debt. However, it is worth noting that a limited number of financial intermediaries primarily facilitated a majority of bond and note transactions in the city of Chicago. Intermediaries derived benefits from interest-rate spreads, which refer to the disparity between the payment made by municipalities and the promised returns to their investors, alongside various underwriting expenses. The individuals in question are responsible for supervising the project for the entire duration of the instrument. These charges elucidate the reasons for the escalating soft costs observed in TIF budgets.

Municipalities can influence tax assessors to increase the valuation of parcels within TIF districts, particularly in counties with a more rural character. Certain cities enter into "minimum assessment agreements" with local tax assessors, formally declaring that property values would not decline below a predetermined threshold.

Some municipalities impose restrictions on developers in certain TIF districts, prohibiting them from appealing property values below a predetermined threshold. The municipal authorities collaborated with the Cook County Clerk to establish distinct tax codes for parcels located within TIF districts that saw a decline in value. This pertains specifically to sites where improvements have been dismantled or where tax-exempt entities, like educational institutions, have acquired land. Taxing authorities, such as educational districts or local governments, can impede repayment plans by reducing property tax rates or reclaiming portions of the increment stream through legal action, contractual agreements, or legislative measures. By engaging them in maximizing increments, negotiating agreements with them, and compelling them to make concessions, the City of Chicago avoided legal objections from these corporations. Officials aggressively discouraged the public from participating in the TIF designation process. Project planning decisions were made behind closed doors with little or no transparency. TIF allocation decisions were only made public after consultants, developers, and financial intermediaries had been lined up.

2.3.2 California

Marantz (2018) explained the process of TIF-based revitalization, specifically within the context of California. In 1945, California authorised local lawmakers, including city councils, to form redevelopment agencies and delineate redevelopment project zones to mitigate the effects of "blight." Since 1952, the state has permitted redevelopment agencies to allocate increases in property tax revenue for funding enhancements within designated project areas. Redevelopment agencies may employ TIF to finance development projects to augment sales tax revenues, thus providing additional support to the money generated from residential property taxes. During the

1960s and early 1970s, redevelopment agencies utilized TIF to hinder the allocation of property tax revenue increases to overlapping county governments and, indirectly, the state. This occurred at a time when both entities assumed greater responsibility for a diverse array of public services. The expansion of TIF-based rebuilding from inner cities to affluent suburbs resulted in a progressively significant strain on the state's financial allocations. The dissolution of redevelopment agencies in 2012 resulted from state legislative and judicial action, effectively resolving the intergovernmental conflict regarding property tax income. The redevelopment agencies in California played a crucial role in the financial landscape of the most populous state in the United States until their dissolution in 2012. The use of TIF as a method of redevelopment in California can be attributed to the swift institutional transformation resulting from the enactment of Proposition 13, a statewide measure that imposed limitations on property taxes in 1978.

Nevertheless, implementing Proposition 13 does not comprehensively explain the growth of TIF-based redevelopment in California. Before the late 1960s, TIF was predominantly utilized inside urban areas that had been established for a considerable time. The utilization of TIF experienced a surge in popularity during the latter half of the 1960s, as the geographical scope of redevelopment project areas expanded and an increasing number of cities adopted TIF to facilitate rebuilding efforts. TIF-based redevelopment became more popular in developing suburban jurisdictions after that. The TIF-based redevelopment was contingent on state legislative approval in two stages.

The Community Redevelopment Act of 1945 in California allowed redevelopment organizations to use eminent domain to redevelop neglected land. At

the time, redevelopment proponents were primarily concerned with the state of older central cities. They devised a comprehensive definition of blight to allow eminent domain to acquire a wide range of urban land. Such imprecision, required for conversion, would come in handy decades later under entirely different circumstances. Due to the absence of specific provisions in the 1945 legislation granting corporate leaders and government officials in Los Angeles the power to generate money, they pursued state endorsement for TIF, which was granted by late 1952. The mechanism confers upon redevelopment agencies the legal jurisdiction to exercise control over any supplementary tax revenues generated within designated project areas. The conversion operation was ruled out due to the precision; however, drift was allowed.

A redevelopment agency can designate certain portions of a project as blighted, use eminent domain to acquire the blighted land, undertake land clearance activities, implement improvements, and subsequently transfer the property to private developers for sale. The redevelopment of older center cities was facilitated by many groups, such as the National Association of Real Estate Boards (NAREB) and the Urban Land Institute, who provided support for blight abatement initiatives. The primary objectives of these groups were to improve traffic flow, increase the availability of parking facilities, streamline property ownership, and address hazardous and unsanitary living conditions. Implementing these regulations may necessitate the condemnation and clearance of properties that show no discernible signs of decay. The California Community Redevelopment Act echoed similar aspirations, defining blight as places characterised by “prevalence of depreciated values” or “lack of proper application... resulting in a stagnant and unproductive condition of land” in addition to buildings that were “unfit or unsafe to occupy.” Furthermore, the law stated that redevelopment project areas could “include lands, buildings or improvements which

of themselves are not detrimental to the public health, safety or welfare, but whose inclusion is necessary for the effective redevelopment of the area of which they are a part.” As a result, the definition of blight was ambiguous from the start, leaving the door open for its later application in new settings.

Despite the extensive powers granted to municipal redevelopment agencies in California by the 1945 Act, particularly in terms of land condemnation and development, it is important to note that they were not bestowed with any distinct jurisdiction pertaining to tax collection. According to the legal provisions, the approval of municipal general obligation bonds needs the support of a majority of two-thirds of the voters. These bonds constituted the exclusive means of financing redevelopment initiatives. The acquisition of consent was a significant challenge for redevelopment advocates, resulting in the construction of merely one redevelopment project area in San Francisco between 1945 and 1951. The 1949 report presented to the California Senate identified "insufficient funding" as the primary obstacle hindering the effective execution of the Community Redevelopment Act at the local level. The Federal Housing Act of 1949 provided financial assistance through grants to address the prevailing circumstances.

Nevertheless, the business leaders in Los Angeles, the most populous city in California, cautioned against federal money due to their perception of it as a potential strategy to introduce public housing (Marks, 2004). Consequently, they took the lead in initiating a campaign to secure approval from the state for TIF as a viable substitute for general obligation bonds and federal funding. Bonds supported by TIF revenue would necessitate approval solely from the board of a redevelopment agency, as opposed to the requirement of a two-thirds majority vote from local voters for general

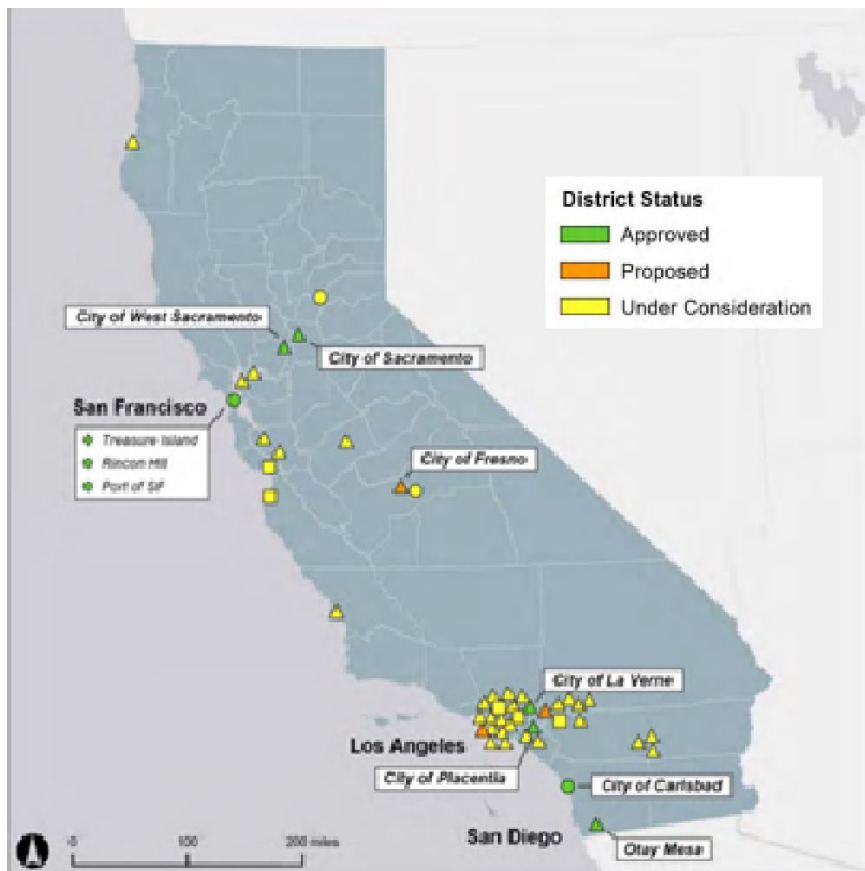
obligation bonds. Proponents emphasized the Tax Increment Financing's purportedly self-sustaining characteristic rather than its capacity to bypass local electoral processes. The argument was predicated on the premise that the sole guarantee for TIF-supported bonds resided in the augmented property tax revenues resulting from escalating property valuations within the vicinity of the redevelopment project. The city would not be responsible for compensating bondholders if property values within the project area fail to experience an increase. If property values within the project area increase, the redevelopment agency will have the right to receive revenue generated from the corresponding rise in tax collection. The agency can utilize the funds for direct funding of renovations or allocate them towards the repayment of bonds used for financing the aforementioned enhancements.

The authors demonstrate how more enormous environmental changes contributed to rising TIF profits while also amplifying TIF's negative impact on overlapping jurisdictions. The concept of blight and the permission for TIF remained unaltered between 1952 and 1975. The impact of TIF altered dramatically due to broader environmental factors throughout this time. California's economy thrived in the decades after WWII, as worldwide trade surged and federal defense spending fueled growth in the aerospace and electronics industry. The building of freeways experienced a notable increase in pace from the latter half of the 1950s to the mid-1960s, mostly due to financial support from both state and federal entities. This development significantly facilitated travel between essential business districts and previously rural villages located on the periphery. Property values in redevelopment project locations were kept under control by redevelopment agencies. While these improvements boosted actual property values, rising inflation, which began at the end of the 1960s, increased nominal property values. The Consumer Price Index climbed

at a 1.6 percent annual rate from 1952 to 1967. From 1968 through 1978, the average yearly rising rate was approximately 6.3 percent. During this time, redevelopment agencies operating within TIF districts were granted the right to benefit from tax increments resulting from property value appreciation caused by inflation. A surge of municipal incorporations transpired in the post-World War II era. The implementation of suburban municipalities occurred prior to the advent of TIF. Both developers and government authorities have acknowledged TIF as a feasible financial resource to support the necessary capital investments to expand retail sectors.

The case study of Cerritos serves as a prime example of how rehabilitation efforts based on TIF have extended beyond the boundaries of California's more established urban centers. Cerritos, located approximately 20 miles southeast of downtown Los Angeles, played a significant role as an early suburban TIF innovator, serving as a noteworthy exemplar and source of inspiration for other regional municipalities. TIF was first used to fund a significant retail mall to generate sales tax income. The conversion was at work here, as project proponents used the blight criteria to promote suburban expansion on farmland. The officials of Cerritos realised that implementing the redevelopment project area would enable them to utilize the TIF funds as a substitute for the city's general fund. The emergence of this predicament can be attributed principally to the phenomenon of drift resulting from the aforementioned environmental processes, along with subsequent endeavours to impede alterations in state legislation.

Figure 2.2: TIF Districts Considered, Proposed, or Approved in California



Source: Report on the use of Tax Increment Financing - California.

2.4 Extending TIF: Value Capture Financing

2.4.1 Impact of Infrastructure on Land Values

Infrastructure project financing has become increasingly complicated. Earlier, such projects were often sponsored entirely by the government. The question of who should pay is essential as more comprehensive benefits and environmental costs are involved, if the users should bear the expense and how much of these should be carried by future generations. The term "land value" in this context pertains to the value of land that has been enhanced by adding buildings, upgrades, utilities, and various other services.

In their study, Connolly and Wall (2016) examined the value capture (VC) method, which has recently experienced a surge in popularity in the United States. The participants engaged in a discourse pertaining to the concepts of value creation and value capture. A resource is deemed valuable when it enables a corporation to fulfil desires at a reduced cost compared to its competitors. Use-value refers to consumers' subjective and individual perception of the specific quality of a new product or service in relation to their needs. The monetary amount is realized when a new product or service is exchanged for exchange value; the realization of this is called value capture. The process of value creation encompasses more than simply understanding the willingness of consumers or society to pay for a product or service. It also entails acknowledging the presence of multiple users who cohabit rather than existing in isolation.

Additionally, it is crucial to investigate how value is acquired, as it is contingent upon the knowledge and evaluation context of potential consumers. Competition and isolation mechanisms are two essential elements that play a pivotal role in determining which party successfully obtains the newly generated value. Value capture can potentially be a feasible method for financing infrastructure investment, provided that a portion or the entirety of the exchange value generated by infrastructure development can be actualized. One potential value proposition is the ability to offer instant benefits to the owner. For instance, a developer may sell land near a newly constructed road access point at a higher price than its previous worth.

On the other hand, the value could be associated with the proximity of a property to recently developed infrastructure, which can yield both long-term financial benefits, such as increased property prices, and immediate advantages, such as reduced

commute time for the property owner. The funding for the project could perhaps be partially sourced from taxes or levies imposed on the beneficiaries rather than relying solely on user fees. VC is considered economically neutral as it does not introduce any distortions to the decision-making process in the economy. In light of the aforementioned considerations, it is evident that land with strategic positioning is limited in availability and hence exhibits low elasticity. Any novel asset contributing to the appreciation of land and property values is potentially appropriate for value capital investment. Improvements in public transportation make it easier to get to work and school, and easily accessible sites fetch higher costs.

Consequently, local authorities have the potential to leverage augmented property prices to promote transit-oriented development and allocate resources towards community amenities such as affordable housing. Moreover, transit is widely perceived by property owners and developers as a highly coveted asset capable of enhancing the value of adjacent residential properties and expanding the range of available development opportunities. Residing in close proximity to efficient public transit systems offers several advantages of a financial nature, such as the potential for increased property values. Additionally, it contributes to social benefits, such as the regeneration of neighbourhoods. Furthermore, it presents environmental benefits, including the reduction of traffic congestion.

The influence of TIF on aggregate property values was measured by Merriman et al. (2011). The researchers utilized time-series data pertaining to the valuation of municipal properties located within TIF districts, properties situated outside TIF districts, and all properties encompassed under the municipality's jurisdiction. The study suggests that TIF has stimulated the growth of real estate projects inside TIF

district areas in Wisconsin. However, the available evidence is inadequate in demonstrating substantial enhancements in overall property values within municipalities implementing TIF programs. Empirical data suggests that residential and manufacturing TIF districts exhibit inefficiencies since they impose upfront costs on the community while yielding less than a dollar of aggregate property value for every dollar of TIF increment attained.

Contrary to a substantial body of anecdotal evidence, the idea positing that commercial development in TIF districts displaces commercial development in other neighbourhood areas lacks substantial statistical support. Instead, the study discovers evidence of a significant synergistic effect. Policymakers have cited the reported phenomenal increase in TIF districts as proof of effectiveness. However, a more thorough investigation reveals a qualified story of moderate success and property value reallocation. Based on the available data, it can be observed that TIF has exhibited varying impacts based on the specific nature of the development being considered. The appreciation of property values within TIF districts exhibits a notable expansion rate, yet this phenomenon does not seem to correspond with a significantly accelerated pace of development within the wider community. This observation suggests that TIF districts may engender a deceptive perception of advantage.

Dye and Merriman (2000) empirically examined the influence of tax increment financing (TIF) on property values using data for the Chicago metropolitan area. They collected data to look into two independent but possibly linked questions: the factors that influence TIF adoption and the impact of TIF adoption on subsequent growth. A municipality's choice to use TIF could be based on a number of factors. The municipality may employ a TIF because it recognizes that the region is going to be

developed and wants to capture the revenue increase from the surrounding municipalities. Conversely, TIF might be employed in an area that is terminally blighted on the premise that a TIF designation will not result in any revenue loss. The study found that TIF adoption is influenced by the municipal tax rate beneficially. The population has a substantial, positive association with TIF adoption. Municipalities characterized by a more significant proportion of non-residential property are more inclined to establish a TIF district. The study discovered evidence that municipalities that use TIF expand more slowly than those that do not. TIF implementation appears to have a substantial cost for municipal growth rates. TIF-adopted municipalities encourage the growth of neglected regions at the expense of the bigger municipality.

2.4.2 Value Capture Financing Tools

The phenomenon wherein the public bears the costs associated with the provision of urban infrastructure and services, but the rewards are private, is largely ignored by conventional fiscal approaches. Public investments benefit the property owners who are directly impacted and promote new building and development rights. For example, expansion of water and sewerage systems gives additional capacity that allows developers to construct at higher densities. Similar benefits arise when rural land is converted to urban uses or land-use laws inside city bounds are relaxed. Landowners, particularly in Third World nations, may thus benefit greatly from a range of public projects or the relaxation of zoning and other limitations, resulting in significant gains in unearned income. Value capture aims to mobilize some or all of this windfall money for the entire community's benefit through fiscal, regulatory, participative, and other measures. Value capture, or "value recapture," is a concept that permits the public to recover the increase in private land values that it was technically and legally

responsible for creating. Three key components make up the working definition of value capture. First, it only refers to increases in land value, not changes in the value of buildings. Second, community initiatives and any direct government engagement can boost land values in various ways. Third, “mobilization” rather than “appropriation” is a better phrase for value capture since land-value increments arising from community actions can be translated into multiple forms to enhance urban development. Depending on their legal frameworks, governments can use land-based finance instruments to meet public expenditures, stimulate spatial growth, and promote greater social integration. (Smolka, 2019)

Land value capture refers to fiscal devices that allow governments to collect increases in property values not caused by landowners’ actions. Diverse planning strategies aiming at capturing land value exist in different countries. Almost all planning regimes impose a charge on new development to wholly or substantially fund new local infrastructure or upgrade existing infrastructure. Standard costs are imposed in some instances. In others, contributions are negotiated as part of integrated programs or complex partnership arrangements, in addition to fixed tariffs. There are multiple methods via which payments can be rendered, encompassing cash, infrastructure, and land. While several mechanisms have been integrated into regulatory regimes for a considerable period, possessing a lengthy and eventful history, others have emerged more recently. (Oppio et al., 2018). Several forms of value capture mechanisms are discussed below:

Land Value Tax (LVT)- The study conducted by Cho et al. (2009) examined the effectiveness of implementing a land value tax to mitigate the expansion of urban sprawl in the Nashville region. The researchers conducted an empirical investigation

to examine the proposition that implementing a land value tax incentivizes more substantial development in proximity to existing development compared to the current property tax system. The implementation of a land value tax would likely lead to an escalation in urbanization pressure on inner-city open spaces, potentially leading to their development and a potential decline in the desirability of the urban living environment. Therefore, it is imperative to consider urban open-space preservation activities while contemplating implementing a land value tax. While appealing in theory, the land value tax has only been enacted in a few US cities, including Pittsburgh and several Pennsylvania towns.

Special Assessment District (SAD)- SADs are commonly used to collect funds for enhancing public services. SADs were employed to finance the Metro Red Line transit initiative in Los Angeles, California, in 1985. The strategy faced opposition from property owners, leading to the Los Angeles Metropolitan Transportation Authority (LAMTA) having to navigate numerous legal challenges. Consequently, the adoption of the SAD incurred substantial processing expenses. However, it should be noted that SADs constitute 9% of the total project cost of the Metro Red Line. Despite its imperfections, the Los Angeles model is a feasible alternative for reducing the financial burden of extensive transportation improvements in urban regions, benefiting all taxpayers. The feasibility of implementing SAD is unquestionable, yet significant political ramifications accompany its implementation. SADs necessitate proficient technical skills to forecast the influence of accessibility on land valuations, ascertain catchment regions, and calculate the appropriate pricing. (Rolon, 2008)

Development Impact Fees (DIF)- Evans-Cowley et al. (2005) conducted an empirical analysis to investigate impact fees' impact on the valuation of land employed in

residential development. A random effects model was used to evaluate the relationship between impact fees and land values in a sample of forty-three Texas communities that implement impact fees. Previous scholarly investigations have posited a positive correlation between increased impact fees and elevated lot values, and the present study's findings substantiate this theoretical proposition. The growth in lot prices is directly proportional to the increase in impact fees, with a rate of 1.3 percent for every \$1,000 increment in fees. Furthermore, these findings imply that developers can pass a tiny portion of the impact charge to landowners. However, the results for undeveloped terrain are varied. Undeveloped land values drop by 0.042 percent for every \$1,000 in imposed impact fees. These findings back up previous evidence that houses buyers may end up paying most impact fees. Nelson et al. (1992) showed that impact fees positively relate to residential urban land prices in Sarasota County, Florida.

Joint Development Mechanism (JDM)- Multiple transit agencies, such as the San Francisco Bay Area Rapid Transit (BART), the Washington Metropolitan Area Transportation Authority (WMATA), and the Metropolitan Atlanta Rapid Transit Authority (MARTA), have engaged in collaborative development agreements to enhance transit ridership and generate additional revenue. In the United States context, most prominent collaborative development endeavours have focused on fostering transit-oriented development in proximity to pre-existing stations. However, these programs' outcomes in generating revenue for transit agencies have exhibited considerable diversity. BART has effectively converted certain surface lots into developments with increasing density. Nonetheless, the exorbitant cost associated with constructing parking structures to replace commuter parking poses challenges to collaborative development and hampers the implementation of such projects.

WMATA is widely recognized as a successful transit agency due to its effective facilitation of collaborative development initiatives at established transport stations. The agency initiated its collaborative development program during the 1970s and established a commendable standing for its internal expertise in real estate, lucrative development partnerships, and innovative transaction arrangements. (CTOD, 2008)

Transportation Utility Fees (TUF)- Junge & Levinson (2012) assessed the efficiency, equity, revenue adequacy, and political and administrative feasibility of transportation utility fees as an alternative funding source. Since the method was initially developed by ordinance in Fort Collins, Colorado, in 1984, transportation utility fees have been employed in other states. They have gained much traction in Oregon, where La Grande was the first municipal to adopt them in 1985. The legality of the fees, which differs by state and the phrasing of the specific fee in question determines the scope of adoption. The idea then expanded to Texas and Florida.

Negotiated Exactions (NE)- Oppio et al. (2018) emphasized the exactions negotiated under the Urban Development Agreement in the Lombardy region (Italy) to cast light on the fairness of the exchange between public and private parties. A sample of fifteen case studies was selected, comprising successful experiences that have been completely realized. The case studies demonstrate a range of outcomes in terms of the disparity between the additional contribution agreed upon and the financial requirements imposed on private developers by public authorities. This discrepancy, while generally favourable, exhibits significant variability. In particular, in cases where private functions are more prevalent, land value capture tends to be higher. This can be attributed to the increased potential for predicted profit that private developers anticipate. Upon further scrutiny of the agreements, it has come to light that the extent

of land value capture often does not align with the anticipated benefits for the private sector, suggesting that the talks are conducted individually.

Air Rights (AR)- The exploration of the notion of air rights dates back to 1797 when it was initially conceptualized as the ownership of space extending both above and below the surface. At this early stage, air rights' precise scale and dimension remained unknown. The utilization of space outside the Earth's atmosphere was limited to the boundaries of physical habitation following the advent of the aeroplane during the twentieth century. Air rights began in 1908 at Grand Central Terminal in NYC. The architectural design of the terminal facilitated the seamless incorporation of an electrified railway system, a thoroughfare, and areas designated for residential and commercial use. By 1929, a total of 18 buildings in NYC had been completed utilizing the air rights development technique, following a planning and construction period of around five years. This trend has been widespread in North America and several European cities, notably London, driven by rising residential homes and urbanization. (Allam & Jones, 2019)

Land Pooling Scheme (LPS)- Land pooling is commonly employed in Australia, Canada, Germany, India, Japan, South Korea, Taiwan, Thailand, and the United States. Land pooling has proven politically, financially, and administratively feasible in various circumstances in these countries. On the other hand, its applicability in emerging Asia is currently being investigated. In Southeast Asia, the Japanese land readjustment model is frequently cited as a model for similar land pooling plans. By 2000, land readjustment had remodelled nearly one-third of Japan's urban area. Land readjustment laws in South Korea have aided rapid urbanization; 84 percent of the country's cities have employed land pooling. Indonesia initially used land pooling in

Southeast Asia, with a scheme in Bali starting in 1981. India's long history of hybrid land pooling for building infrastructure dates to the early 1900s. (Farrin et al., 2021)

Vacant Land Tax (VLT)- Taxation of vacant land was implemented in Porto Alegre, Brazil, in 1988. The levy was intended to encourage landowners to develop or sell their properties to those who could. Bogota has had considerable success with its vacant land tax. The tax's effectiveness can be ascribed to its time-limited character, as the tax rate triples after ten years if no development occurs. An African country with a tax on vacant land is the Democratic Republic of Congo (DRC). The tax is based on the surface area, estimated by projections of vacant land on the rooves' margins. A vacant land tax was enacted in Mexico to encourage urban growth. This case was hailed as a success since it prompted numerous property owners to register their properties to avoid paying the tax. In South Africa, a vacant land tax was enacted to encourage densification while ensuring that owners of unoccupied land contribute to public investments and the costs of services provided in the area. (Hass & Kopanyi, 2017)

Transfer of Development Rights (TDR)- With the passage of the first American Zoning Ordinance in 1916, the concept of transferring development rights between properties was first introduced in New York City. In 1998, the city implemented a new TDRs initiative to avoid the demolition or conversion of live-performance theatres in the Broadway theatre district. Montgomery County boasts the country's most successful TDRs program. TDRs were used to permanently conserve about 38,000 acres of farmland in the county. On the other hand, New Jersey Pinelands is the country's most massive TDRs program, comprising one million acres of land and allowing transfers between 60 municipalities. The Tamilnadu government has approved TDRs, which the

Chennai Metropolitan Development Authority announced in the city's second master plan in 2008 to make land acquisition easier. (Haque et al., 2013)

Betterment Levy- The financing of the Sydney Harbour Bridge in Australia during the 1920s illustrates the use of a betterment levy. The urban centres of Bogota, Cali, and Medellin in Colombia have successfully raised considerable funds through various mechanisms, which often account for more than 25% of local revenue. Since 1921, Bogota has been a poster child for implementing a betterment charge to recuperate the cost of public works. Argentina's provinces and municipalities have used improvement fees known as Contrubuciones de Mejoras to fund public works. Betterment levies are used in various Indian cities, including Andhra Pradesh and Telangana. When developers request development authorization in Hyderabad, they must pay betterment and 'external betterment charges.' (Mishra, 2019)

2.5 Value Capture Financing Practices in Indian Cities

Land monetization, or converting an asset into money or legal tender, is a key method of land-based financing (LBF). Land can be monetized in several ways; the most basic is by land disposition, leasing, or selling. Land can also raise additional funds by serving as collateral for loan financing. Land monetization in land disposition is not a new concept in India; it dates back to the 1880s when the colonial government established City Improvement Trust Boards (CITBs). (Balakrishnan, 2016). This section will show LBF and various VCF tools to fund critical infrastructure in Indian cities.

2.5.1 Mumbai

The Maharashtra Metropolitan Region Development Authority (MMRDA) was created in 1975 and is part of the Maharashtra government's urban development department. It is responsible for developing and implementing regional plans, financing infrastructure projects, and managing numerous regional initiatives, including the Bandra Kurla Complex development. It has worked on several regional infrastructure projects, including the metro rail, eastern expressway, and Mumbai trans-harbour link, and coordinated the World Bank-funded Mumbai Urban Transport Project. (Gandhi & Phatak, 2016).

Mumbai is among a limited number of Indian cities that have implemented Land Value Capture (LVC) legislation. The Brihanmumbai Municipal Corporation (BMC) possesses the jurisdiction to impose development charges on the sale of additional floor area/space and the alteration of land use. The Mumbai Municipal Corporation Act of 1888 confers authority to the BMC to levy property taxes on any land and structures within the city and impose a betterment charge on any unexpected gains arising from public investments or development projects. The MMRDA Act of 1974 grants the authority to impose "betterment charges" on private landowners to capture the additional financial gains resulting from the development initiatives undertaken by the MMRDA. The fee must not exceed fifty percent of the windfall profit. As per the provisions outlined in the MMRDA Act, it is important to note that the imposition of betterment charges is limited solely to the land value of properties rather than encompassing the value of flats or structures. (Sharma& Newman, 2018)

Mumbai is likely the first Asian metropolis to use the Transferable Development Right (TDR) to create civic amenities. The owner of land set aside for

public use under a Development Plan may surrender it to the planning authority for free in exchange for a Development Right Certificate (DRC), which forms the TDR. The TDR project was later expanded to include other aspects of city development, such as slum housing, heritage preservation, and even the development/provision of public services that would have been provided by the MCGM otherwise. There was a constant flow of TDRs into the market after 1991 as the market was buoyant, and land market prices were highly favourable to the provisions laid out. However, the TDR program has not adjusted to satisfy the objectives in a changing market environment. There is still a long way to go until TDRs are fully utilized in acquiring land acquisition as required by the development. (Nallathiga, 2014)

2.5.2 Hyderabad

The Greater Hyderabad Municipal Corporation (GHMC) has employed many innovative mechanisms to gather land-related expenses during the urban planning procedure. Efforts have been made to utilize urban land as a valuable resource. In Hyderabad, external betterment charges are levied alongside development charges to recuperate the costs associated with public infrastructure services, including trunk water and sewer lines, roadways, and parks. The collection of these fees occurs in accordance with predetermined scales subsequent to the approval of plans and commencement of building activities. Hyderabad has become the pioneering city to implement an impact charge, a notion adopted from economically prosperous nations. In the territory of Cyberabad, specifically in the High-tech City area, where a prominent information technology hub has been formed, additional costs are levied based on the value added per square meter of the constructed space. The Road Expanding Scheme offers landowners who voluntarily surrender their land at no cost

to widen key roadways with benefits such as enhanced Floor Space Index (FSI), zoning concessions, and Transferable Development Rights (TDR).

In addition, evaluations are conducted on proposed layouts that fail to meet the statutory need for open space designated for parks and conservation. An open space contribution equivalent to 10% of the land value is considered in such cases. The GHMC imposes a vacant land tax of 0.5 percent based on the current registration value of the land. (Vyas et al., 2020)

2.5.3 Bangalore

The Government of Karnataka has lately introduced a range of innovative measures to establish a dedicated resource pool for advancing the Bengaluru Mass Rapid Transport System. These measures include the implementation of a special cess to gather the augmented land value resulting from transit-related developments. In forthcoming property projects and novel layouts, a 5% surcharge is imposed on the market valuation of the land and/or the building. The funds generated from this levy will be allocated to the Metro Infrastructure Fund and then disbursed to various government agencies. These funds will be utilized for the direct financing of the metro system as well as the development of additional civic infrastructure that complements the metro system, overseen by other relevant agencies. All properties within a 500 m influence area on each side of the alignment of the metro will be able to have a Floor Area Ratio (FAR) of up to 4.0. As a result of the higher floor area ratio (FAR), property owners will receive a benefit in the form of a ten percent cess on residential structures and a twenty percent cess on commercial buildings, which will be collected. The utilization of TDRs will be permitted as an alternative to monetary compensation for acquiring land designated for transit alignment. The Bangalore Metro Rail Corporation Limited

(BMRCL) will implement a policy wherein it will provide compensation for land acquisition related to the metro rail project through the issuance of TDRs. Proposed are systemic modifications aimed at enhancing the market-oriented nature of the TDR program, hence yielding benefits to all parties involved. (Vyas et al., 2020)

2.5.4 Delhi Metro

The DMRC is a joint venture between the Government of India and the Government of the North Central Territory of Delhi, with both governments investing equally. Nevertheless, the primary financial support for the Delhi metro is derived from official development assistance loans provided by the Japanese government via the Japan International Cooperation Agency (JICA). The ownership holdings of the Government of India and the Government of the NCT of Delhi in the three stages of the Delhi Metro range from 10% to 16%. Conversely, loans provided by the JICA account for a range of 49% to 60%. The proportion of LVC revenues, categorized as either "property development" or "real estate revenue" in DMRC documents, fluctuates between 5.6 and 7.3 percent. This accounts for over US\$700 million out of the overall project cost of approximately US\$11 billion, equivalent to approximately 7% of the project cost across the three stages.

The DMRC implementation of LVC tools has encountered minimal resistance from within the organization. The DMRC has exhibited commendable entrepreneurial acumen by effectively employing a diverse array of LVC tools. Moreover, the DMRC has successfully developed substantial institutional capacity utilizing LVC tools. The tools are lease, development of residential, commercial, and office properties, the naming of stations, and advertisements. However, there are still significant obstacles to overcome.

The DMRC was supposed to raise revenue through LVC from the beginning of the metro system's development. For example, the phase 1 cost was exceeded by a significant margin, mostly due to the revenue generated from land sales, which accounted for more than 3 percent of the total cost. The DMRC acquired several land parcels from other government agencies at a nominal cost. Nevertheless, the DMRC had challenges in generating money from alternative LVC mechanisms, such as real estate ventures, due to the complexities involved in acquiring permissions from multiple public authorities. The optimization of land value is contingent upon the appropriate utilization of property and the implementation of zoning regulations. Additionally, establishing transit-oriented development (TOD) in close proximity to stations is of utmost importance. Historically, the Delhi Development Authority has been responsible for regulating land use and zoning policies pertaining to the Delhi Metro. These policies have traditionally limited the floor area ratio (FAR) to one and 2.5. Regions with a high demand for real estate experience a decrease in land values due to low FARs since real estate developers are inclined to offer lower bids for land parcels with low FARs. The DMRC has proposed to increase the FAR for land designated for stations and their surrounding areas in the context of the Delhi Metro. Nevertheless, due to the adverse consequences of high-density development, the DDA has previously declined to approve an increased FAR. However, this stance has recently been revised following the implementation of a TOD policy by the Government of India, which now permits a maximum FAR of four within a 500-meter radius on both sides of the metro train line. The DMRC has garnered significant attention towards utilizing property development as a vehicle for value capture. Nonetheless, the appreciation of property and the subsequent sale of FAR generate value increments exclusively for newly constructed complexes, whereas existing

properties benefit from transit accessibility. This advantage is available to houses within a 1 km radius of metro stations. The DMRC has difficulty using LVC tools for stations in less favourable areas. Requests for proposals (RFPs) from the DMRC to rent kiosks and commercial areas in such stations are frequently ignored. (Mathur, 2019)

2.5.5 Ahmedabad

Sanyal and Deuskar (2012) focused on applying Town Planning Schemes (TPS) in the city of Ahmedabad, Gujarat. TPS is not a novel concept, and its application is not limited to Gujarat. TPS has been used in India since 1915 and tested in various forms in several other Indian cities. It does not replace traditional city planning but relies on master plans, a conventional tool for regulating urban growth. The difference is that a master plan implies general orderly expansion, whereas TPS, based on market signals, tells which sectors should grow first. TPS in Gujarat was developed in three stages: draught, preliminary, and final plans, each requiring state government approval. The GTPUDA separated physical and financial factors to overcome the considerable delays when financial difficulties between landowners and the government were resolved. This allowed project implementation to begin as soon as the physical layout of the region was finalized, rather than waiting for all of the financial aspects to be ironed out. Even still, delays were common, with some projects requiring up to 20 years to complete.

Furthermore, few schemes were self-funded: the World Bank estimated in 1986 that the government supported 50–90 percent of total project expenses for TPS. As a result, TPS began to lose favour in Gujarat as well. Authorities began reserving

land for public use in their construction plans, circumventing the TPS procedure entirely.

TPS has made land acquisition easier for the government in Ahmedabad. On the other hand, the overall approach to Ahmedabad's growth plans is relatively similar to that of other cities. The city of Ahmedabad's plans have been chastised for lack of analytical rigour and transparency in identifying future growth locations. For instance, the population growth rate of a particular area is calculated using historical data estimates, with no regard for the area's precise location within the city. The employment rate in the area and other socioeconomic variables, transportation infrastructure, and housing supply are not considered. This is why prior population growth predictions in development plans have been woefully incorrect, typically overestimating growth in satellite cities while underestimating growth in the core metropolis. Such predictions result in precise quantities of land being rezoned frequently not adequately explained, regardless of the methodology employed to forecast population increase.

Another application of the technique was presented when Bhuj, Ahmedabad, was destroyed by an earthquake in 2001. The Environmental Planning Collaborative (EPC), an Ahmedabad-based planning company, created eight new TPS to replan and rebuild the region. TPS's appeal as a reliable planning tool grew due to its ability to be applied swiftly in an emergency. Since the turn of the twenty-first century, the use of TPS has grown. AMC and AUDA, for example, used TPS to develop more than 77 square miles (200 square kilometers) of land between 2000 and 2009. In the previous 25 years, only half of that region had been developed.

2.6 Debt and Equity Financing Options

Urban infrastructure financing is a way for cities to get the right funding to build and develop their physical infrastructure, ensuring that all of their residents have long-term access to quality services. It may be utilized by local governments to develop and enhance municipal services. Throughout the asset's useful life, the infrastructure cost is amortized. It is more responsive and adaptable than relying on a single financing source, such as small donations. Local governments and the urban poor now have more financial resources. However, India's regulatory framework for funding urban infrastructure still falls short, making it challenging to increase financing options and safeguard against risky deals. Government representatives at the local and state levels are still learning about it. There is a deficiency in institutional backing for the satisfactory development of local government projects, and the widespread replication of crucial financial components has not been achieved significantly.

Urban infrastructure financing combines several different sources of funding, including (1) local government capital budget allocations; (2) state and federal grants; (3) bank and institutional loans; (4) proceeds from long-term municipal bonds; (5) proceeds from pooled bonds issued on behalf of smaller local governments by urban infrastructure funds; (6) microcredits for the poor; and (7) other emerging sources of financing, such as leveraging municipal assets and private equity. Different financing components are used depending on the creditworthiness of the local government and the viability of its activities from a commercial standpoint.

Wagner et al. (2014) suggested enhancing investors' risk-return trade-offs to encourage private investment in viable Brazilian infrastructure projects. The Brazilian government has declared intentions to increase spending on infrastructure in

transportation and logistics, power generation, and oil and gas exploration. To attract private-sector debt investors, new laws were enacted to regulate tax benefits for infrastructure bonds. However, the high cost of private investment makes it difficult for equity holders to attract new investors and to compete with BNDES's subsidized funding successfully. Pension funds and insurance firms are often cited as prime prospects for infrastructure investing due to their inflation-indexed, long-term obligations. Infrastructure investment can give them a longer time horizon, protect them from rising prices, and broaden their investment options.

The authors proposed that the private sector should contribute more to developing the nation's infrastructure and reducing public debt. They proposed five different methods by which infrastructure spending could be increased. The first is an efficient financial framework for sharing the after-tax risks and cash flows of multiple sponsors. Risk structuring is the second, and it's important to look into credit upgrades and the best ways to optimize the structure of subsidies together. The third is improving risk management to get the best credit rating for a project and the cheapest financing options. Risks should be identified, managed, and reduced at every project phase. Fourth, the government should set the stage for long-term risk mitigation, which is now a significant cost factor in infrastructure development. Fifth, capital market improvement and development measures include increasing rating transparency, tightening trade reporting requirements, and allowing high-quality infrastructure bonds to be used as collateral.

Freire and Kopanyi (2018) discussed the feasibility of cities monetizing their physical assets, barriers to entering new markets, and the benefits of taking a broader view of assets and liabilities. They reviewed the issues and difficulties cities have when

dealing with asset and debt regulations, ways to maximize their potential resources for funding infrastructure, providing services to citizens, and maintaining financial and fiscal health.

Despite differences in wealth and level of development, all cities have the potential to generate new prospects. Municipalities can generate revenue through the sale, leasing, property taxes, and other land-based capture vehicles. They can utilize the land as collateral for debt and borrowing and in public-private partnerships. Nonetheless, these concepts can't be implemented in cities in underdeveloped countries unless they have established reliable administration and valuation systems. A key takeaway from the argument between bonds and loans is that issuing bonds is not a clear alternative to bank borrowing. To successfully issue bonds, the city must inspire confidence in the market to fulfil its debt obligations.

In their study, Fay et al. (2021) investigated the extent to which private money can be feasibly incorporated into a contracting model for infrastructure finance and financing. The text presents a comprehensive structure for financial agreements and delineates how public and private funding can harmoniously coexist.

Mobilizing private investment for infrastructure projects in underdeveloped nations requires a substantial combination of service pricing and service provider subsidy. The aforementioned situation further highlights the inherent conflict between achieving financial stability through cost recovery and promoting social inclusivity. Addressing poverty in countries with significant populations of low-income individuals can provide political challenges. Various aspects, including the form of projects and the economic and institutional environment characteristics, influence

viability. These elements encompass the efficacy of bankruptcy proceedings, the cost of public funding, regulatory capability, and corruption.

Interestingly, whereas improvements in certain attributes have been observed to enhance the accessibility of private financing, they seem to improve the efficiency of public finance in different ways. This is particularly applicable in cases where there are reductions in the cost of public funds, as such circumstances tend to shift the balance in favour of increased government subsidies. The extent to which private finance for infrastructure becomes acceptable as countries go down the development path is not as clear as the aforementioned narratives imply. A U-shaped pattern is observed, wherein the countries with upper-middle-income have the most prominent peak. Nations experiencing deficiencies in infrastructure should refrain from regarding the expansion of private financing as the exclusive method for augmenting investment. Policy reforms to enhance the business climate are prone to yield inconsistent outcomes. Certain strategies aim to enhance the attractiveness of infrastructure projects to private investors, whereas others focus on assisting governments in generating revenue and optimizing expenditure.

Kim (2016) provided actionable guidelines to help cities improve their urban infrastructure funding strategies and provide basic infrastructure services to their residents and companies more promptly and effectively. For cities, the most pressing problem regarding funding infrastructure is the upkeep of publicly owned assets. Grants, subsidies, transfers, taxes, and other funding sources are unsustainable in the long run. Infrastructure financing involves using future revenue streams to cover the high upfront expenditures of building infrastructure when and where needed. Raising these upfront funds to speed the process is referred to as financing. The revenue

streams in the future that will be used to repay the funding are referred to as funding. Municipal bonds and public-private partnerships are the most common financing vehicles accessible to cities for public and private sector financing.

Public and privately funded infrastructure can benefit from the patient and long-term investments made possible by institutional investors. Also, both taxation and user fees are key sources of revenue for municipalities. Investing in infrastructure takes time, and finding the money to do it can be difficult. For large strategic infrastructure projects with far-reaching economic and social effects, the direct and active engagement of public pension funds and other key institutional investors is crucial. From the standpoint of the global investment community, meaningful benchmarking is currently lacking in the realm of infrastructure investments. Investments in infrastructure can have wildly varying risk-reward profiles. It is a new type of asset that combines the characteristics of fixed-income investments (such as energy utilities) with those of private equity (such as privatized airports) and real estate (such as new greenfield toll highways). Crowdfunding encourages civic participation by connecting project backers and investors, and it provides essential money for low-impact public works projects like bike lanes and city parks.

In recent years, a plethora of innovative approaches to financing with a focus on social responsibility have arisen. Green bonds, carbon taxes, and cap-and-trade are being used in several municipalities worldwide to finance infrastructure projects that address climate change, global warming, and other sustainability concerns. Public safety, affordable housing, workforce development, and public healthcare are just a few of the key social concerns that cities confront, and social impact bonds, a new type of financing that focuses on performance rather than financial returns, are designed to

tackle these issues. Even though they are relatively new, they provide a potential platform for releasing a huge pool of charitable contributions for infrastructure objectives.

Rouanet and Halbert (2015) examined the consequences of the growing financialization of urban production in India. The vital function of developers in securing investments is well known, but their capacity to use financial wealth to achieve economic and political agency is rarely questioned. Using a cultural political economy lens, the authors explore the possibility that the increasing financialization of India's urban production processes may provide developers greater autonomy and influence in the market and government. Data revealed that builders push for new rules that further entangle the real estate and banking industries. They helped spark a boom in investment activity in the mid-2000s. Also, a few developers in Bangalore can make optimal use of their access to financial resources. First, it allowed them to expand into new areas, increase the size of their land holdings, modernize their production methods, expand into the traditional markets, and ultimately expand to other cities in southern India. Second, thanks to this influx of capital, developers now play a larger role in transforming urban materiality and spatiality. Their actions are likely responsible for the city's dispersed urbanization structure. Third, wealthy developers with resources who have played a pioneering role in transforming the urban landscape can build ideal cities. They create and spread stories to integrate domestic markets into international financial chains. Fourth, developers aim to increase their influence in political decision-making. Citing their role in economic growth and resolving the housing crisis, developers push for pro-urban policies. Some proposed changes include more "transparent" public activity and robust municipal governance. They seek to

lessen the amount of time and money lost due to corruption and inefficiency in administration.

The study broadly discusses the financialization of urban production as perceived through the eyes of developing nations. It is a dynamic product of numerous power conflicts and agreements between investors, developers, and other players in city-making. The features of financial capital are not universal but are rooted in specific times and places. It is heavily reliant on institutional arrangements and developers' strategies. It is imperative to conduct in-depth research in emerging markets to validate the claims that Indian developers can conceive of and achieve large material, symbolic, and political reforms.

Pratap and Chakrabarti (2017) discussed at length the nature and significance of project finance, a type of financing that is often used for infrastructure projects. Project finance is the practice of funding a specific project by a special entity to plan, develop, and operate it. In contrast, under conventional corporate financing, a single enterprise may often undertake several projects at once, and these will all be financed together as a single portfolio. Off-balance sheet financing in project finance is possible thanks to the ring-fencing that separates the company's liabilities from those of the equity investors. For return on investment and debt repayment, creditors and investors rely on "non-recourse" or "limited recourse" financing. The term "recourse" describes the ability to use the project promoter's other assets not related to the project to secure the loan. Non-recourse finance means that the project company itself, instead of any other party, is responsible for repaying the loan. Limited recourse debt is backed by the promoter's promise to return up to some maximum amount, usually some percentage of the principal, or until a certain event occurs. Infrastructure companies

tend to have high debt-equity ratios because of their heavy reliance on project finance. A debt-equity ratio of 70:30 is typical for project-financed infrastructure projects.

The authors summarise the recent trends in how India has funded its infrastructure projects. From 2012 to 2017, the 12th Plan had the objective of allocating a total of \$1 trillion for infrastructure development. There was an expectation that the proportion of infrastructure investment contributed by the private sector would rise to 47% in the 11th Plan, compared to the previous figure of 38%. It was anticipated that the proportion of public sector investment in infrastructure would decrease as a result. State representation was predicted to fall from 28% in the 11th Plan to 22% in the 12th Plan. Estimates for the 12th Plan period infrastructure investment were up somewhat from those made for the 11th Plan period, coming in at around 8.2% of GDP on average. Since private investment in infrastructure was so fruitful during the 11th Five-Year Plan, it was decided that this approach should be maintained going forward in order to close the investment deficit. The percentage of private sector investment would be much higher in particular sectors that require a legislative and regulatory climate that encourages the development of massive infrastructure projects based on solid business. However, actual investments are well below these forecasts. There were major deficits in the energy, transportation, and telecommunications sectors. Investment momentum was lost in the first two years of the 12th Plan since infrastructure spending was so much behind goals, even in 2013–14. As things stand, it is highly unlikely that the 12th Plan (2012-2017) goals will be met. However, the infrastructural impetus appears to have been recaptured in the latter two years of the 12th Plan. The government has launched a massive public infrastructure investment initiative to make up for the shortfall in private investment. Since 2017, many new government initiatives and programmes have been rolled out

to boost urban and infrastructure development which have not been covered by the paper. The capital investment has gone up exponentially in the last five years and grants to ULBs to promote urban development have also been increased substantially.

Infrastructure finance in India is fraught with difficulty due to the unique nature of infrastructure financing and the Indian financial industry. They include the sustained fiscal deficit, high initial cost and lengthy repayment period, problems with infrastructure financing by banks as they are the go-to for financing large-scale infrastructure projects, underdevelopment of bond markets, low user fees in several infrastructure sectors, and externalities.

2.7 Towards Comprehensive Value Increment Financing

TIF model has been a path breaker in many countries starting from United States. Cash strapped municipalities went for new development with municipal bonds and other mechanisms, escrowing the tax increments from the TIF district. Subsequently, the concept of TIF has been extended to value capture financing with primary focus on land value capture. However, the concept of financing based on benefit principle has not been fully explored. In this regard, we refer to golden rules of urban finance by Bahl and Linn (1992). The principle says:

1. If benefits are identifiable and beneficiaries are identifiable, user charges are the first best instruments.
2. When benefits cannot be measured, but beneficiaries are identifiable, benefit tax must be levied. Example- Motor Vehicle Tax
3. Infrastructure and services whose benefits spillover the boundaries of jurisdictions, they must be financed by inter-governmental transfers by a large part.

4. Lumpy infrastructure projects whose benefits transcend geographical/administrative jurisdictions and generations should be financed by borrowings.

In the section above, we have referred to debt and equity financing. But there is no free lunch. Debt has to be repaid with a predictable mechanism so that investors have confidence in the project and borrowers. TIF is a good mechanism to build such confidence. Value capture financing supplements TIF mechanism, but both these mechanisms focus on land and property taxes which are politically contentious, subject to vote bank politics and vested interests. In this context, there is a need to extend benefits from property tax, and land-based taxes to other mechanisms, including tapping direct, indirect and induced benefits. For example, Bahl and Linn talk of income tax and goods and services tax as benefit taxes in connection with living, working and shopping in the cities. Krugman's new economic geography talks about agglomeration rents accruing to mobile capital. Stiglitz talks of monopoly rents and other forms of rent. In Chapter 5, we'll extend the TIF and value capture models to a comprehensive Value Increment Financing model, including value increments in infrastructure markets, goods market, labour market, land market, etc., and due to wider economic benefits due to externalities (Venables, 2007). We suggest application of users pay, beneficiaries pay, polluters pay, congestors pay, exacerbators pay and growth pays. We suggest if a part of the value increments is extracted, whether it is accruing to local, state or central government, or the private sector, the same could be pulled and used for repaying debt through debt-equity financing, municipal bonds or other mechanisms which we discuss in Chapter 4.

Chapter 3

Challenges of the Urban Infrastructure Sector in India

A Delphi Study on Stakeholders' Perception

3.1 Introduction

Since the beginning of the 21st century, the Government of India has been discussing urban development and its importance in the growth of the Indian economy. The first major urban mission, JNNURM, was launched in 2005 to revive and transform the urban areas in the country. The mission encouraged reforms and fast-tracked planned development in many major cities of the country. Since then, many urban development missions and programmes, especially focussing on infrastructure development, have been introduced by different state governments and central governments. Many programmes have involved the urban local bodies by making them partner in the development process. Starting in 2014, a new wave of infrastructure development has emerged that has changed the way we have always imagined our cities to be. The Swachh Bharat Mission's first mission was initiated in 2014 to eliminate open defecation and improve solid waste management. This mission by the central government made the local bodies perform one of their major duties according to the 74th Amendment of the constitution. In 2015, the central government launched the smart cities mission by including 100 Indian cities to make cities sustainable and citizen-friendly. Like JNNURM, the smart cities mission called for participation between centre and state governments to club resources to develop the cities. The purpose of the mission is to drive economic growth and improve the quality of life of people by enabling local area development and harnessing technology. The central government launched another transformative mission, AMRUT, in 2015. The mission

was a replica of JNNURM to provide basic services to households and build amenities in the cities to simplify life for people, especially the poor and the disadvantaged groups. The mission majorly focuses on providing water supply and sewerage connections, developing greenery, maintaining open spaces like parks, ensuring sufficient availability of public transport, etc.

PMAY-U was launched in 2015 to address the problem of urban housing shortage among the economically weaker section and the lower- and middle-income groups. The scheme focussed on providing pucca houses to the slum dwellers to promote inclusive growth of the cities. Under the scheme provides dignified, affordable rental housing to urban migrants and labourers, especially in the industrial sector. In addition, many infrastructure development programmes have been initiated to strengthen the economy and provide ease of doing business. The road network has been strengthened tremendously by connecting even the country's remotest areas to the mainland. Many expressways and highways have been developed to connect major cities of the country, like the Delhi-Mumbai expressway, etc. Under the Bharatmala Pariyojana, the government plans to build a 26,000 km-long economic corridor. To make the air network more robust, the government launched the Udan scheme, through which the number of operational airports doubled between 2016 and 2021. Similar large-scale projects have been undertaken to strengthen the railway and port networks. The development of transport networks through roads, rail, air, and waterways not only eases commuting for citizens but also opens up many economic opportunities for them and improves business opportunities.

Apart from the budgetary support, the government has used various instruments and mechanisms to fund these programmes. To increase the participation of the private sector, the government has tried different PPP models. Among the

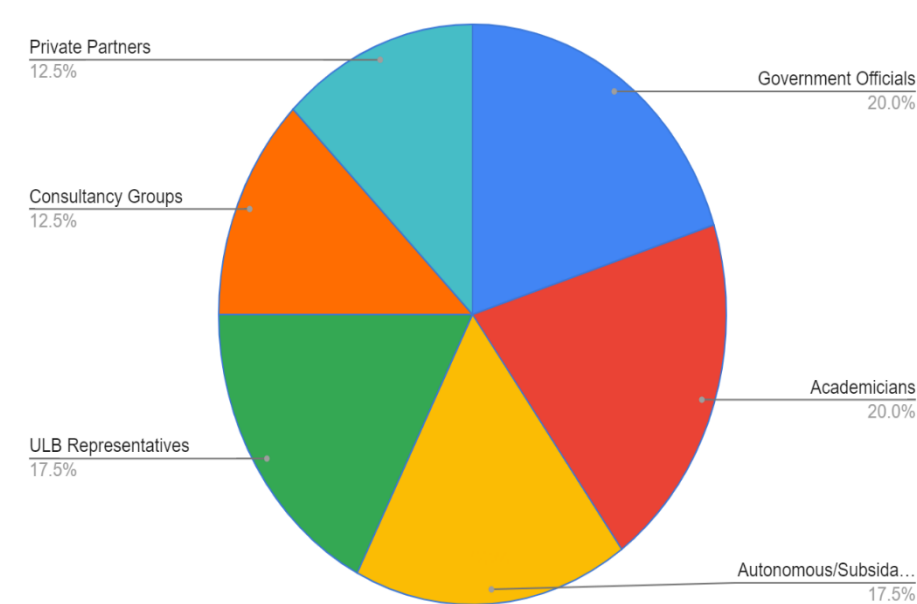
models, the Hybrid Annuity Model (HAM) is being used in many sectors as a successful funding option as it reduces the risk burden from the private sector. The government has also tied up with bilateral and multilateral agencies and many international agencies to provide loans and invest in our country's infrastructure development projects. The government established NIIF, India's first infrastructure specific investment fund or sovereign wealth fund, to strengthen the institutional framework for the development process. The body has professional management to help structure the projects, invest in projects and get other private investors on board to invest in infrastructure projects. More recently, the government announced the setting up a DFI to provide long-term capital for infrastructure projects and credit enhancement. The work for setting up the DFI was fast-tracked, and NaBFID has been established to solve the project fund crunch problem. Apart from NIIF and NaBFID, other institutions like IIFCL, ILFS, HUDCO, etc, are also in place to provide long-term capital for infrastructure and urban development projects. Institutes like HUDCO, Niti Aayog, the Infrastructure division of the Ministry of Finance, and many other autonomous and attached offices provide the much-needed research to strengthen the development process and bring reforms. To ensure the availability of funds for the construction and maintenance of projects, the government is trying out new instruments like InvITs and REITs, as well as many other debt and equity tools. Also, the MoHUA has released the Value Capture Financing framework for states, ULBs and all development authorities to capture the value generated from infrastructure and use it for repayment of loans, maintenance of the project or for funding further projects in the vicinity. To sum it up, the government is using available funding mechanisms to ensure the smooth availability of funds for the development authorities, and reforms are being introduced in the existing financing regime.

However, despite major infrastructure and urban development programmes from the state and central governments and with all funding and financing channels available at its disposal, India faces a huge infrastructure deficit, which has been discussed in Chapter 1. While schemes and programmes are announced, and projects are initiated, many projects fail to complete due to various hindrances, mostly due to lack of finances. Thus, to understand the complexities of the process and find out the major challenges in developing infrastructure, a study was conducted using the delphi method.

Delphi method originated in the 1950s from a research study conducted by the Air Force in the United States. The study was conducted by taking expert opinions and was called 'Project Delphi'. The objective of the original study was to obtain the most reliable consensus of the group of experts by a series of intensive questionnaires interspersed with controlled opinion feedback. (Turoff and Linstone, 2002). The delphi method works well when the goal is to improve the understanding of problems, opportunities or solutions (Skulmoski, 2007). The multiple questions to the experts, focussing on qualitative data and the condition of anonymity, together help collect reliable and unbiased data. The delphi approach offers a flexible approach to gathering the views of the experts on the area of interest without getting them all together. Thus, it has proved to be a successful method of understanding the problems and finding solutions. After its origin in the United States, many Western countries adopted the delphi research method quickly and to the far east. Today, the delphi method is extensively used across the countries and across the domains of the study. Delphi is a flexible method for collecting data from experts in the form of interviews, and this method was used to understand the problem of infrastructure deficit in our country and explore solutions. Using the method, qualitative interviews were conducted with

stakeholders who form important pillars in the infrastructure and urban development process, including government officials, academicians, private parties and representatives of think tanks, municipal corporations and various consultancy groups working with the government. A total of forty interviews were conducted with experts, the composition of which has been given in the figure 3.1.

Figure 3.1: Composition of Experts Interviewed



The experts in the ‘government officials’ category comprise senior officers in the Ministry of Finance infrastructure division. The list also comprises the Chief Economic Adviser, MoF, Prime Minister’s Economic Advisory Council Member, and senior officers from the Ministry of Railways, Ministry of DoNER and Ministry of Housing and Urban Affairs. The ‘academicians’ category includes senior professors from reputed universities and institutions and senior researchers from independent think tanks like CPR and NCAER. The study’s ‘autonomous and subsidiaries’ category covers senior officials from organisations like Niti Aayog, NIPFP, NIIF, HUDCO, IIFCL and ILFS. Major consultancy groups like the World Bank, ADB, KPMG and

E&Y have been covered under the ‘consultancy’ category with interviews from officers working directly with the ministries on infrastructure projects and providing policy guidance to the ministry. Under the ULB category, representatives from the Municipal Corporation of Gurgaon, Pune, Mumbai, Rohtak, Sawai Madhopur, Indore and Ahmedabad have been covered. It was a conscious decision to speak with municipalities from different states to understand the issues with the corporations. Hence, well-developed cities like Ahmedabad, Mumbai and Pune, the rapidly evolving municipality of Gurgaon, the top performing municipality of Indore and comparatively lesser talked about municipalities of Rohtak and Sawai Madhopur were covered. To understand the viewpoint of the private players and investors, experienced representatives from L&T, Ayana Renewable Power, Athaang Infrastructure private limited and CDPQ were interviewed to understand the concerns of the big and upcoming players in the domain. The chapter is divided into sections based on the broad topics in the interview and further divided into sub-sections based on specific questions in the questionnaire.

3.2 The Urban Local Bodies

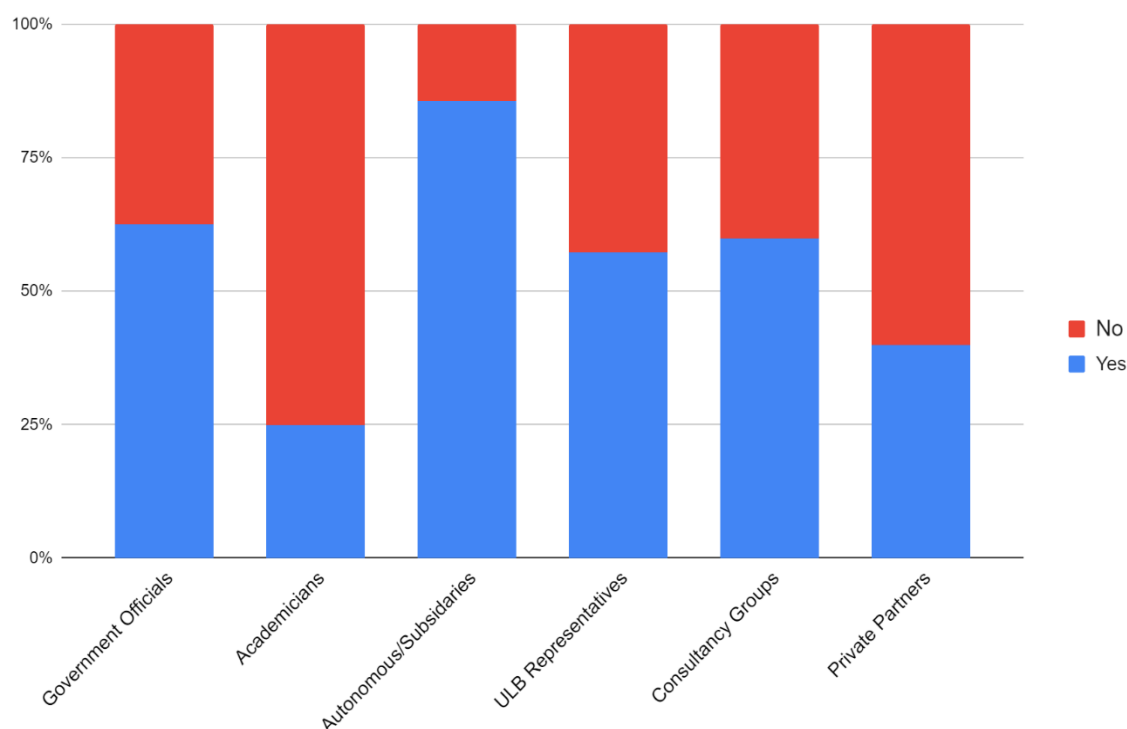
3.2.1 The Future of ULBs

In 1992, the government passed the 74th amendment to the constitution of India that mandated the setting up and transferring powers to the local governments as the lowest unit of governance in cities and towns. It was passed by the Parliament and implemented in mid-1993. This amendment gives the power to elect the third tier of the government and highlights the functions the third tier is supposed to take up and the services it must provide for the citizens. The state governments have been mandated to specify the functions and responsibilities that must be delegated to the

ULBs to empower them and enable them to function as effective institutions of governance. The states must delegate the powers to the local bodies to efficiently implement the schemes and programmes at the grassroots level. In the amendment, it was left for the state legislature to decide on matters related to the finances of the ULBs. For collection of taxes by the ULBs, imposition of user charges for the services provided and for the grants and transfers received, the ULBs must consult and take approval from the state governments. It has been thirty years since the amendment to strengthen the third tier of the municipality was implemented. However, except for a few bigger municipalities, majorly those in the metropolitan cities, most of the ULBs cannot even provide basic services to the citizens. All the major infrastructure and development projects, even those for urban development, are undertaken by the state or central government. In this context, the experts were asked if they feel that the ULBs can take up urban development and infrastructure projects in the near future (5-10 years).

Out of the 40 experts, only 22 believed that the ULBs will be able to take up infrastructure development or any major programmes in the near future, despite all the steps being taken by the government to boost capital expenditure and supporting the third tier. Almost half of the representatives of the ULBs believe they cannot take up big projects. 75% of academicians believe that the ULBs will not be in a position to take up future projects. Most experts believe that the ULBs must not focus on infrastructure development but on basic services like water, sewage, solid waste management, street lighting, etc.

Figure 3.2: Will Municipalities be able to take up Development Programmes in the Near Future?



According to many experts, state and central government must take up big projects as the ULBs do not have a vision for such tasks. Capital-intensive projects are difficult for ULBs to handle, while they are easier for higher authorities as they have a bigger vision with a regional perspective. Further, India faces a huge infrastructure backlog, and the deficit gap is continuously widening. Given the capacity of the ULBs, the higher authorities have to step in to take charge of major projects. The autonomous and subsidiary organisations for the central government showed the maximum trust in the ULBs. They are responsible for taking up the majority of research for the government and providing advice to the government. They believed that the ULBs were moving in the right direction and would be able to take up development projects individually in the coming years. Almost all the experts suggested that the basic

structure and fundamentals of the ULBs must be put in place before expecting outcomes from them.

However, with the rapid urbanisation in India and the huge infrastructure backlog, all the tiers of the government need to come together to work on the persisting challenges. The ULBs, being the lowest tier and the one closest to the people responsible for implementing the schemes at the ground level, cannot be neglected or left behind. Most of the issues concerned with the citizens are local and must be taken up by the ULBs as they best understand the needs. They must be the front runners in the development process. Some ULBs in the country are already performing well and have developed colossal capacity to take up infrastructure projects.

Similarly, bigger ULBs in India, including Mumbai, Thane, Surat, Ahmedabad, etc., are taking up big projects as they have sufficient levels of funding available. Many ULBs focus on improving service delivery to the customers and ensuring service quality. Some ULBs in tier 2 cities have started taking up capital-intensive projects. The central and state governments must focus on the bigger ULBs to strengthen the third tier further. Once the bigger ULBs, say top 50, become self-reliant, they can start helping the other ULBs in their states. The 15th Finance Commission, understanding the growing needs of the cities, has provided sufficient funds to the ULBs to start taking up capital-intensive projects and to ensure basic amenities in the cities. The national missions of the central government, like Swachh Bharat Mission, Smart Cities Mission, AMRUT, etc, are laudable initiatives as they have made the ULBs an essential partner in these programmes. Such programmes help in activating many ULBs that were dormant in the past. The next section covers the major challenges for ULBs and the reforms required to strengthen them.

3.2.2 Major Challenges and Reforms Needed

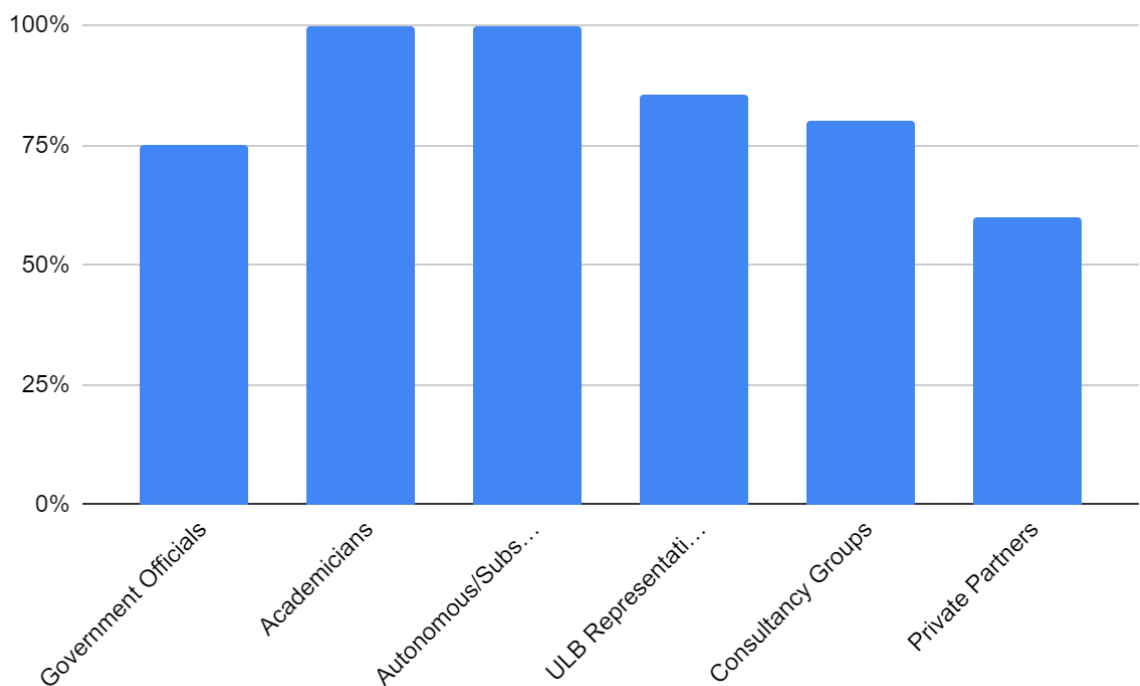
3.2.2.1 Major Challenges

One essential requirement to undertake any development project or to operate as an entity is the availability of sufficient funds. This has proved to be one of the biggest challenges for the ULBs in India. Many ULBs are not even in a position to pay the salaries of their employees. While the 74th amendment delegated function to the ULBs, no matching finances or a municipal finance list were announced. There is a tremendous mismatch between the ULBs' revenues and the expenditure they are supposed to undertake. The revenue sources of the ULBs have been declining over time. During the interaction with the experts on the challenges faced by the ULBs, insufficient revenue sources were the most common answer. 70% of the experts believed that lack of finances is one of the major reasons for this condition of the ULBs. All the academicians and experts from autonomous and subsidiary organisations believed that a shortage of funds is a significant hindrance to the growth of ULBs. Except for the private stakeholders, more than 75% of experts from all other groups believed that revenue streams must be ensured to make the ULBs self-sufficient. During the interaction, many experts pointed out that the ULBs are completely reliant on the grants and transfers received from the higher authorities to take up their activities. Some believe that easy access to these grants and funds through national programmes is the major reason ULBs do not strengthen their revenue sources. While the expenditure has been increasing continuously, the revenue sources and base have declined.

The revenues of the ULBs comprise tax revenue, which comprises the property tax and non-tax revenue collected through user charges for the services provided by

the ULBs. While the ULBs can levy different taxes and charges, the states do not permit the ULBs to do so, as it directly impacts their voters. Even the taxes the ULBs collected, like the octroi, have been taken away. The state governments have either taken away all the revenue sources of the local bodies or have submerged in the GST.

Figure 3.3: Finance as a Major Challenge

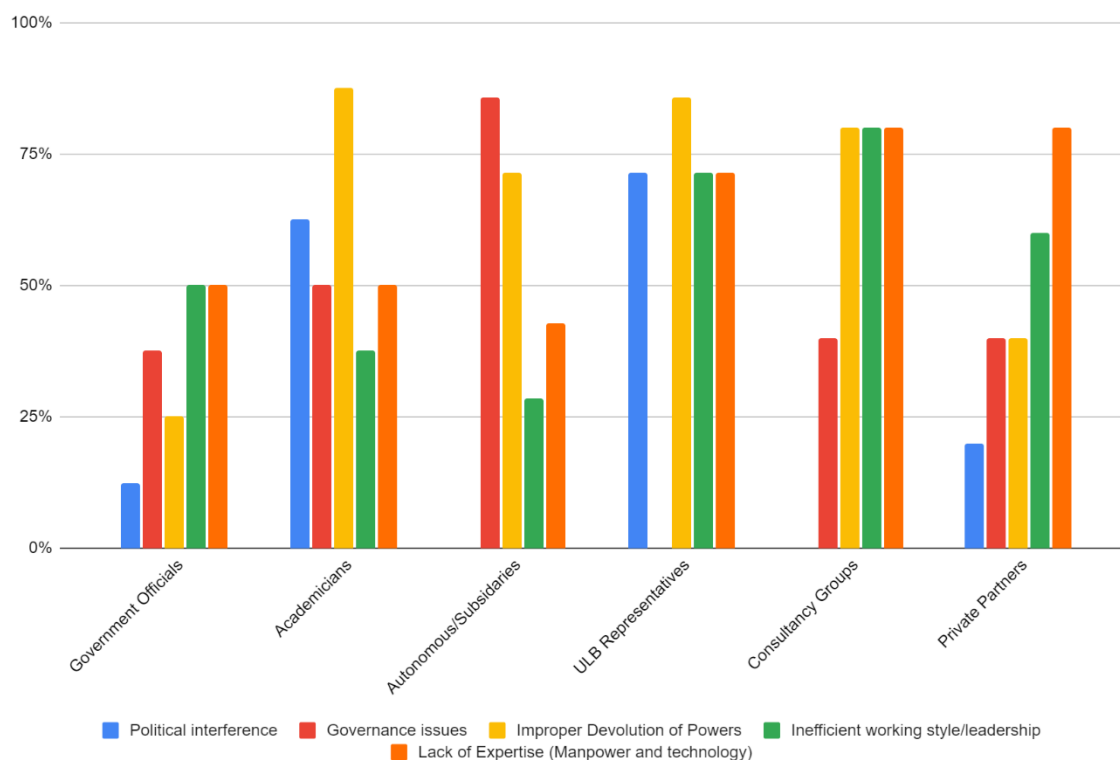


The collection of user charges by the ULBs depends on the services and amenities provided to the people. However, the quality of services has also not been up to mark. Due to this, over the years, citizens have lost trust in the ULBs and are unwilling to pay for the charges they should pay for using the services of water supply, sanitation, waste management, etc. The collection is so poor that many ULBs cannot cover the operational cost of providing these services, forgetting about generating a surplus for improving the service further. The charges collected are not even sufficient to meet the revenue expenditure. As stated by one of the experts, before 1992, 65% of the funds required were generated by the ULBs themselves. However, the situation

has worsened over time. Due to this, the horizontal and vertical imbalance has become very high. This has impacted the very foundation of fiscal federalism in our country. The next section talks about the revenue sources in detail.

Another major challenge is the improper devolution of powers to the ULBs. According to the 74th Amendment, many responsibilities, functions and finance sources were to be passed over to the ULBs. However, to maintain control over the jurisdiction and centralise the power, the states have not given any powers to the ULBs. The local bodies are not allowed to make any decisions by themselves. They require the state government's permission to take any loans, raise money using bonds, undertake any project under PPP mode and even select their senior staff members. They do not have any autonomy or decision-making power. The private is uncomfortable negotiating or discussing with the ULBs as the local bodies cannot take an independent stance. Thus, private players deal directly with the states to undertake the projects started by ULBs. Many experts stated that the ULBs are often unable to do a transparent tendering, auctioning, and bidding process as the state government officials pressurise them to award the contract to a specific entity. As they do not have powers and decision-making authority, they cannot raise resources, hire people, undertake development projects or even make decisions regarding improving their basic services. This excessive intervention and control by the state governments have made the ULBs lethargic and unwilling even to try to bring in reforms.

Figure 3.4: Major Challenges with the ULBs



Lack of expertise and shortage of skilled manpower are other challenges for the ULBs. Due to a shortage of funds and no permission from the state governments, the ULBs cannot hire skilled human resources. Also, the ULBs do not have access to the latest technology to date. For e.g., even big ULBs in metropolitan cities maintain their accounts manually. Many ULBs do not follow proper accounting methods or maintain updated accounts. The officers from the municipal corporations pointed out the problem of excessive workers, with very few having the required skillset. Many ULBs do not have an accountant to oversee the accounts or an engineer to monitor the projects. More than 75% of the experts from the private stakeholders and consultancy groups believed that lack of expertise is a major challenge for the ULBs. This is one of the major reasons why ULBs cannot structure and market their projects. They cannot draft proposals and frameworks for efficient working and project

implementation. The ULBs are unable to negotiate and deal with the private players. The private stakeholders do not feel comfortable dealing with ULBs as very few ULBs have an officer who can understand the project details and the concerns of the private partners. The ULBs have weak management teams and follow the school operating methods incompatible with the private stakeholders. Some experts from academics and autonomous and subsidiary organisations believe that ULBs lose their autonomy, resources, and the project while dealing with the private stakeholders as the staff does not have the required competencies. More than 70% of the representatives of the ULBs agreed that the staff and officers in the ULBs are not competent enough to adopt the evolving technologies and understand the new instruments and methodologies. More than 50% of the experts believed that the leadership of ULBs is weak and follows an inefficient working style. More than 75% of experts from the consultancy groups stated that the leadership is inadequate and not interested in developing the ULBs. The ULB representatives also stated that the leadership is ineffective and/or interested in changing the functioning of the ULB.

The governance structure of the ULBs also needs a transition. Most ULBs are headed by senior officers posted by the state governments. The smaller ULBs often get officers sent on 'punishment postings'. The state governments control most of the ULBs and have severe political influence on the ruling party leaders and local corporators. Almost 75% of experts from the ULBs said that the political influence of the local leaders severely impacted their work. 60% of the academicians believed that political influence was a major obstacle to the efficient working of the ULBs. Their decisions regarding projects, user charges, taxes, land, etc, are all affected by political influence. Political influence is one of the major reasons the taxes have not increased. Many state governments force the ULBs to provide water supply, waste collection and

disposal services, etc., without charge for their political gain. The freebies culture has profoundly impacted the functioning of the ULBs. Many state governments have also created parallel organisations for undertaking development projects. State development authorities, water supply boards, infrastructure trusts and funds, etc., are some of the examples that state governments have initiated for undertaking the same functions that have been given to the ULBs by the constitution. Many of these parallel bodies are created to benefit party workers of the ruling party by giving them contracts and leadership positions in these organisations.

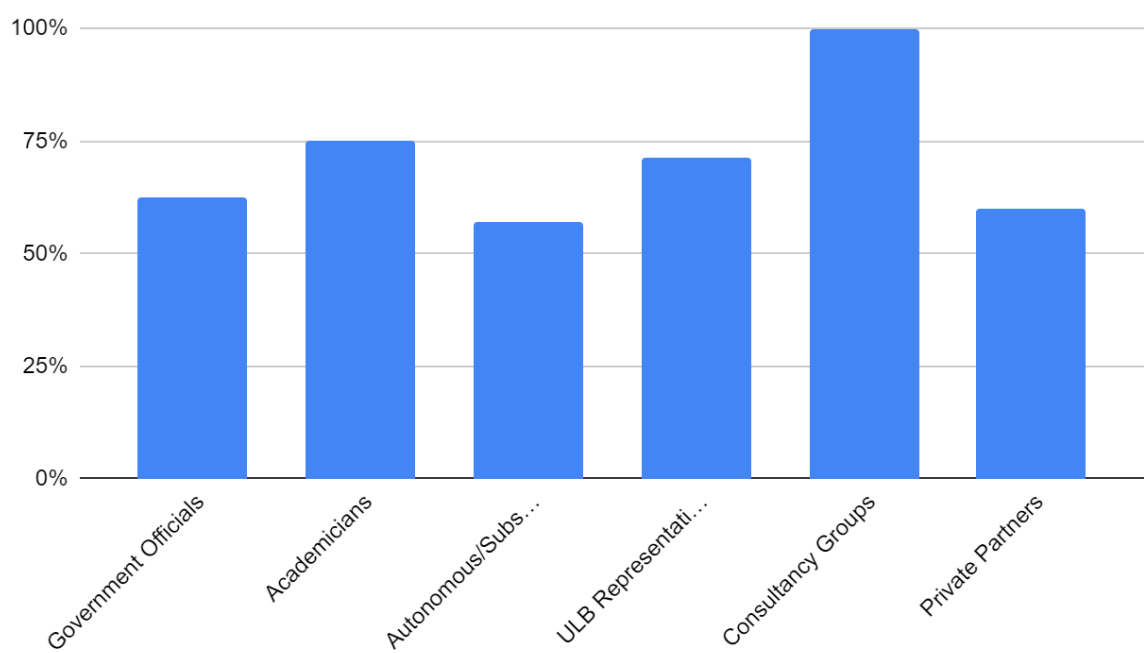
Though the central government, in the last decade, has extensively focussed on urban development and capital projects, many state governments are still focused on the development of rural areas. They do not focus on the needs of the cities or the reforms required in the ULBs. Many ULBs are still operating with old rigid master plans that are unsuitable in the present conditions. In addition to this, the ULBs are very weak on the administrative front. Many ULBs in India still do not follow the double-entry accounting method and do not maintain transparency in their accounts. The administrative process and formalities in the ULBs are lengthy and often require approvals from the state government. This often leads to time and cost overruns for most projects. In some instances where a third party, a private partner or contractor, is involved, the project often comes to a standstill due to these delays. Due to these administrative challenges, the private players are unwilling to collaborate with the ULBs as they get stuck on the project due to delays. Even the lenders are not comfortable lending money to the ULBs since they are doubtful of the project's completion, and the existing revenues of the local bodies do not guarantee repayment of the loans. The ULBs face various challenges in raising capital using capital and

secondary markets, which have been discussed in detail in the other sections of the chapter.

3.2.2.2 Reforms Needed

While all the challenges discussed above need to be addressed by the relevant authorities, the experts suggested a few reforms that must be undertaken to develop ULBs. More than 70% of the experts believed that Capacity Building was the first step to empowering the ULBs. Capacity development means training the ULBs' employees, especially the junior-level officers. The staff must be prepared to collect taxes and efficiently maintain revenues and expenditure accounts. The mid-level officers must be trained to structure the projects and draft procedures and frameworks for project implementation. Senior-level officers must be trained to negotiate with private stakeholders and ensure that all ULB activities are undertaken smoothly. They must be trained about the instruments for generating revenues and the tools for accessing the capital market to raise money using different debt instruments. Many national and international agencies provide technical assistance to the ULBs in India and run workshops and seminars for staff capacity building. Another mechanism is to link experts and research institutes with the ULBs to guide them on projects. For example, Ahmedabad Municipal Corporation has collaborated with academicians for most of their successful projects. The ULBs must be allowed to hire industry experts and experts on a competitive salary to get the required assistance to undertake projects and strengthen the ULB. Alternatively, the state can hire specialists and experts like CAs, engineers, lawyers, etc and rotate them among different ULBs in the state to ensure that all local bodies get the required help.

Figure 3.5: Is Capacity Building Required?



In addition, the ULBs require handholding by the state and preferably by the central government. The government must provide all kinds of assistance, from structuring projects to implementing them and raising capital to creating revenue streams. The government must prepare at least 1 model ULB in every state, which can help and mentor fellow ULBs in their respective states. The government must also share the successful case studies of ULBs, which are performing exceptionally well in generating finances and implementing projects. These studies will motivate the other ULBs and show them a roadmap for working. A competitive and rating framework must be adopted to develop healthy competition among the ULBs. The ULBs performing good must be awarded and rewarded. National programmes like the Swachh Bharat Mission, Smart Cities Mission, etc., are doing well and encouraging the ULBs to do well. However, the selected ULBs must be mentored and provided with proper guidance. The ULBs must be given more such projects and responsibilities to ensure smooth implementation. They must be given fixed targets and must be

monitored continuously. They must be engaged in projects with strict deadlines to make them efficient. Further, there must be coordination committees between ULBs, state government, development authorities and all governmental agencies working together in the city. They must collaborate with all relevant stakeholders.

The vision of the leadership in the municipality is a prerequisite for the growth of ULBs in India. Experts suggested a state-level or national-level cadre that must be developed specifically for the local bodies and be rotated among the ULBs after a fixed tenure. With fixed tenure officers dedicated only to the local bodies, the functioning of ULBs will definitely improve as they will come with prior experience working with a ULB. The best practices of ULBs will move with the officers to other ULBs, and a solid, robust third tier of the government will be formed. Stability in leadership will ensure long-term vision and policy certainty for all stakeholders collaborating with the ULB for different projects. This will also provide confidence to the private players to enter into contracts with the ULBs. A policy push might be required to win the confidence of the private players. In addition, the states must ease their control over the ULBs. The ULBs must be given space to operate and take decisions for their respective ULBs. They must be given autonomy to decide on their partners and the choice of projects they need to undertake.

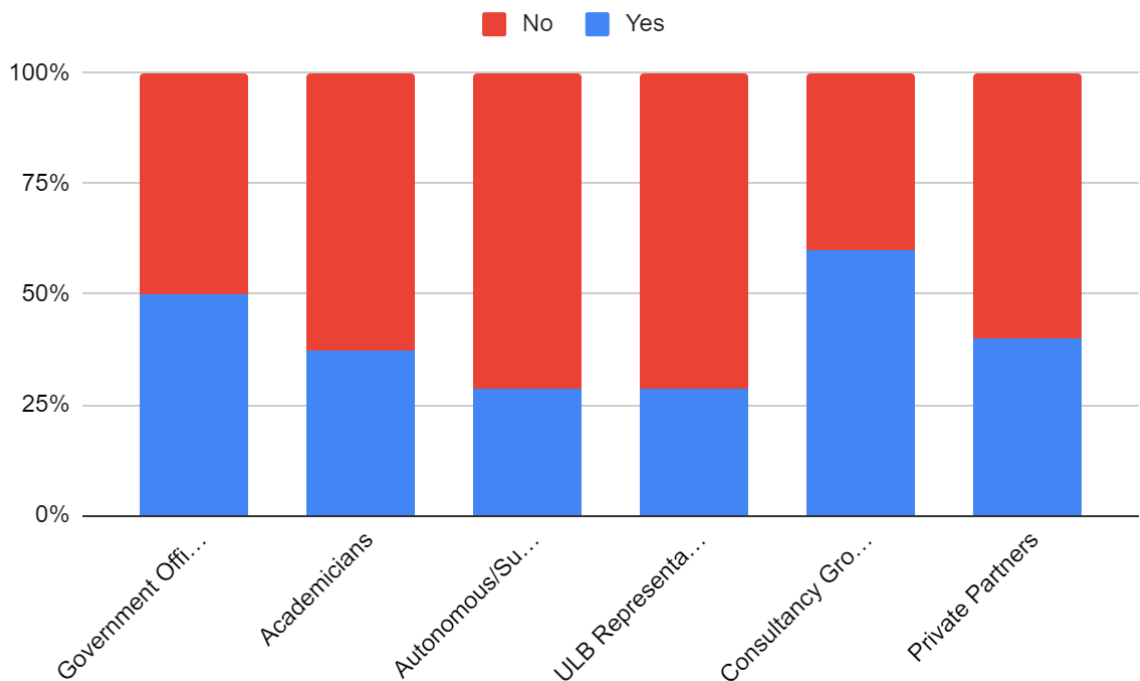
Along with providing the powers to perform the functions, a municipal finance list must also be added to the constitution to highlight the charges and taxes that must accrue to the local bodies for the operations. Once the finances are set in place, the ULBs will be able to provide good service to the citizens and help them win the people's trust. This will also help the ULBs in further collection of user charges and service charges. This will help pull the ULB out of the poor service-poor revenue trap.

3.2.3 Raising Money through the Capital Market

3.2.3.1 Can the ULBs raise money using debt or equity instruments?

Any infrastructure and urban development project requires a large amount of capital investment which starts giving future returns after a long period. Some Indian ULBs have sufficient funds available to take up big projects, while almost 90% of them do not have adequate availability of funds. However, in both cases, borrowing money or generating funds using debt and equity instruments for funding big capital projects is advisable. Raising funds using capital markets has been a common practice followed across the globe. During the study with the stakeholders, the experts were asked their opinion on the local bodies in India using these instruments to solve their fund crunch problem. More than 60% of experts feel that the ULBs in India are not prepared to issue municipal bonds, the most accessible tool for ULBs, for raising capital. Almost 75% of the experts from the ULBs believe they are not prepared to issue municipal bonds. Only the bigger ULBs and those performing well, like Indore, have the confidence to take up such assignments. More than 50% of the experts from the consultancy groups believe that the ULBs must experiment with their ways to get into the capital markets. The academicians and experts from autonomous and subsidiary organisations believe that the ULBs must not think in this direction until their fundamentals are in place. However, most of those who did not believe in the ULBs said that the bigger ULBs and top-performing ULBs must start exploring the market with the help of central and state governments. The figure below shows the responses of different stakeholders.

Figure 3.6: Can ULB raise Capital through Municipal Bonds?



Whenever an investor or lender puts their money into a project, the first condition is the timely repayment of the capital. To be assured of repayments, the investor must trust the borrowing entity and be assured of a regular revenue stream from the project. In the case of ULBs, neither of these conditions is fulfilled. As discussed earlier in the chapter, the experts believe that it is tough for any lending institution or investor to have faith in the ULBs in the given conditions. Even the citizens in the local jurisdiction of the ULB do not have trust in the local body and might not be interested in investing in them. The finances of the ULBs have already been discussed in the chapter. In addition, the investors are not sure if the project they are investing in will be able to generate revenue streams in the future. The projects are not appropriately structured, and the project's viability is always a question. In the majority of the projects, it has been observed that either the cost is underestimated, the revenues are overestimated or both. However, once the project is operational, it cannot

generate the revenues required to cover operational expenses and repay the loans. This has been a common phenomenon over the years and has restricted investors from investing in government projects, especially those led by local bodies. The project structuring is poor because ULBs cannot design and plan big projects aimed at infrastructure development. The staff in the ULB does not have the expertise to efficiently design projects, estimate the project's cost, and predict the revenues that the project will generate. The staff is also unaware of capital markets and instruments they can use to raise money from markets.

Before approaching the capital markets, the ULBs need to strengthen their internal structure, as suggested by many experts. Until the system is strengthened, the fundamentals are in place, and the staff is trained, no mechanism can help the local bodies raise money. The local bodies must work to remove the challenges arising from red tapism, which is widely observed in most government offices, especially the ULBs. In addition, many rules and regulations do not support the ULBs when approaching the capital markets. For example, RBI does not consider ULBs as a separate tier and still marks it as a part of the state government. SEBI guidelines follow the same procedure for ULBs that were prepared for corporate entities. The local bodies cannot match the standards of a corporate firm and are, hence, poorly rated. Only around 5% of the ULBs have a credit rating that can help them borrow money from the capital markets. Thus, in the near future, it seems very difficult for the ULBs to approach the capital markets to arrange the finances required to take up development projects.

3.2.3.2 How can the Centre and State help the ULBs?

Given the condition of the ULBs, it is evident that they need the support of central and state governments to approach the capital markets. Once they raise the required capital,

they can initiate the development project, which will help them raise revenues from the assets created using those finances. This will further help them undertake new projects, and a spiral process of generating revenues and taking up new development projects will be initiated. The experts were asked their opinion as to how they believe the central and state governments can help the ULBs. The most common answers received during the interaction have been summarised in the figure below. Except for the representatives of the ULBs and a couple of experts from central governments, all other stakeholders believed that the central and state governments must guarantee the loans raised by the local bodies. 60% of the private stakeholders believed that the central government must ensure the loans as many investors might not be comfortable working with the state governments. All the state governments are not in a position where they can help the ULBs in structuring the projects or helping them raise capital from the secondary markets. More than 40% of experts from the consultancy groups and the autonomous and subsidiary organisations believed that the higher authorities need to be guarantors to help the ULBs raise capital from the market.

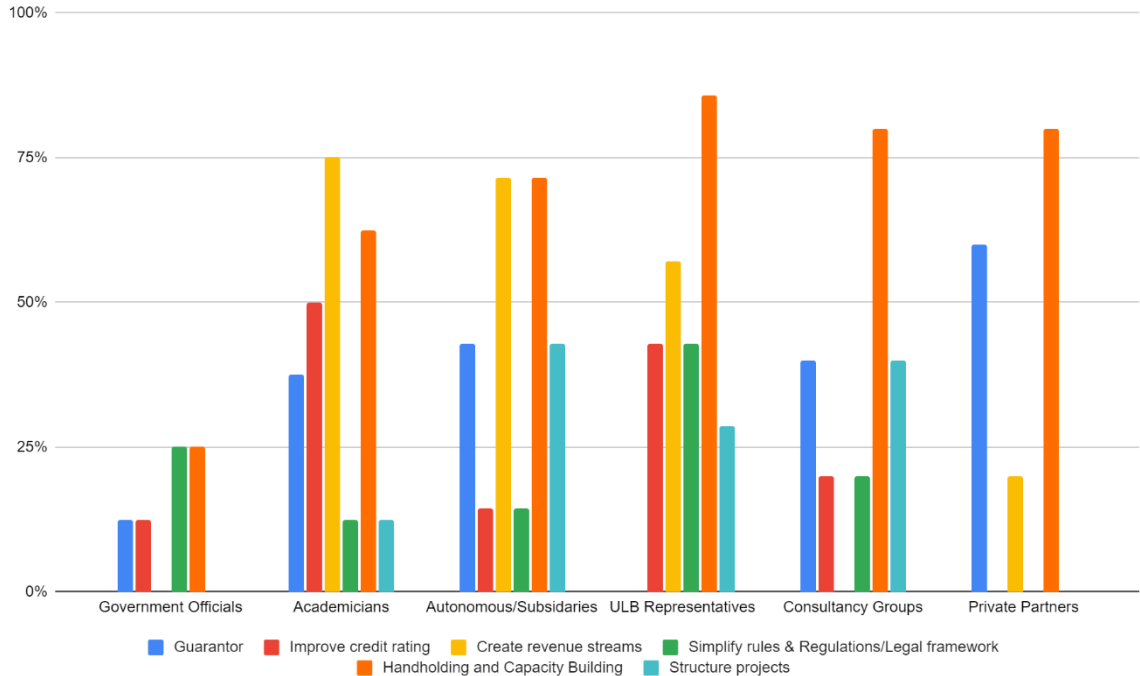
Except for government officials, most of the experts from all other groups believe that the ULBs require handholding and capacity-building exercises. If the government trains the staff in the ULBs, provides them with experts, and supports them in their work, the ULBs will slowly become independent and capable of raising finances alone. Many experts stated that the central government must provide handholding to at least the ULBs with a vision and have been performing well. These ULBs must be trained to structure, design and implement development projects. They must be trained to manage accounts and raise finances. These ULBs must be provided with proper mentorship and guidance and trained to maintain transparency and accountability. The central government must give a vision document and ask them to

implement the action steps given. Once these top ULBs become independent, they can help the next layer of ULBs with the same process, and the process can continue until every ULB in the country becomes independent. More than 70% of academicians and experts from autonomous and subsidiary organisations believe that creating revenue streams for ULBs can solve most problems. Stable cash flows guarantee repayment for the investors and help the ULBs get confidence in their projects and services. Escrow accounts can be created using the municipal finances and the revenue streams from the project and can be used for repayment. This will also help in improving the credit rating of the ULBs. Out of 463 ULBs, only 160 are rated, and only around 30 ULBs have a credit rating of AA- or above. The academicians and ULB representatives pointed to the importance of improving credit rating for the ULBs as it will help the local bodies become independent.

Another major requirement for the entire process is to change the mindset towards borrowing. The citizens and the ULBs must understand that borrowing is not bad. Even an individual is more comfortable taking a loan or buying things on EMI today compared to the scenario two decades back. Similarly, the ULBs must not shy away from borrowing money if they can use those funds efficiently. The legal framework must be modified and reformed to support the ULBs and make them capable of approaching capital markets. The academician suggested granting tax-free status to the municipal bonds as it will make them an attractive investment option for the common investor. They also suggested that the central and state governments must play the role of a facilitator by helping ULBs in the tendering process and helping them find investors. The higher authorities must also help the ULBs negotiate with the private players as the ULBs cannot deal with big private entities and end up losing in the deals. Academicians also suggested that the ULBs must maintain a good

relationship with the state governments and vice versa. The higher governments must support the projects by the ULBs as it gives confidence to the investors and the common citizens. The states must also clearly define the functions and finances of the ULBs. Providing a municipal list in the constitution could help smooth the major issues. In addition, the academicians suggested that the ULBs must help manage their assets and keep a record of their assets and their valuation.

Figure 3.7: Help from Centre and State



The representatives from the ULBs suggested that they must be trained in accounting, budgeting, managing expenditure, using technology service delivery, etc. Most of the help they require from state and central government is administrative. The representatives said that given the limited resources and knowledge, they focus on providing services to the citizens. They have never been given the mandate to raise resources and be profitable. Thus, the ULBs have never put their energy in this direction. However, with the rapid migration of the population in the urban areas and

the co-location of industries and multinational companies in major cities, the ULBs in the cities must be made efficient to support the rapidly increasing requirements of cities. The Centre must support the ULBs as they will be at the centre of Indian economic growth and all developmental programmes. If the third tier of the government does not function efficiently, it will severely impact the growth of Indian cities and the economy. The ULBs are willing to innovate, take up projects, and raise money if given the required support from higher authorities. The ULB representatives wanted the central and state governments to provide them with good projects and help them structure them well. This would enable them to approach the capital markets individually without the help of higher authorities as guarantors.

The municipal corporations of Ahmedabad and Indore are doing well in this regard. They are successful as they have won the people's trust with their work and have good credit ratings because of stable cash flows. The central government must help get a good credit rating by modifying SEBI's guidelines. The guidelines are strict, and the ULBs are expected to match the standards of a corporate entity. Since the ULBs fail to match the requirements, they fail to get good agency credit ratings. Similarly, the RBI framework does not recognize the ULBs as a separate entity, which is a significant hindrance to raising finances from the market. The central government must help the ULBs by addressing these issues with RBI and SEBI.

On the other hand, the central government stated that they have already undertaken many steps in this direction. Various national and international agencies are working on the capacity building of the ULBs. The central government has initiated various national programmes to empower and strengthen the ULBs—one of the best examples being the AMRUT programme. With the help of these initiatives, 11 ULBs have raised capital using municipal bonds in recent years, including Ghaziabad,

Lucknow, Ahmedabad, etc. The Smart Cities Mission and the Swachh Bharat Mission have empowered many cities like Indore, which have become self-sufficient in raising revenues, implementing projects, and raising capital from the market. With the help of these national programmes, many ULBs have expert accountants and CAs, which has helped them maintain their accounts transparently and efficiently. The experts suggested that based on their previous experiences, they have studied that providing seed money or direct monetary support never improves the situation in any ULB. They told that to win the confidence of investors and lenders, the ULBs need to win their trust. Policy certainty is required to take them in confidence, and the project pipeline must be publicly displayed for all. The central government has taken up both these measures and successfully got investors on board. The ULBs must also move in the same direction. The state governments must take up the matters of local bodies seriously. The state government must fix the grants and share of ULBs in state revenues to stabilise the functioning of the ULBs. They must lead in monitoring the projects and guiding the local bodies. The state finance commissions must operate efficiently, understand the needs of the ULBs, and submit the same to the central finance commission on time. The state government must also promote pooled bond financing methods and help the ULBs come under the same umbrella to approach the capital markets for funds. The central government is willing to provide all the help required if the state and local bodies follow proper guidelines and start operating actively. Timely and efficient coordination among the three tiers of the federal structure is the key.

3.2.4 Revenue Sources for the ULBs

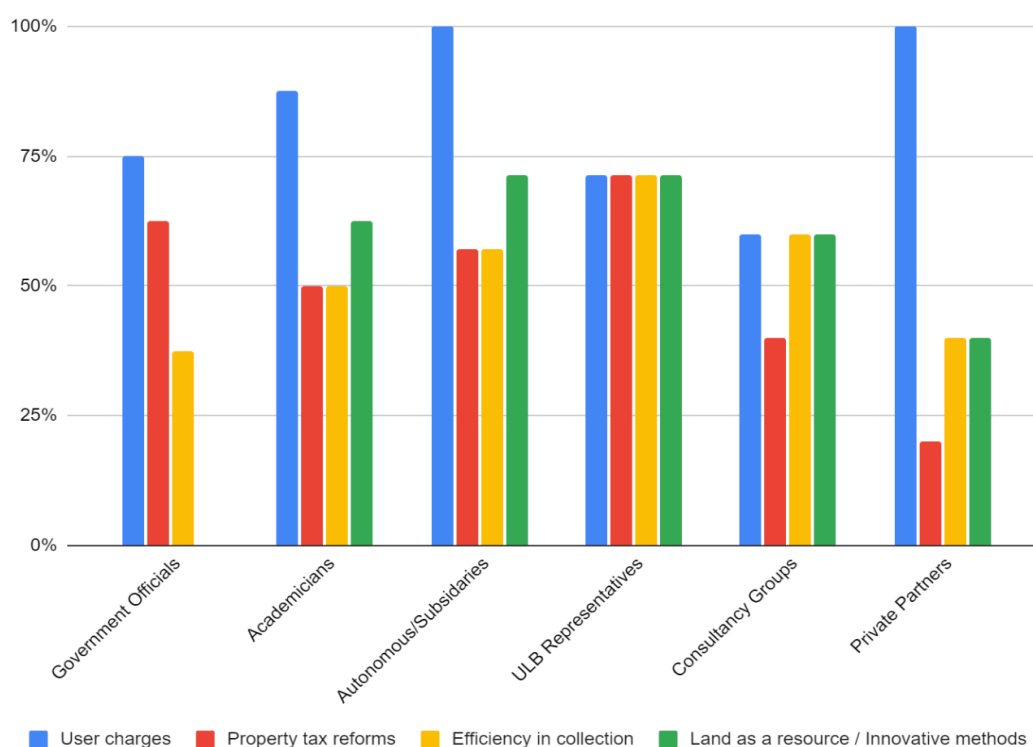
As discussed in the sections above, finance has been the major challenge for the ULBs. The absence of a municipal list in the constitution has aggravated the problem. The

states are unwilling to lose control and want to maintain a monopoly on all major revenue sources. Financing is not only a problem when it comes to financing capital projects, but for many ULBs, it has become a day-to-day challenge as they cannot meet their employees' salaries. The ULBs are short of funds to maintain the services that they are providing. Most of the challenges discussed earlier in the chapter persist because of a shortage of funds with the ULBs. The local bodies cannot hire accountants and other experts because they do not have sufficient funds to pay their salaries. The ULBs are not updating the technology because of the fund crunch. The local bodies cannot borrow the money because the investors do not trust them, mainly because the local bodies do not have revenue sources. The credit rating of the ULBs is badly affected due to a lack of stable cash flows with the local bodies. Thus, as the experts suggest, the first step in making ULBS an efficient third-tier government is rectifying its financial challenges. Strengthening municipal finances would require the creation of revenue streams that can guarantee permanent cash flow to the ULBs. To find a solution, it is important to understand the problem.

The local bodies have two major sources of revenue. First, are the tax revenues, which are majorly dependent on the property tax collection since the other tax revenue sources have either been taken away by the state government or were submerged in GST. Even the property tax collection in our country is very poor. The majority of the properties are exempted due to various provisions. For example, in Rajasthan, any apartment less than 1500 sqft and any individual house of plot size less than 300 sqyds are exempted from paying property tax. The builders and property owners prepare the houses keeping this area in mind; hence, most residential properties get tax exemption status. Many state government offices and properties are located at the centre of the city or in the most prime location but have been exempted from paying property tax.

Many state governments have kept the property tax rate below average or very minimal or have even exempted the tax in certain cases to gain popularity among the masses for electoral benefits. Even those properties that can be taxed do not pay the taxes. The ULBs do not have an efficient system where the properties in the jurisdiction can be identified and charged. The local bodies do not have the details of all the properties existing in their areas.

Figure 3.8: Reforms suggested by the Experts



The second most important source of revenue is non-tax revenue, which is generated by collecting user charges for the services provided by the ULBs. Most of the ULBs are inefficient in collecting user charges, and the charges are so low that the local bodies cannot cover the service's operation and maintenance cost. The accounts of many ULBs are running into deficits as they are not allowed to increase the user charges with the rising cost over time, and in some cases, the local bodies are forced

by the state governments to provide the service for free. The state government's excessive intervention in collecting user charges has become a significant barrier for the ULBs. The experts suggested some reforms required to be undertaken immediately to solve the financial challenges of ULBs.

One of the most common responses received from the experts was on improving the collection of user charges. Experts believed that while taxes were subject to political gains, the user charges must not be played with for votes. According to most experts, it was easier to bring reforms in user charges than to focus on taxes. Also, they suggested that the ULB must devote its energy and time to providing services and efficiently collecting the user charge to ensure that the O&M cost is covered. According to the 74th Amendment, the ULBs can take up more than 30 services and charge citizens for using these services. All the experts from the autonomous and subsidiary organisations and the private stakeholders believed that user charges are the right of the local body, and they must be given the autonomy to decide and levy these charges. According to them, this was the first step in bridging the financial gap in the ULBs. Some representatives of the ULBs were hesitant to talk about increasing user charges as they believed that their task was to provide services to the citizens and not extract money from the people. More than 75% of government officials and academicians also mentioned user charges as one of the first reforms required to strengthen the revenues of the local bodies. The user charges must be linked with inflation to cover the O&M cost, which might rise with the rising cost of supplying the services. If the service delivery improves, people's trust in the ULBs will increase, and the revenue collection of the local bodies will go up.

The next major step required is to reform the property taxes. More than 50% of the experts believe that the property tax must be improved on a priority basis. This

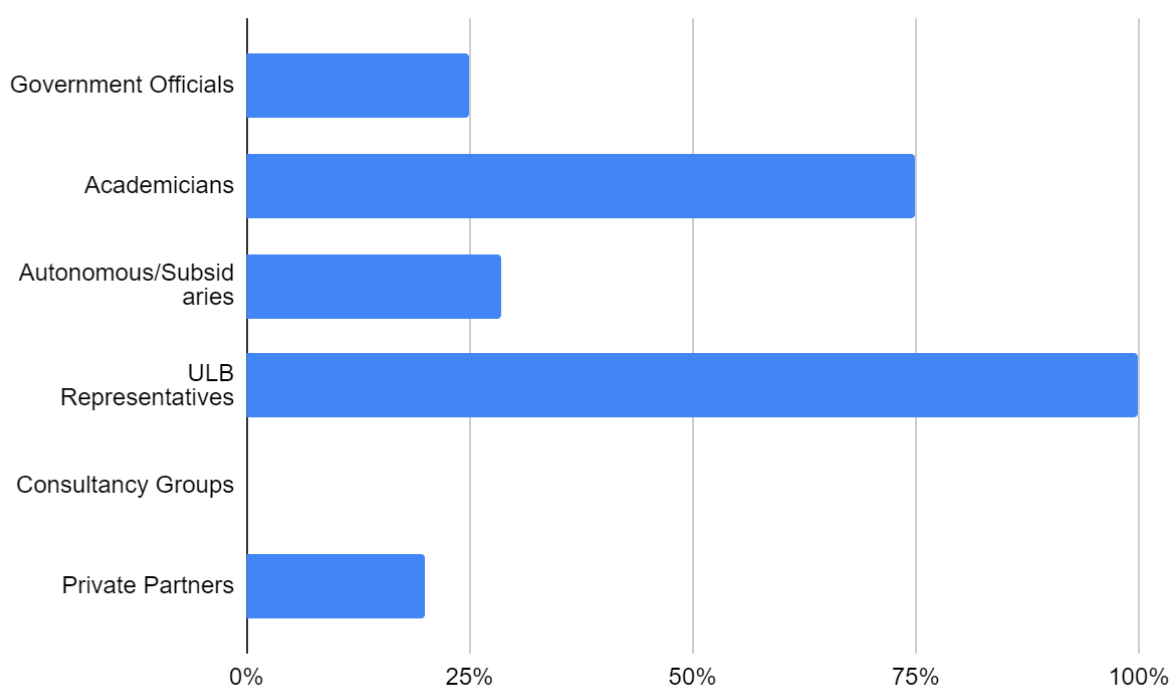
has the potential to generate vast amounts of revenue for the ULBs. The first significant reform required in this direction is to introduce GIS mapping in the system to identify every household that exists in the jurisdiction of the local body and maintain an account of the payments made by the households. The property tax rate must also increase by providing new services in the locality. Any new infrastructure project initiated in a locality tends to increase the property values in that region and must be captured. Technology has become an important tool to identify and capture taxes. The government properties located in the cities must also be made to pay the property tax to the ULBs as they provide all basic facilities used by those properties. In addition, efficiency in collecting taxes and charges is the major key to increasing ULBs' revenues. More than 50% of the experts believe that the ULBs must focus on improving the collection of the charges. Some experts pointed out that various middlemen involved in providing services to the citizens are also mandated to collect the charges on behalf of the ULBs. In many cases, they do not pass on the complete collection to the local bodies. It is important to digitalise the services by installing digital meters to get accurate units of the quantity of service being used.

The stakeholders were also asked if they believe that the local bodies must get a share of the GST revenues collected, as the majority of it is collected from the major cities. All the members of the ULB said that the local bodies deserve to partner in the GST collection since they provide the basic services required for a city to function, which attracts the people and industries to migrate and co-locate. Along with the ULB representatives, the academicians firmly stated that the ULBs must be partners in GST collection and an MGST component must be added. If a share of GST revenues is marked for the local bodies, it can completely solve the issues of the ULBs. If the local bodies are provided with proper funds through GST collection, they will become more

confident. They will be in a better position to provide services that will ultimately benefit the citizens and the firms by increasing productivity, further increasing the GST collections. However, the other groups were not in favour of the suggestion.

None of the experts from the consultancy group agreed to give a share of GST collections to the local bodies. They believed that not much thought should be delivered in this direction as it wastes time. The private stakeholders believed that giving a share of GST to the local bodies was not practical. The experts from the autonomous and subsidiary organisations and the government officials believe that it is not required to make ULBs a partner in GST as it might further complicate the problems. They stated that the states are being compensated for the loss in revenue by various grants and transfers. If the ULBs are still losing the revenues they were collecting pre-GST, the SFCs must highlight this in their reports sent to the CFCs. The officials stated that increasing grants was easier than making ULBs a partner in GST.

Figure 3.9: Should ULBs be a Partner in GST



Further, as seen in Figure 3.8, the ULBs must use land as a resource to generate revenues. Many ULBs in India have vacant land lying with them, which they must lease, rent, or sell to generate revenues. Ahmedabad Municipal Corporation is one example of a ULB that has sold land to generate revenues when required. The states must share the revenues generated from land with the ULBs as they maintain and provide services for that land. Stamp duty is one major source of such revenue, which must be shared with the ULBs.

Similarly, the RTO tax collected by the state governments on the purchase of any new vehicle must be shared with the ULBs as they maintain the roads in the cities. The ULBs must also be allowed to collect charges for selling the FAR. E.g., In Delhi, the government permitted an increase in the FAR in areas near the metro. However, the additional FAR was provided in Delhi without any fees/ charges. This tool has a vast potential to generate funds and must be taken seriously. The ULBs must be given the authority to sell FAR and TDR rights and fix the charges. Vacant land tax is another source of revenue that the local bodies must explore. It has shown great results in Hyderabad. Parking fees are a major source of generating revenues across the globe. However, this source has not been taken up seriously in India. In most places, either designated parking spaces do not exist, or the parking charges are very low compared to the other developing and developed countries. Similarly, advertisement, amusement, and entertainment taxes come under the preview of the local bodies. With the increasing number of facilities for amusement and entertainment purposes, these taxes, if appropriately levied, can generate large revenues for the local bodies.

In addition, the ULBs need to explore innovative mechanisms for generating revenues. Based on the increasing services in the cities and the continuous migration of people and firms in the cities, the ULBs must explore taxes on agglomeration and

congestion pay principles. The ULBs must also examine the possibility of levying a pollution tax or green tax in major cities. Alternatively, the ULBs must think of innovative ways to provide additional income apart from their services. Indore is one of the finest examples of generating revenues through its services. The solid waste management project by the Indore ULB has proved very successful. The waste collected by the local body is segregated into six different kinds. It is then used to produce different outputs like methane gas, fertilisers, reusable paper, plastic, cardboard and many other dry products that can be reused. The municipality earns tremendous revenue by selling these products in the market.

Similarly, Indore is generating revenues through its solar and carbon projects as well. In addition, some services can be outsourced or handed over to the private sector, and the ULBs can generate upfront revenues through this process. One of the experts shared an example from the US local bodies and their innovative methods. The local body in the US gives its office hall for marriage and party purposes on rent after office hours. While this might not fit in the Indian context, it is a lesson for the Indian ULBs to explore different innovative revenue generation mechanisms.

3.2.5 Maintaining a Good Fiscal health

Another major problem with the ULBs is the lack of transparency and accountability. This has increased the trust deficit between local bodies, investors, and private partners. Even the common man does not trust the intention and staff of the ULBs. To improve the condition of the local bodies, it is essential to encourage them to maintain good fiscal health. The government officials pointed out the numerous steps the central government is taking to promote ULBs to maintain good fiscal health. The AMRUT scheme of the government is one example where CAs have been provided to the ULBs

to keep the accounts transparent. The finance commission has also provided performance-linked grants for the ULBs performing well apart from the regular grants for all local bodies. Training the leadership and giving them a vision for the ULB is essential. They must be made to understand that good fiscal health will help in increasing their credit limit by improving their credit rating. The government officials believe that rather than encouraging them to do it, it is important to provide them with legal, administrative and technical assistance to follow the accounting mechanisms. Even the private stakeholders believe there is no need to offer special incentives to the ULBs for following transparent and accountable mechanisms. According to private experts, the ULBs require a good team and efficient leadership to solve this issue.

The experts from consultancy groups and autonomous and subsidiary organisations suggested that a ranking framework be developed for the ULBs. According to them, a competitive mechanism would encourage the ULBs to follow proper guidelines and maintain good fiscal health. Some experts suggested that the performance of every ULB must be publicly displayed. While those performing well must be rewarded and awarded, the ULBs that did not perform well must be named and shamed. Some experts also believe that these issues in the ULBs will be automatically resolved once the local bodies start getting the funds. They also suggested that big projects that perform well and are accountable and transparent must be given to ULBs. This would make the local bodies compete for funding. The challenge is not big, but the solution depends on the leadership's will to resolve the issue. The academicians favoured the local bodies' capacity-building to solve these issues. They believed that training the employees in municipal finance would not only help maintain the accounts of the ULBs but also help maintain a database of assets with the ULBs with their correct valuation. The academician suggested various steps

that must be taken by the higher authorities to help the ULBs. They suggested reforming the municipal acts and giving more powers and functions to the local bodies. The higher authorities must provide the appropriate institution structure and support required to train and reform the ULBs and ensure they maintain good fiscal health. The SFCs must be made to work efficiently, and they must monitor the accounts of the local bodies. A few academicians suggested that the higher authorities must adopt a strict disciplinary attitude towards the local bodies to force them to maintain transparency and accountability.

The representatives of the ULBs understood the need to maintain transparent accounts and be accountable. However, they must work in the existing system with the given resources. One of the ULBs stated that they do not have experts in their local bodies. They take up projects without an engineer and maintain the accounts without an accountant. A normal clerk is expected to hold the accounts and follow a double-entry accounting system. The staff cannot understand the mechanism, and the central and state governments must provide training to them. Another municipality mentioned that in their corporation, one person sanctions the money for the projects and approves the bills. When the same person takes up the entire process, from sanctioning the money to auditing the accounts, how do we expect an efficient system?

On the other hand, some representatives mentioned that their local bodies have followed the double-entry accounting system for many decades and maintain the accounts transparently. Many experts from the ULBs pointed out the need for an efficient third-party auditing mechanism. This will force the ULBs to follow the guidelines and be accountable. Many ULB representatives stated that the ULBs performing well must be rewarded, and their case studies must be shared with other ULBs. More grants and significant projects must be given to the local bodies

performing well. Another expert suggestion was to digitalise the flow of funds from the ULBs. For example, a few corporations are using the e-nagar palika application. This application has all the details of the revenues, grants and expenditures of the ULB. It also details the projects undertaken and the funds utilised for them. Such a system must be adopted by the ULBs across the country. The ULBs must be encouraged to borrow money from the capital markets as they must maintain their accounts efficiently and transparently to raise money. Also, when funds come, certain systems will automatically fall in place. In the end, the representatives from the ULBs suggested that various steps from the higher authorities have proved to be very helpful in improving their fiscal health. After the 13th CFC, the ULBs hope to get funds if they perform properly and maintain transparency. The national level programmes like the Swachh Bharat Mission and Smart Cities Mission have made the local bodies more efficient and have forced them to follow proper accounting methods with the help of the CAs provided to them by the central government. However, these facilities are only available to the top ULBs, while the other ULBs in India continue to function with primitive techniques and require the attention of state and central governments.

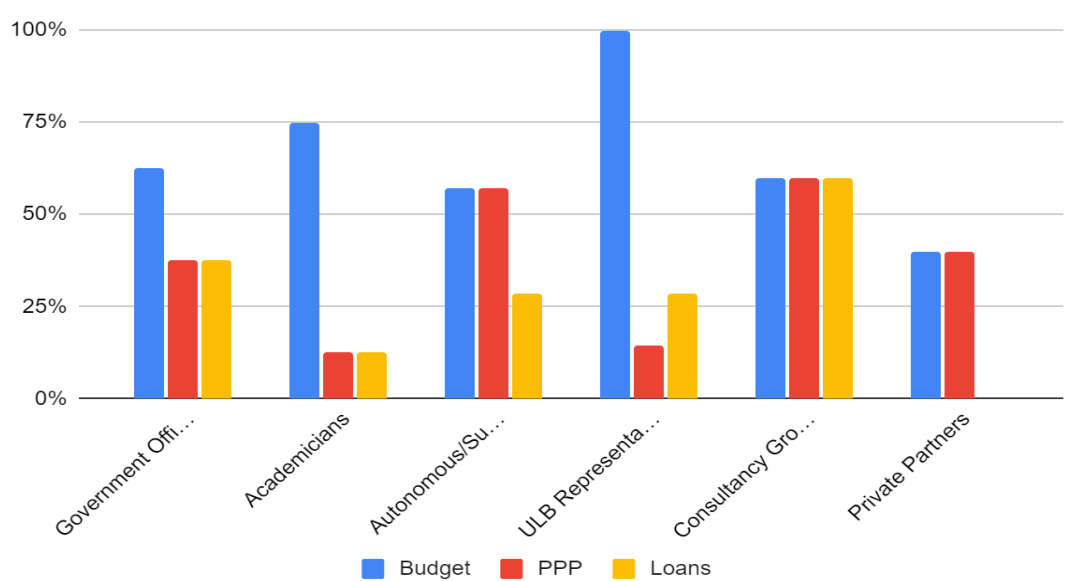
3.3 Financing Infrastructure

3.3.1 Most commonly used and successful models of funding Infrastructure

With the huge infrastructure deficit in the country and the ever-expanding gap, there is a need to invest heavily in infrastructure. As discussed in the earlier sections, shortage of funds is the biggest issue in building infrastructure. In this context, all the experts were asked about the most commonly used funding infrastructure method in India and the most successful model based on their experience. Almost 70% of the respondents said that most infrastructure and urban development projects in India were being taken up through budgetary support. Some respondents even picked up loans or

PPP in addition to budgetary support. All the representatives from ULBs said that all their projects were done through budgetary support, while some ULBs like Indore are using PPP in some projects along with budgetary support. The local bodies are not borrowing or using any financial instrument like bonds for capital expenditure, except bank loans in a few cases. The experts from the consultancy group said that all the options were being explored and used simultaneously. As observed, all the projects, whether directly by the ULBs or the national missions initiated by the central government, are all done majorly based on the grants received from central and state governments. Only a few developed ULBs operating in large cities are using innovative methods and trying to collaborate with private players for infrastructure projects. While planning the national infrastructure pipeline for \$1.4 trillion worth of projects, it was decided that the central government would give 39%, the state government would contribute 40%, and 21% would be taken up by the private sector. However, based on the projects initiated and completed to date, the central government has taken up 70% of the investment cost.

Figure 3.10: Commonly used method of Funding Infrastructure

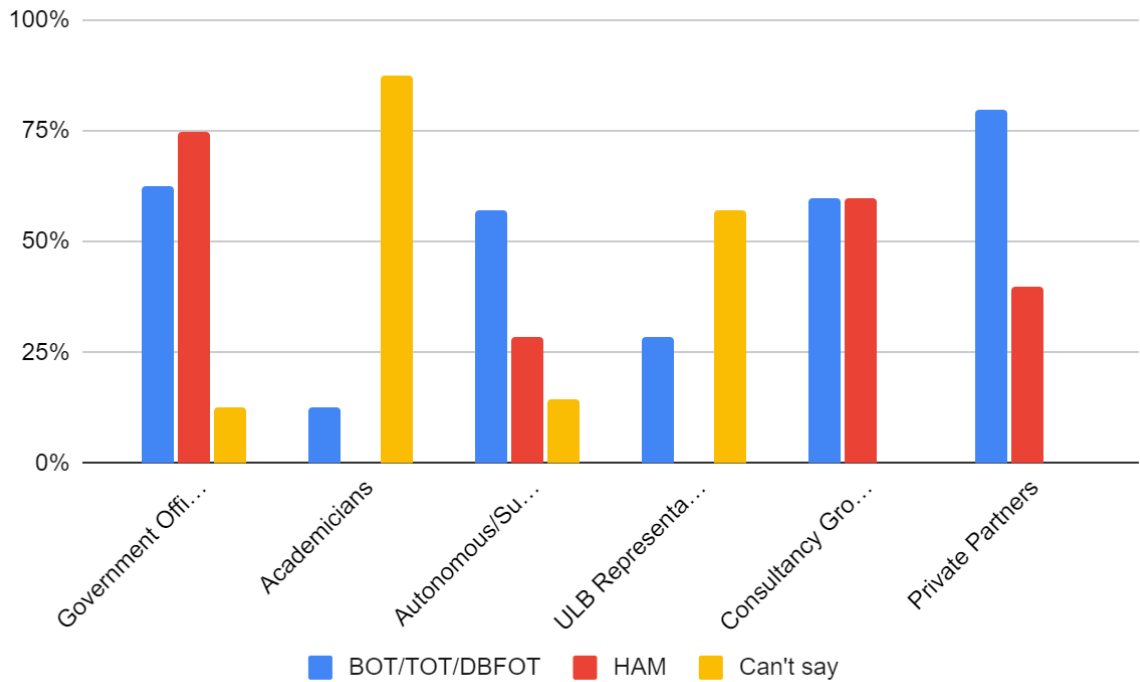


Some projects by the local bodies are being taken up by the assistance provided to them by multilateral and bilateral institutions. These agencies fund the projects either by providing grants and aids or by providing loans at cheaper rates. External commercial borrowings have also picked up rapidly in the past few years. With interest rates flattening in most developed and developing economies, India is a bright investment spot for foreign sovereign funds, pension funds, and insurance funds. Many pension funds from different countries are actively working in the infrastructure financing sector. However, these foreign investors are limited to the big-ticket projects being taken up by the central government since they are more stable and predictable. To attract foreign investment to the state and local bodies, a lot of effort would be required from all the tiers of the government. The local bodies will have to upgrade themselves, and the central government will have to provide capacity building training to the staff. Also, the foreign investors would be willing to invest only if the central government becomes a guarantor for the local body and the ULB can showcase the returns from the project and the revenue cash flows that the project would generate.

The stakeholders were also asked to give their opinion on the most successful infrastructure financing model being used in India. The most commonly received answers from the experts were either the HAM model or the BOT/TOT/DBFOT model of infrastructure development with the private stakeholders. Almost 30% of the experts said it was impossible to choose one single method of funding infrastructure, out of which 50% of the experts were academicians. According to them, it was impossible to choose a single method of infrastructure financing without proper study and analysis. Another 35% of those who could not select the most successful funding mechanism belonged to the local bodies. These were the people from ULBs who were not even aware of the methods to finance infrastructure and urban development. A couple of

people from ULBs who have experienced PPP chose DBFOT as a successful method. While the government officials felt that HAM followed by BOT were delivering the best results, the private stakeholders believed that BOT and DBFOT were the best practices. However, all these experts stated that the best practice for financing infrastructure may vary based on the project sector. HAM and BOT/TOT/DBFOT have proved very successful in the roadways, highways, ports, and power sectors. These models have proved successful because, in HAM, the government shares the risk with the private while under BOT and DBFOT models, the private is guaranteed revenue streams. Hence, in both models, the risk-reward structure is balanced, which is the main reason for their success.

Figure 3.11: Most Successful methods of building infrastructure



3.3.2 Major Issues in Funding Infrastructure

During the interaction with the experts, they were asked their opinions on the major roadblocks in funding infrastructure in India. The first and foremost challenge is the

approach and attitude of the entities and the leadership towards different aspects of finance. To begin with, the governments at all levels have never thought of increasing their share of capital expenditure till as late as 2019. The share of capital expenditure in the Indian Union budget was less than 10%. However, the central government has increased the share of capital expenditure to almost 20% of the total budget. It has also announced various incentives for the state governments to increase capital expenditure. In the programmes and missions initiated by the central government, the states and ULBs do not pay their share of dues in time, forcing the central government to stop the funding, and hence, the project comes to a standstill. Government spending on infrastructure is a prerequisite to crowd in private investment in infrastructure. In the last few years, private spending has relatively gone down. Hence, all the tiers of the government must come together to bring the private stakeholders on board. The representatives of the local bodies raised concerns about the grants received from the state and centre. They stated that in several cases, the grants are diverted or stopped by state and central government after initiating the project. The allocated funds must be used for what they are sanctioned for. If the contractor has completed or partially worked on the project, he demands money from the local bodies. The centre or the state authorities usually ask the ULB to make the payment, which will be reimbursed to them in some time. However, they are either refunded partially or have to settle the accounts themselves.

While the issues regarding the shortage of revenues and challenges in raising capital from debt and equity instrument have been discussed earlier in the chapter, it is important to highlight the negative sentiment regarding debt financing not just with the ULBs but also with the higher authorities. In addition, other challenges in debt financing do not make it a desirable option. The cost of debt capital in India is very

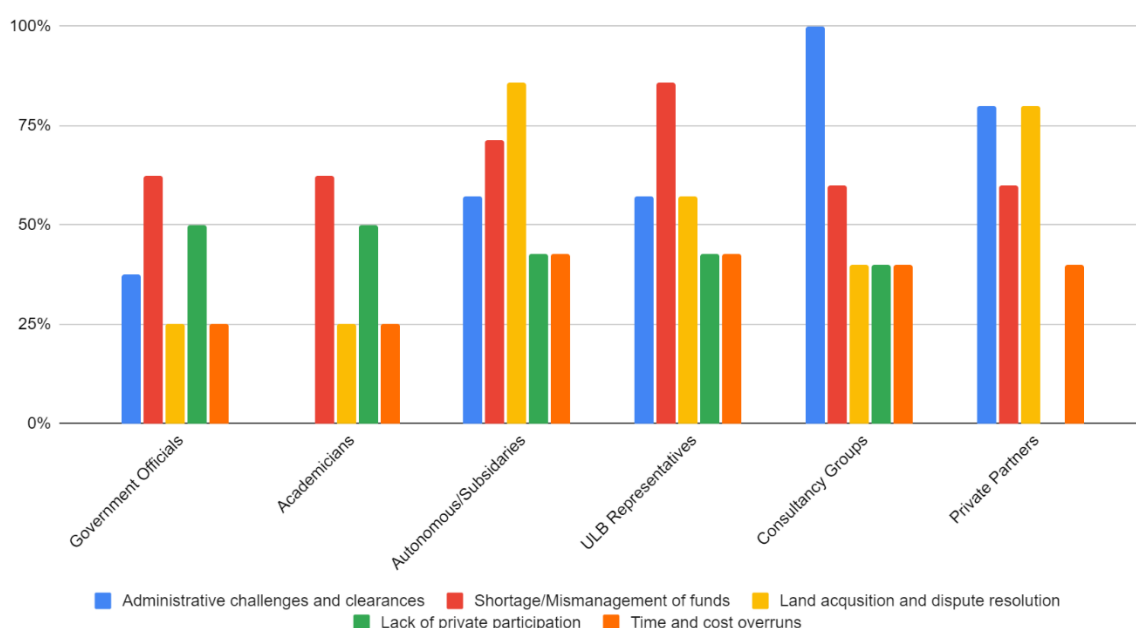
high compared to other developed and developing countries. One of the most frequently used debt financing options has been commercial bank loans. Many experts suggested that this is not a viable option for debt financing as it leads to an asset-liability mismatch for the banks and might threaten its existence, as observed with many NBFCs and DFIs in the past. Credit enhancement is one of the most important requirements to tackle the funding challenges in the country. Another roadblock in raising debt financing is the shortage of equity investment in the projects. The government must focus on getting equity investment to leverage the debt required to fund the projects. As suggested by government officials, there is a need to tap the excess foreign capital available in the global markets, which is being tapped by the African entries. These funds, which include the sovereign wealth funds, pension funds, insurance funds, etc, of different countries, can quench the thirst of the Indian infrastructure sector.

The government officials and experts from the autonomous and subsidiary organisations pointed out that sufficient funds were available in the infrastructure market. This was in line with the comments from the private stakeholders, who said that they are willing to collaborate with the government to invest in development projects. However, they all pointed out that arranging the funds for projects can be eased out only if the projects are structured well and the government officials' clear vision regarding private participation. The private stakeholders pointed out that the government officers lack interest in collaborating with the private. The contractual structure of PPP, where the government is the boss and the private players have to work like a contractor, must change, and both parties should behave as partners in PPP. The private players also stated that the government at all levels must publicly display the project pipeline for at least the next five years for the private to plan their

investments. While the macroeconomic uncertainties and government policies continue to be a challenge for the private sector, a roadmap for planned projects can bring stability and certainty to the infrastructure sector.

On the other hand, government officials pointed out a lack of big private players in the infrastructure sector. Most of the project developers in this field do not have the required experience and do not have a good credit rating. However, the major issue in finding private partners is that the experienced private players have so many projects stuck in operations that they are hesitant and unwilling to enter the sector to take new risks. Also, many private players have a lot of money in the infrastructure sector, and the loss of sunk costs has weakened their balance sheets.

Figure 3.12: Major Issues in Funding Infrastructure



Along with the above-mentioned challenges, administrative challenges and getting clearance from the relevant authorities are major hindrances to timely project completion. The staff in the government offices, especially at the local bodies level, is

not sufficiently trained to deal with private developers and contractors. The lack of expertise makes them a weaker party during negotiations. On top of that, government authorities lack efficiency in handling and monitoring the projects. Many authorities, especially the ULBs, lack fiscal discipline and the improper budgeting by the local bodies puts them in a tight spot in completing the project. The administrative challenges become a problem when a project involves multiple agencies or departments. The lack of planning and coordination between the stakeholders and government departments affects the timeline of the development project. To add to the chaos, many state governments have set up development authorities, urban development trusts, water supply boards, etc, which have been given the same mandate as the urban local bodies. Many states have taken land away from the ULBs and given it to the development authorities. The multiplicity of authorities and institutions have made it rather confusing for the citizens and the private players to understand the structure and mandate of all agencies individually. Excessive political interference has been one major reason behind the creation of these parallel organisations. These institutions are created with officers appointed by political influence and are then used by political leaders for their benefit. In addition to this, the multiplicity of organisations, along with red tapism, makes it very difficult to get clearances leading to delays in project completion. The delay in completion of projects combined with corruption and bribery inherent in the system leads to cost overruns while completing the project. The time and cost overruns impact the project's structure, and thus, the participating authorities and contractors start losing money, and private players want to pull out. However, while some government officials did agree that administrative challenges were a problem, others believed that the authorities were competent and dynamic enough to make decisions based on the changing scenarios.

Another major hindrance for the private players in building infrastructure is the difference in rules and regulations in every state. The consultancy groups and the representatives from the autonomous organisations highlighted the importance of having model concession agreements that every state must follow in every sector. The model code of the accords has been observed in the road sector and has proved to be very successful in attracting private participation. The same is now being used in the power sector and is getting good results. As highlighted by these groups, the institutions do not follow the model code of agreements and do not get bidders for their projects. This must be enforced in every state and must be followed by the local bodies as well. The states that do not follow these agreements make strict rules and inflexible guidelines that become a challenge for getting private and external sector funding. The government officials had a mixed view on this issue. While some believed it was incorrect to change the terms and conditions after the agreement was signed, other officials thought the private must be allowed to renegotiate the deal with the changing ground situations. The clause to renegotiate based on the prevailing situations will not only help attract the private sector but also help the government save money, eventually benefiting the citizens.

Land acquisition is one issue that was highlighted by all the groups during the interaction, except the private players. When the issue was specifically discussed with a couple of private players, they stated that land acquisition is a challenge that existed in the past, is hindering projects in the present, and will continue to cause trouble in the future. They stated that it is a problem that is bound to persist, and thus, this problem must be internalised in the system rather than being affected by it. The representatives from the autonomous and subsidiary organisations agreed that land acquisition is a problem that affects the majority of the projects, due to which the

private sector is unwilling to take up greenfield projects. As per their study, land acquisition took up to 40% of the project cost in most projects. A few respondents suggested that since land is a state subject. Also, states cannot pay their share of project costs in time, so the responsibility of land acquisition must be handed over to the state governments. This has twin benefits. It not only eases out the problem of acquiring land but also helps manage the project's cost. The government officials felt that the new land acquisition policy solved the problem of acquiring land. However, all other groups saw it as a major issue. One of the experts from the group of academicians highlighted the example of Japan in land acquisition, which pays a much higher amount than the market rate for acquiring the land and then develops it in such a way that the value of the land skyrockets and helps them recover the cost of the project.

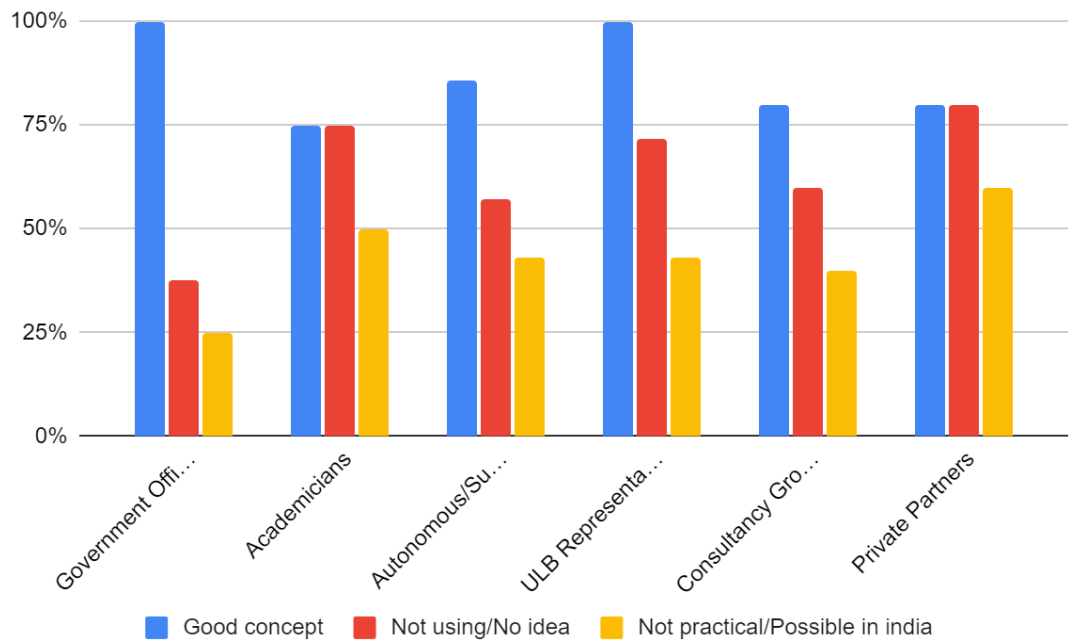
3.4 Alternatives for Financing and Funding Infrastructure

3.4.1 Value capture Financing Framework

As studied in the sections above, shortage of capital is the major challenge in urban development and infrastructure financing. Thus, it becomes essential to give priority to infrastructure that can generate higher economic returns. Many infrastructure development projects, especially those in the cities and those aimed at boosting connectivity, have a great potential to generate economic values that can be captured by creating different revenue streams. The Ministry of Housing and Urban Affairs (MoHUA) released a VCF framework to be followed by states and ULBs while initiating infrastructure and urban development projects. However, no considerable efforts have been made by state or development authorities. The value generated by development is most easily tapped in terms of land values. While infrastructure development has multi-sectoral benefits, the incremental land value gives the highest returns; hence, most VCF tools are based on land values. Many experts have regarded

VCF as the most innovative tool to fill the funding deficit in our country. It can help better structure the projects by making them more viable and attractive for the private sector. The government has not put severe efforts into promoting VCF and training the stakeholders to implement the tools; hence, the use is limited to a few case study projects in the country. A few experts have also suggested commercial development along the path of development projects as it is easier to capture incremental value from commercial property owners than individual land owners and residential properties. The experts suggested that windfall gains must be captured. Still, since taxing everyone is not possible, the developers and entrepreneurs in the region must be taxed since they benefit more from the infrastructure development.

Figure 3.13: Value Capture Financing Instruments



The value capture tools are more successful in transport projects, and Hong Kong metro is a successful case study. However, no measures were taken regarding Delhi Metro, and the corporation struggles to repay the loan amount to the lending authorities. Delhi Metro could have generated considerable revenue by selling

additional FAR to the residents apart from the incremental land values. However, since the government lacks a sustainable vision, the FAR was given to the residents without providing any benefits to the DMRC. Thus, the experts were asked about their vision for VCF tools and whether it is possible to use them in India.

Almost 90% of the experts believed in the concept of VCF and agreed that it was an excellent concept for funding infrastructure development in the country. According to the World Bank, there are 18 VCF tools, and 15 of them have been used in Indian cities. While the tools are being used in some projects, the use is limited to selected projects and is used as an exception rather than a practice. The centre has drafted a framework, but it is for the cities to decide whether they want to take it up for not. While the preliminary framework has been designed and shared with the states, the VCF tools are still evolving. They must be assessed, appropriately explored, and exploited enough to generate revenues without hurting citizens.

As of now, the success of VCF is a mixed story. Some projects have yielded good returns, while others failed to provide the expected returns. The success of VCF and the projects depends on the instrument's choice and implementation timing. Also, it is important to bring out VCF as a framework and a policy with a fixed set of rules. Currently, the usage is significantly less and as the study indicates, more than 60% of the experts were either unaware of the VCF methods or unaware of these tools being used in India. Many experts stated that different projects used the same principle as the VCF tools but did not name the practice being used due to different complications. Many PPP projects undertaken in the DBFOT mode included some or other kinds of VCF practice to generate revenues from the project. The instruments were not being used properly, and only some parts were incorporated into the project based on convenience. While the usage of these instruments is low, practitioners are slowly

realising the potential of these instruments. Some academicians, however, suggested that the government and other participating authorities were not very keen on using these instruments. The representative of the ULBs indicated that they have not adopted this as more clarity was required on using these instruments. Some ULBs have used betterment levy, TPS, land use conversion and, development charges, etc. However, while the instruments have been used, they were not incorporated in the funding model or linked with a particular model, hence lacking efficiency.

It is pertinent to note that more than 40% of the experts believed that VCF was not a practical option or it was not possible to use these instruments in the Indian context. 60% of the experts from the private sector believed that it was not possible to implement these tools in India. They pointed out that the system cannot smoothly operationalise the basic mechanisms or use even the conventional funding mechanisms available in India; hence, bringing a new method would not be easy. Half of the academicians also believed that it would not be possible to use VCF tools efficiently in India due to many existing flaws in the system that might hinder its implementation. To start with, VCF tools need a uniform structure with proper rules and regulations for usage nationwide. While the structure of the framework and rules must be uniform, the tools and their usage will vary across the country based on the local dynamics of the area and the citizens. Many experts have pointed out that these tools can only be used in the country's urban areas. One of the significant challenges in implementing the VCF tools is that states and even central agencies lack the expertise to use these instruments. One of the basic principles of the tool is to identify the value created because of the infrastructure and implementation of an apt tool to capture the incremental value. However, given the resources available and staff knowledge, it isn't easy to assess the exact value generated by the project. One of the experts pointed out

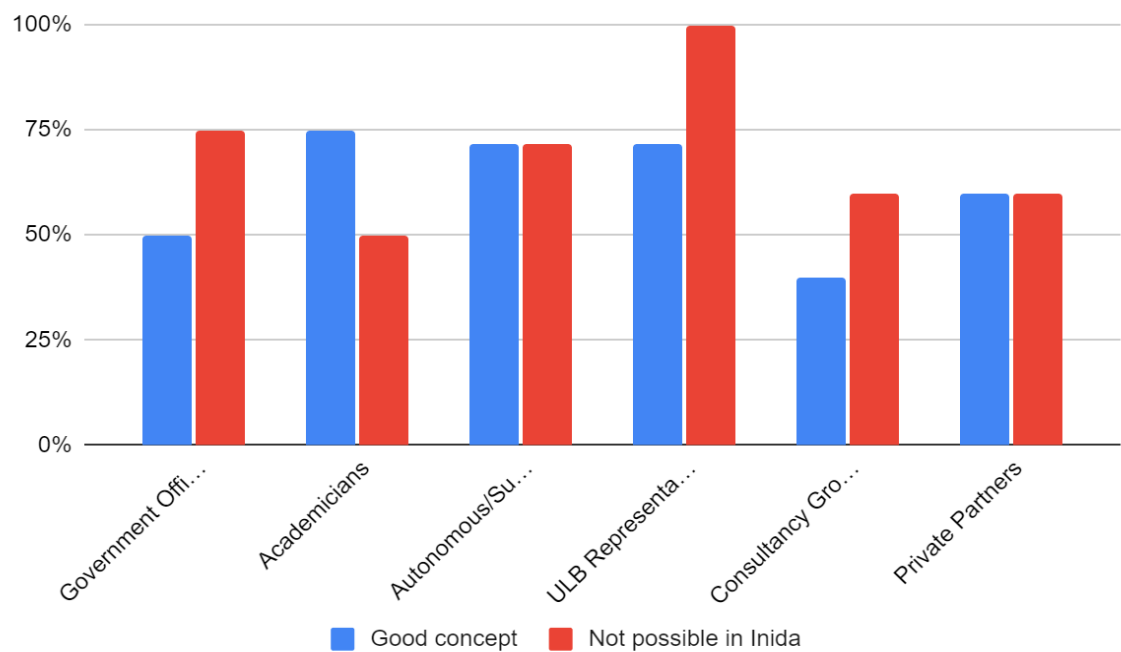
that if there is more than one project in the same vicinity being undertaken by different authorities, how will the value generated by each project be determined individually, and who will be given the authority to collect the incremental value? Some academicians suggested that India is not using scientific methods while assessing and capturing values. They indicated that all revenues were estimated randomly without proper calculations, including the toll charges on national highways. They suggested that the government must hire experts and tie up with academicians to undertake project evaluation and conduct proper cost-benefit analysis before undertaking any project. In addition, land is a complicated subject, and any policy about this must be framed after taking all stakeholders on board. Land ownership is a challenge, and it won't be easy to charge residential areas and individuals every year. Academicians suggested that the plight of economically weaker sections of the city population must also be considered before forming any policy that imposes a tax or charge on them. Since politicians control a considerable amount of land or are known to be controlling large chunks of land, political influence is another major challenge in implementing the VCF tools. Hence, many efforts will be required to ensure the smooth operation of VCF tools in the country.

3.4.2. Tax Increment Financing

TIF is a significant source of funding infrastructure in many developed countries, especially the US, Australia, and many European countries. While many successful case studies of TIF globally exist, this funding mechanism has not been explored in India. During the interaction with experts, they were questioned about the method and asked if it was possible in India. Surprisingly, more than 80% of the experts working in this domain for so long were unaware of this funding mechanism. All the experts were briefed about the mechanism with examples before taking their opinion on it and

asking about its feasibility in India. Almost 60% of the experts appreciated the TIF funding mechanism as it has the potential to fulfil the infrastructure deficit in the country and has yielded results globally. The government officials stated that the escrowing mechanism of TIF is suitable but will need guts to implement and get all the stakeholders on board. They also suggested that a lot of customisations will be required to implement the model in India. The experts from consultancy groups and autonomous and subsidiary organisations agreed that TIF is an excellent mechanism to capture windfall gains for property owners, and it is time that the escrowing mechanism matures in India. It is a forward-looking mechanism and has delivered results globally. The academician stated that this mechanism must be enforced in such a way that it improves equity in society along with generating stable revenue streams for repayment. Some of the private players liked the concept and agreed that TIF can take us 25 years ahead. However, various concerns were raised about using TIF in India.

Figure 3.14: Tax Increment Financing



While most of them liked the concept of TIF, almost three fourth of the experts believed that it was not possible to implement this framework in India. All the representatives of the local bodies, which will play a major role in implementing this mechanism, believed that it was impossible to implement this mechanism in India. According to them, the ULBs were not prepared to undertake such advanced measures as it is impossible for their staff to undertake these calculations. While some ULBs are already using escrowing mechanisms in some other form, using them for incremental property tax did not seem feasible as the property tax collection itself is inefficient. In addition, the intervention by state governments and the political influence on the ULBs make it highly unlikely to implement this mechanism in the near future. Even the government officials mentioned that the government has no intention of using this mechanism in India as our country is already on the list of high-taxation countries, and the compliance rate is very low. They suggested that it was tough to introduce new taxes and practices or bring tax reforms given the political culture of freebies. Some government officers mentioned focussing on user charges and fee-based system rather than taxation with the example of the government's collected cess charges. The experts from consultancy groups and autonomous and subsidiary organisations raised further concerns about TIF. They stated that a taxing framework cannot be introduced in India merely by seeing its success in other countries, and implementing such a framework is a challenge in the Indian context. They, too, highlighted the concerns of efficiency in property tax collection and challenges in calculating incremental values. They suggested that this framework is ideal but does not seem practically possible in the near future. Thus, a fee-based system must be promoted using an escrowing mechanism based on value-capturing principles. It is difficult for the local bodies to take this up, and it can only be used for big-ticket projects by the central government.

The private players were also apprehensive about implementing a new mechanism as they believed India was not ready for such a framework as the country was still struggling with the basics. Some of them also stated that working in this direction would be a waste of time as it would not be possible to charge money from everyone every year, and the scheme would face much opposition. The academicians had a comparatively more positive outlook with regard to the applicability of TIF in India. They suggested that it must be used to target those enjoying the windfall gains due to development as it will ensure equity in society. Taxes and commercial properties must be increased to pay for the benefits they receive. They added that ULBs must be provided with technical expertise to be ready to implement the framework and be trained to increase efficiency in tax collection. Some academicians noted that much research is required to understand the feasibility of implementing the TIF framework in India.

The experts pointed out various challenges that make TIF a distant dream in the Indian context. To start with, the local bodies' representatives highlighted the need for trained staff, a clean system, and digitalisation in the office to start thinking in this direction. Technology will play a major role in marking the properties in the area, as many properties are still not registered with the local bodies, leading to an inefficient collection of property taxes. The experts from the consultancy groups and autonomous and subsidiary organisations stated that the mechanism can only be implemented in densely populated urban areas. In addition, they also stated that centre and states must let ULBs make their decisions and work independently to help them increase efficiency in tax collection and train them for fiscal discipline. They also highlighted the difference between US ULBs and Indian ULBs, mentioning that a successful US model might not be suitable for India. Black markets in India operate much faster and

might adjust swiftly, hindering the process of calculating the incremental values. The government officials stated that India is not ready for such taxation, and the society is yet to mature to understand such progressive measures. The officials pointed out a similar challenge with regard to black markets and asymmetric information among citizens. This lack of information might affect the common man, and the developers and real estate dealers might benefit from the situation. Apart from this, experts from all the groups raised a few general concerns. First, the influence of politicians in the working of local bodies and their involvement in the land markets will influence the administrative decisions of imposing charges on land owners. The real estate mafia is known to have deep connections in the political system. Thus, awareness of leaders is important for the functioning of the TIF mechanism. Second, it is important to frame proper rules, guidelines, and a framework by consulting with all the relevant stakeholders for smooth functioning. The last concern the majority of the experts raised was the alternative options that can be combined with property tax in the TIF model. Many suggested using FAR sales, cess charges and other user charges as alternative or supplementary charges in the TIF framework.

The experts also discussed the issues regarding the federal structure in implementing the TIF framework. Suppose the central or state government is undertaking big infrastructure projects. It is bound to increase land and property rates in the region. The benefit of this incremental value will accrue to the local body. In such a scenario, the majority of the experts suggested the creation of an SPV that will make local bodies a part of the development process and make it easier to collect the taxes accruing at the local level. However, some experts stated that the taxes at the local level must not be used for projects being run with the involvement of state and central governments as they have sufficient levels of funding available for the projects.

The representatives of the local bodies were more than willing to partner with state and central government by creating an SPV for infrastructure development. It will solve the financial challenges and activate and train the staff in the local bodies. The academicians also highlighted that the jurisdiction of the land might become a problem in the implementation of big projects. However, the entire land and everything above and below the land belonged to the local bodies, and thus, the ULBs form an essential layer in the federal structure. They suggested legislation to form SPVs and to make the ULBs a partner in future projects. A few experts dealing with government projects indicated that they are already facing the issues of authority and rights over resources. However, overall, the experts pointed out the importance of the federal structure and cooperation among the three tiers of the government. They suggested that all tiers must have a positive outlook and a coordinating authority, either like an SPV or something along the lines of a GST council, must be created to address these challenges.

3.4.3. Land and Asset Monetization

In the last few years, land and asset monetization or asset recycling has become an essential source of accumulating capital for infrastructure development. This mechanism has been used globally and has proved to be a successful source of generating finances. The government officials believe it will be the next big thing in terms of future investment. They are confident about the mechanism and prepared to deal with the resistance that might arise. They said that while the results might take time, monetizing land is crucial for financial sustainability. There are many departments in the government which are running losses and have a large amount of land lying idle with them. The most highly valued idle land is with the Ministry of Railways and Defense. Both ministries will not want to share the proceeds and give up the land if they feel they are losing the deal. However, it will be essential to see how

land is acquired from such institutions and ministries, as it is important to maximise the economic productivity of land.

The experts from the consultancy groups echoed the challenge of acquiring land from institutions. They agreed that it is an important mechanism and must be used by the government. They stated there was a shortage of policies and laws to support the acquisition of land lying idle in premier localities. Ministry of Railways has started focusing on idle land by using it productively with the help of its SPV. The experts from autonomous and subsidiary organisations suggested that the development authorities must raise resources using this method. They believed this is an effective tool for realising land value potential and raising resources. Given the needs of the current situation, this tool can make a huge difference. Land banking can prove to be an effective method for infrastructure development. A few experts suggested that it will not be easy for India, like China, as the properties are not marked and ownership is not defined. Land valuation will be a significant challenge when these issues do not exist. They further suggested that if selling and acquiring land is challenging, resources must be raised using other mechanisms like leasing the land or levying user charges or vacant land tax.

The academicians liked the concept and suggested that extra land must be monetized to raise resources. However, they also raised several concerns with this mechanism. While the method is used globally, it will not be easy to implement in India with the systemic challenges of corruption and bribery. Land scams in the country are highly likely if the mechanism is not monitored carefully. They also raised concerns about the compensation offered while acquiring the land and the chances that the weaker sections of the society would lose out on the deal. They suggested it can be an ideal mechanism for the ULBs if the challenges are addressed. The ULBs face twin

challenges on this front. Most of the land with the ULBs is undervalued, and there is a lack of legal support for the ULBs to undertake monetization. These two challenges hinder the process of monetization for the local bodies. The private players had a slightly different opinion on the same. Though they liked the method and thought it could speed up infrastructure development, they believed it was a challenging step. According to them, this method will invite a lot of opposition in the country, and thus, the focus should be on asset recycling rather than focussing on land. The representatives of the urban local bodies had a mixed opinion on the same. While ULBs like Indore and Ahmedabad said that they were already using land as a resource to generate resources, other ULBs thought that it was not possible to take this up. Majority of the representatives believed that since ULBs were anyways losing their land, it is important to start using land to generate resources as it will help them gather the capital required to initiate development activities. To begin with, it is necessary that the ULBs maintain proper records of the land that falls under their control and that a policy with clear guidelines and framework be formed to undertake monetization of land by the local bodies, either by selling or leasing the land. If the authorities can ensure a transparent mechanism and avoid corruption, this mechanism can cover the pending losses of the ULBs.

Along with land, the government has also decided to focus on asset monetization or recycling of assets. Many projects have been initiated, and many others are in the pipeline. Government officials suggested that this mechanism has been ignored for a long but must be taken seriously as it is an acceptable form of global funding. Privatisation is one form of monetizing assets as seen in the case of airports handed over to the private sector for smoother operations and maintenance. They suggested that it is important to develop a culture of using assets to generate resources

using assets. The experts from the consultancy groups believed that the government was moving in the right direction regarding asset monetization. They suggested that the government build assets, monetize them immediately, and then use the proceeds to take up future projects. Those from autonomous and subsidiary organisations believed that asset monetization is more crucial and straightforward than land monetization. They suggested that this mechanism has great potential; thus, it must be accelerated and structured better. The assets must be leveraged, and proceeds should be used for future infrastructure development. The academicians were critical of the asset monetization scheme but suggested that the authorities ensure that all assets are used efficiently. If there is a need to monetize, resources must be generated by leasing the asset rather than selling it to private parties. The experts from the private firms suggested that asset monetization is significant for the future of infrastructure development in India. This will have two benefits. Private companies will get the assets they can manage more efficiently than the government.

On the other hand, the asset is used as equity to raise more debt from the market for further development. However, for the policy to succeed, the government must plan and have a fixed stance on the policy. Encouraging pension funds, provident funds, etc., is also important to hold more stable government assets. If this mechanism is implemented successfully, it has to bridge the country's infrastructure deficit.

3.4.4. InvITs and REITs

In the last couple of years, InvITs and REITs have become an important source of infrastructure financing after the Government of India made special provisions and highlighted their importance in the annual union budgets. The government officers were highly hopeful of the success of these instruments in India. They stated that these

instruments can attract huge amounts of private capital in the long term. Although REITs have been used globally to finance infrastructure, InvITs are being promoted in India to help the government accumulate capital to fund government infrastructure projects. The instruments are working well in brownfield projects, and more than 15 InvITs have already been registered. Almost all the registered InvITs are working in the road and power sector. For InvITs to mature in India and be successful in other sectors, there is a need to establish revenue streams to attract investors, have a stable economy, and have a consistent government policy stance. In recent years, the participation of the private sector in these instruments has increased, and the instruments have been simplified for use by retail investors. Regulatory and taxation policy changes are also being made to protect the investors and make these tools an attractive investment option. While all InvITs have been granted tax exemption, only the listed REITs are exempted from taxation. The consultancy group experts stated that the instruments' underlying assets are crucial for their success. The government is encouraging the use of these instruments, and the experts are hopeful that they will pick up slowly in India. An expert pointed out that the InvITs in India are quite similar to the YieldCos used in the other countries as both these instruments comprise debt and equity components. However, 75% of the academicians were not willing to comment on the success of these instruments as they believed that it was essential to study their usage in India. They stated that the financial sector in India is not that developed and mature enough to accept new instruments easily, and a new mechanism might be required to promote them. They believed that while the instruments have been changed from bonds to InvITs, the underlying issues in the financial sector remain the same. The rest of the academicians were hopeful that InvITs would succeed in India.

The experts from the autonomous and subsidiary originations had mixed opinions. While most of them believed that many investors were interested in these instruments as they provide more than 10% returns to the investors, many thought that the concept was too narrow. They will be able to mobilise minimal capital using these instruments. They added that while REITs are successful, InvITs bring along policy uncertainty. The tools have great potential, and the regulatory framework supports these instruments. The projects with clearly defined revenue streams are successful. While private InvITs existed earlier, the government has now floated 2 InvITs through its organisations, which have raised 13,000 crores. However, other experts suggested that the government must only act as a facilitator and regulator, not focus on floating its own InvITs. The private players were also apprehensive about the government raising InvITs, and they thought that the private sector must use these tools. The private InvITs have performed well as the experts are managing them. The infrastructure companies in the country must also be converted into InvITs and used for raising funds. They suggested that these instruments can provide good returns if the underlying assets are good. The success of these instruments mandates the safety of investors, which can be guaranteed by reducing the risk by changing/ adding the required rules and regulations for it to evolve. REITs are considered to be safer as the returns in InvITs vary. However, InvITs provide good returns in India and are becoming an attractive option for investors, especially those investing in fixed deposits. They also cautioned that over-expectation from these instruments might add pressure and affect the work. While these instruments can be useful for the ULBs, more than 70% of the representatives from ULBs were unaware of these instruments. Those aware of these instruments said that these instruments might have a good future in India. While these instruments are consistent, their implantation will be the key.

They also said that relevant authorities must take the initiatives to spread awareness about these instruments and use them extensively.

3.4.5 Other Debt and Equity Options

Apart from the commonly used debt and equity instruments like municipal bonds, loans, PPP, etc and InvITs and REITs, the experts were asked about other debt and equity instruments they were aware of and were being used in India to finance infrastructure development. The government officers said that they were using all instruments that existed. Apart from bond financing, they also mentioned the usage of mezzanine financing and pension funds. Revenue bonds were not being used as projects were not providing revenues, and the government relied on GO bonds. The consultancy group members mentioned the importance of PSU loans, pooled bonds, green bonds, sovereign bonds and funds from NBFCs and PFCs. The experts from autonomous organisations said that the country's debt and equity instruments have not succeeded. They suggested using LIC, pension funds, provident funds, auctioning of future revenue streams, senior debt and subordinate debt. The government receives significant capital from foreign investors, international insurance companies and pension funds. The private players suggested using only pure debt or equity instruments rather than mixing both and complicating the project. They also mentioned using convertible bonds, debentures and other long-term debt instruments. More than 70% of the experts from among the academicians and ULBs representatives were unaware of any other instruments apart from the conventional methods. The experts were also asked if they knew of any debt and equity instruments being used globally and must be explored in India. More than 80% of the experts were unaware of any new instruments that should be tried in India. Those who suggested new mechanisms that could be explored were either government officers or those working in autonomous or

subsidiary government organisations. The government officers suggested exploring long-term tax-free bonds and microfinancing, while those from subsidiary organisations suggested the use of asset-backed securities, structured debt obligation, private equity investment, covered bonds, insurance companies, etc.

One of the significant issues with all debt and equity instruments, including InvITs and REITs or in financial markets in general, is the hesitancy of investors in putting money in the capital markets. Due to various incidents in the past, investors are not very confident in putting their money in financial markets. Less than 7% of the Indian population invests money in the Indian stock market, which is enough to understand the condition of other investment options. The experts suggested the lack of transparency and administrative challenges, including clearances and procedures, as major hindrances to the investors. The lack of legal and policy framework makes investing in most instruments difficult for individual investors. Some instruments, like InvITs, are complicated and risky and must be initiated only after institutions are in place to regulate and run them. Also, due to a lack of awareness, very few people participate, and hence, the investor market is small, and there is a shortage of liquidity. To improve the given condition, the government must start by advertising these instruments and training interested future investors about these instruments. The informal sector has a lot of idle cash, so they must be allowed to invest in the capital markets. In the end, the government must work on reducing the risk for the investors and increasing the return from these instruments as it will attract the investors and solve the problems in the capital market.

3.5 Institutional Support

3.5.1 National Infrastructure Investment Fund (NIIF)

NIIF is India's first infrastructure-specific investment fund, which was set up by the government in 2015. They invest across infrastructure and growth equity and believe in generating attractive risk-adjusted returns by efficiently operating their investments through economic cycles. During the interaction with the stakeholders, they were asked about their views on the working of NIIF and whether it was able to deliver the results that were expected during its formation. Most government officers were satisfied with the organisation's work and believed it was beneficial for providing long-term funding. NIIF has different kinds of funds that help mobilise the sovereign fund and maintain the debt-equity balance for the project by generating money with a multiplier effect. The organisation has been given a private structure with no government framework despite the centre having a 49% stake. The organisation is trying hard to support infrastructure companies and developing big firms in the sector. However, many government officials believe that the organisation is running below par and it should scale up investments given its mandate. They also believe NIIF has been financing projects only as a business partner and is not focussing on credit enhancement. Some government officials stated that the objective of the NIIF is not clear within the organisation as some believe it to be an investor, and others think of it as an adviser as the NIIF was developed as a think tank for the government.

The experts from the autonomous and subsidiary organisations were not happy with the functioning of the NIIF. They believed the organisation was not working as expected, as rather than providing funds, they were competing with NBFCs to finance projects. The experts believed their competition with banks and NBFCs could damage

the system. Many experts believe that NIIF is risk-averse and only invests in safe projects with excessively available private funding. They provide limited capital (seed capital) just like any corporate financing, which does not benefit the ecosystem, and thus, they must scale up investments substantially. According to the experts, the extent of work being taken up by NIIF is minimal, and that work can be taken up by the government directly. 40% of the experts from consultancy groups were unsure about the workings of NIIF, and the remaining had a different opinion about NIIF. They believed NIIF was doing a decent job and taking sufficient risk exposure. It was making allocations, providing credit for many projects, providing equity options, and attracting much more private funding. According to them, one of the best characteristics of the organisation was its professional setup, which provided a smoother process for private firms to get involved in the infrastructure sector.

The private players had mixed opinions about the functioning of NIIF. While some believed it was a good initiative and such an institution was required to ease out the infrastructure sector, most private players called the institution bogus as it was not interested in development. They suggested that NIIF should stop competing with private and foreign players and work in sectors where private funding is insufficient. According to them, the organisation needed to bring reforms and correct its working fundamentals to increase efficiency. They must stop working as a business entity or a private equity fund and start deploying more funds by taking more risks and investing in stressed projects.

On the other hand, the majority of the academicians were either not aware of the functioning of NIIF or were not willing to comment on it. According to them, while the government reports make big claims about the institution's success, not much has changed on the ground. They suggested that such institutions only work on big projects

and are far away from the cities' and citizens' basic infrastructure needs. They suggested that such institutions must partner with the local bodies and take up smaller infrastructure projects. The academicians also pointed out that such institutions only add to another layer of bureaucracy and lead to duplicity of institutions, which adds to the confusion. The experts from the local bodies refrained from commenting on NIIF as they were unaware of the organisation and its working.

3.5.2 Development Financial Institution (DFI)

One of the long pending demands of many industry experts has been the need to set up a Development Financial Institution (DFI). In the budget speech of 2019-20, the finance minister proposed a study for setting up a DFI for promoting infrastructure funding. Within two years, in the budget of 2021-22, the finance minister announced the setting up of a DFI with Rs. 20,000 crores worth of capital and an aim to have a lending portfolio of at least Rs. 5 lakh crores in three years. Immediately after the consent of the Hon'ble President of India, the National Bank for Financing Infrastructure and Development (NaBFID) was set up as a DFI to support long-term infrastructure financing in India. However, it is essential to note that DFI is not a new concept in the Indian context. The first DFI was operationalised in India in 1948 called the Industrial Finance Corporation (IFC). Soon, a handful of DFIs, including ICICI, IDBI, IFCI, etc., played a significant role in aiding industrial development in the country. However, with the 1991 reforms, the concessional funding to such institutions by RBI and the government was stopped, and as a consequence, these banks converted into commercial banks. After a gap of a few years, a new set of institutions like IDFC (1997), IIFCL (2006) and NIIF (2015) emerged with an aim to focus on infrastructure financing. Despite the efforts of all these institutions, the infrastructure projects, development authorities, and the local bodies are still yearning for funds. In this

context, the experts were asked about their opinion on the setting up another DFI and if it could be a game changer for the infrastructure sector.

The majority of the government officials had a very positive outlook for the DFI. According to them, it is an essential source of long-term credit for infrastructure projects with a long gestation period. The institute will help finance and mobilize capital by being a guarantor and taking risks. Commercial banks cannot take up the risk in projects with such a long gestation period as they are bound to face asset-liability mismatch at some point. A DFI can solve this problem, help in credit enhancement, and support new companies in infrastructure development. The DFI must collaborate with domestic and international investors, including sovereign funds and ensure that the cost of capital remains low. A couple of experts from the government were not convinced by the idea of setting up another institute as many institutions are already working in the domain.

Along with the institutions mentioned above, RECs, PFCs, HUDCO and many such organisations are also involved in infrastructure financing. Rather than creating new institutions, there is a need to clean up the existing system and strengthen the foundations. Otherwise, the upcoming institutions might also face the same fate as IIFCL. According to the experts from the consultancy groups, none of the institutions set up with similar objectives have succeeded. However, they also suggested that given the needs of the Indian infrastructure sector, it is imperative to keep trying such institutions for long-term funding. If the institutions work well in the system, it can help enhance credit, increase liquidity in the sector, and reduce the cost of raising capital for the projects.

The academicians had a mixed opinion on the functioning of DFI. Many were apprehensive about its success and were not expecting much from the institutions, as the challenges that affected the previous institutions still exist today. They believed that it would be difficult for the DFI since the same situations prevailed. The academicians thought that the DFI must be prepared for the challenges by studying the mistakes of previous institutions. Some academicians were confident that the DFI would successfully bring and leverage capital for the infrastructure sector. The institution has enormous scope and must be taken seriously by all the stakeholders. The DFI must start by refinancing institutions like the National Housing Bank, etc, as it will multiply the effect of building infrastructure. They must focus on bringing in sovereign wealth funds from other countries and involve the private players in financing infrastructure. To prevent the institutions from failing, the government and/or RBI must ensure they have collateral support to ensure NPAs don't become a challenge. The experts from the private sector were not convinced by the setting up of DFI, and only one person in this category supported the decision. According to the others, starting a new institution rather than reviving the existing set of institutions was a bad idea. Although they agreed that such an institution gives confidence to the private sector by clearing the government's intent, it must be ensured that the institution makes commercial sense. The private stakeholders suggested avoiding past mistakes and studying the IIFCL model before taking further steps.

The representatives of the urban local bodies were not aware of any such scheme or institution being set up by the government. A couple aware of the concept suggested that it was a much-required step and a significant source of mobilising capital at a cheaper rate. The experts from the autonomous and subsidiary organisations had an unfavourable opinion of the institutions. Hardly anyone from the

category was willing to support setting up a DFI. They believed that despite giving them more power and additional protection by the government, they would not succeed. According to a few, commercial banks were better positioned to raise resources today as they have been given the priority sector framework. Thus, it was better to bring the banks together to fund the projects with the help of specialised people and industry experts. According to them, many institutes exist, and there is no need to bring a new institution as it will go through the same experience as last time. Whenever such institutions are established, there is a massive expectation for raising debt and equity. These institutes fail when they are either overutilized or underutilized. Institutions will come and go. It is a usual process, and the government needs to focus on the objectives. If the institution has to succeed, it must work along with existing institutions like IIFCL, HUDCO, etc. The DFI must be encouraged to work on greenfield projects and take up more risky projects which are challenging to finance by the NBFCs. At last, the experts suggested that new institutions must be established with a new set of experts and involving all relevant stakeholders. Hence, based on the opinion of the experts, the infrastructure sector must not rely entirely on any one instrument or institution to provide for the infrastructure gap in the country.

3.6 Public Private Partnership (PPP)

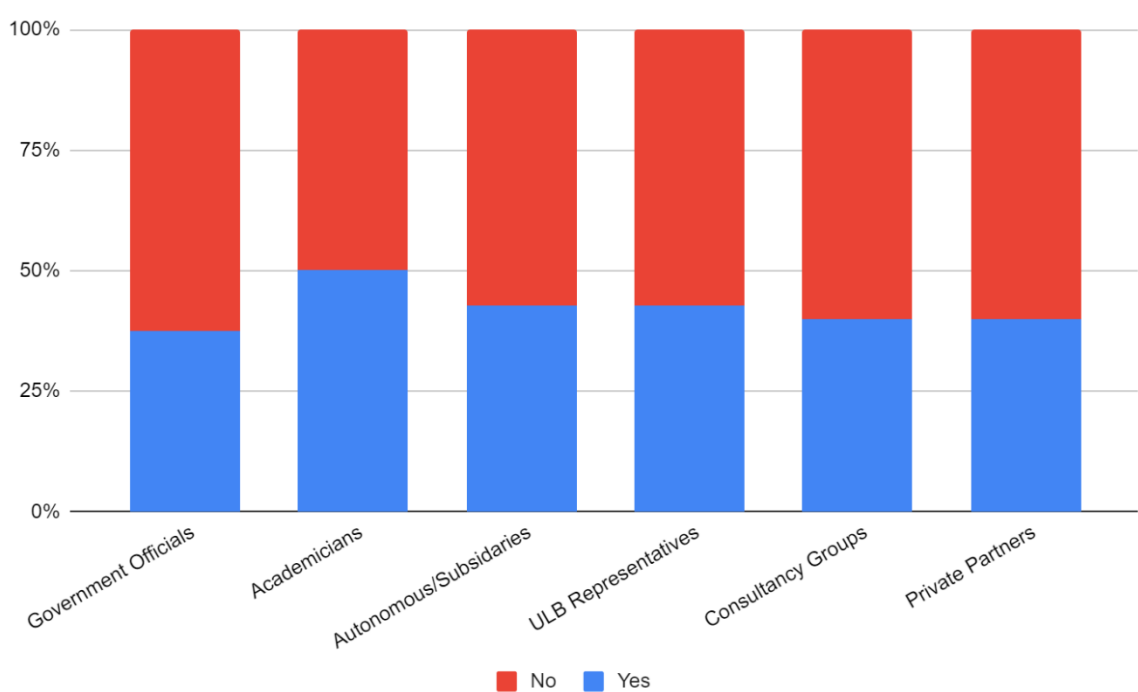
The Government of India is striving hard to improve the level and quality of economic and social infrastructure services in the country. In pursuance of this goal, the government has envisaged a substantive role for PPPs to mobilise private sector investment and operational efficiencies in providing public assets and services. For the last one and a half decades, India has systematically rolled out a PPP program to deliver high-priority public utilities and infrastructure, one of the world's most extensive PPP programs. With close to 2000 PPP projects in various stages of

implementation, India is one of the leading countries in readiness for PPP. They have become the preferred execution mode in multiple sectors like highways, ports and airports. According to the World Bank, PPPs are being adopted extensively in urban areas. In this context, the experts were asked their opinion on the success of PPP in India. Only 42% of all the experts believed that PPP in India was a success. Most of those who said no considered that PPP in India has enormous scope and reforms must be initiated as soon as possible to capture the opportunity.

According to government officials, PPP boomed in India between 2007 and 2012 and slowed down. The experts from consultancy groups state that the investment from private investors has further reduced after COVID-19. The experts from autonomous and subsidiary organisations were unhappy with the working of PPP but were hopeful that things would improve. They believed that for PPPs to succeed, state governments, local bodies, and development authorities must start doing projects on them. With the share of central government spending on infrastructure increasing, private sector investment has decreased relatively. The academicians showed maximum trust in the PPP model and believed it would be the game changer in the future. They thought that it is due to the investment cycle that private spending has been reduced temporarily, and it is bound to pick up again, and the PPP model will continue to lead the infrastructure sector. The private players were also not happy with PPP's performance in India. They stated that PPP cannot be regarded as a success as there are several stories of failed PPP projects and institutions. Only selected local bodies get an opportunity to work with the private sector on infrastructure and development projects. Most local bodies do not get to collaborate with the private players as they are too small to negotiate with them and lack the ability to discuss projects. The projects being done by private players in the local bodies are contractual

jobs where the local bodies pay a contractor to get the work done. All the experts believed that the success story of PPP varied from sector to sector, as highways, ports, power and airports have many success stories. While the government officials believed that the private must be encouraged to enter the remaining sectors as well, the private stakeholders stated that the government must take care of the sectors where private players are not willing to invest.

Figure 3.15: Is the PPP Model a Success in India



For the success of the PPP model, it is essential to understand the concerns of both the relevant stakeholders. Most of our experts believed that government officials are not interested in making the deal run or do not give proper attention to the problems and requirements of the private player. PPP is a partnership where both partners deserve equal powers and authority. The private players highlighted that even while the private sector invests money and takes the risk of the project, the government officials still maintain controlling behaviour and treat the private players as

contractors. They do not want to talk and discuss with the private players before making decisions. The PPP model can be successful if both parties are transparent and completely trust the other party. The major challenge is the risk-reward sharing mechanism between the government and private stakeholders. The majority of the experts believed it to be the primary reason behind the failure of PPP in India.

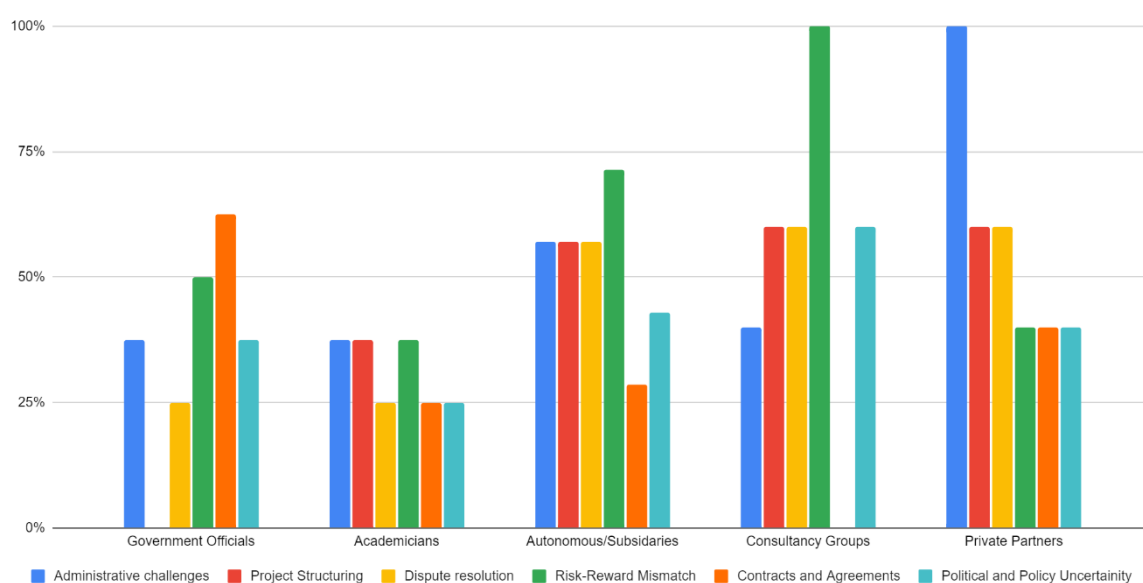
While all the experts from consultancy groups agreed to the mismatch of risk and rewards, more than 75% of the experts from autonomous and subsidiary organisations saw it as a significant concern. According to them, given the uncertainty prevailing in the country and the economy, there is enormous risk, which is borne mainly by the private players alone. The projects are risky and do not assure fixed streams of revenues. Since the revenues and cash flow streams are not predictable, the majority of the cost-benefit analyses are inefficient. The government does not have a commercial vision and does not allow the private sector to collect user charges in every project, and revenue collection is inadequate. Hence, it becomes difficult for the private sector to recover the project cost and earn returns on investment. The experts suggested that the private players must be rewarded with fiscal and non-fiscal measures to compensate for the revenue loss and encourage them to take up risky projects. The experts suggested that the private players must be rewarded with fiscal and non-fiscal measures to compensate for the revenue loss and encourage them to take up risky projects.

The government officials agreed there is a mismatch in risk and rewards as the returns are unpredictable. PPP concessions are unsuccessful in generating consistent revenues for investors. The academicians stated that since risk and tips do not match and the returns are insufficient for the private player, they might compromise on the quality of the project to cover the rising expenses. The private players are unwilling to

enter any project unless the rewards are enormous and the project generates revenue. According to academics, it is important that the government takes some part of the risk from the private players on its own to maintain the risk-sharing balance.

The private players echoed the same concern and wanted the risk to be reduced from the private stakeholders and wanted the government officers to understand that the private players were in the project to make money. They stated that the government is so defensive that the prices of services were set too low to stop the private sector from making money; hence, it becomes difficult for the private sector to operate on the given prices. 60% of the experts from consultancy groups, autonomous and subsidiary organisations and private players stated that project structuring is a significant issue. The projects are poorly designed with an inefficient cost-benefit analysis, making it unattractive for the private player to invest. Some academicians also pointed out the importance of efficiently structuring the projects for the success of the PPP model and the project.

Figure 3.16: Major Challenges in Public-Private Partnership



Another major challenge for private partners while collaborating with the government is the never-ending administrative hassle they must bear. Some government officials pointed out that the complex administrative procedures lead to confusion among the private players. The complex processes usually lead to a delay in payment to the private partner, which sometimes stops the project. The lack of understanding and bureaucratic mindset further magnifies the concerns. Even the experts from autonomous and subsidiary organisations pointed out that the government entities are not interested in putting efforts into PPP. The administrative challenges and inconsistent policies and frameworks make it hard for the private partners to cope. The academicians stated there was a lot of scope for improvement in PPP by solving the administrative constraints. Bribery, corruption, personal motives of some senior officers, etc, are other concerns that stop PPP from realising its actual potential and making it less efficient. The private players said that the government officers lack vision and do not have decision-making abilities. The government must make timely payments for a healthy PPP environment to flourish. They also stated that the government must smoothen the administrative procedures and move towards a single window clearance mechanism. The government must publicly publish details of its vision for the sector and pipeline, mentioning all upcoming projects in the next 5-10 years. This allows the private sector to plan and prepare for projects in advance. The government must have consistent policies and not be affected by the political landscape. Almost 40% of the experts saw the changing political and policy environment as a major concern affecting India's PPP model. Respondents from the expert groups believed that a consistent political consensus with clarity could play a significant role in the infrastructure sector.

As stated by the majority of the experts, the majority of the private sector has been witnessed in brownfield projects. The private partners are hesitant to enter the greenfield projects as land acquisition becomes a challenge in the timely completion of the project. Land acquisition in almost all the tasks leads to time overruns and increases the project's cost, disturbing the cost-benefit analysis of the project and the private partner's loss. The government officials, experts from the consultancy groups, and autonomous and subsidiary organisations all highlighted the issues in attracting private firms to greenfield projects. The several clearances and permissions required in case of greenfield projects make it more difficult to acquire land. Another major challenge in greenfield projects is the higher probability of entering into litigation due to land acquisition, etc. The government officials pointed out that there have been several cases where the projects are going on by following proper guidelines and mechanisms. Still, the judiciary gets involved unnecessarily, creating problems for private partners. If the litigation goes on for an extended period, the project is stopped, and the developers are stuck with their capital parked in the project. The government does not bail out private parties when they are in litigation. The experts from the consultancy group suggested a need to have a dispute resolution and renegotiation mechanism to provide a cushion to the private stakeholders. Academicians also indicated that land acquisition is a major challenge and that the government must be flexible if the private party is stuck in litigation. The private partners echoed the concerns of land acquisition and disputes. They stated an immediate need to bring in a conflict resolution mechanism to strengthen the PPP framework. They expected the government to be a little sensitive towards the private sector and help/ bail them out, at least in genuine cases.

One primary requirement for having a successful PPP project is the need to have transparent and comprehensive contracts and agreements. The government officials stated that it was essential to follow the model code agreements set by the government. The model code agreements were being followed majorly in the highways and power sectors, and both sectors have received extremely positive responses from the private sector. The agreements must have detailed guidelines, be binding, and be followed by both parties. While some officials mentioned that the agreements must not be changed/ altered after both parties have signed the document, others believed there was a need to have a renegotiating option in some instances to be fair to the private sector. The experts from the autonomous and subsidiary organisations pointed out that the contracts must be prepared in detail with details of every possibility in case of any judicial or unforeseen circumstances. They also echoed the idea of having model agreements and suggested that the developing authorities and state governments must be encouraged to follow them. The private stakeholders said that they are always ready to follow the agreements if the government officers follow the guidelines and adhere to them. They pointed out that the agreements are unclear and later, the officers use those against the private partners. Thus, a uniform, detailed, model agreement structure can be helpful in PPP arrangements.

Another issue pointed out by most government officials and experts from consultancy groups in the ministries is the shortage of domestic private partners in the infrastructure sector. Many foreign players are willing to invest in Indian infrastructure but cannot find a domestic partner to collaborate. There are hardly any big players in the domestic market, and most of them are inconsistent. The private sector in India has not matured yet and is unwilling to collaborate. Rather than taking direct exposure, they are willing to invest through different instruments like InvITs, REITs, etc.; hence,

the private capital investment has decreased relatively. In addition, there is a lack of understanding about PPP and the variations available. There is a lack of knowledge on how to use PPP to maximise welfare in society. There is a notion that PPP can only succeed for big infrastructure projects that are commercially viable. However, different models of PPP are working in other sectors and generating good results. ULBs like Indore, Ahmedabad and Mumbai have taken up many PPP projects. Most of the projects by Indore ULB are case studies for ULBs across the country, and they have been done in PPP mode. The problem that affects ULBs is that they do not have the expertise to design, evaluate and plan the projects and deliberate with the private players. The private parties try to dominate the ULBs, and they lose resources in negotiations. The private party is apprehensive because ULBs cannot partner and cannot make decisions that might affect the project in the long run. Hence, if the authorities have the expertise to evaluate and use the suitable PPP model for the right project and the correct institutional support, PPP can be a game changer for the Indian Infrastructure sector.

3.7 Conclusion

The interviews conducted with the experts from different stakeholder groups have given a holistic view of the challenges existing in the urban infrastructure sector and with the ULBs. The study has provided a detailed understanding of all the instruments, models and mechanisms related to the infrastructure sector, along with the major challenges and reforms required to smoothen the process. The study's first outcome was the understanding of finances for infrastructure projects. Given the huge infrastructure deficit and the government's vision, infrastructure development will be at the centre of India's development for at least the next two decades. Most of the projects are being taken up by public funding which is slowing down the development

process. The public budget is limited, and the capital requirement is enormous. Thus, private investment needs to crowd in to cover the deficit. While the private sector invests in quite a few projects, the conditions and expectations from the private stakeholders are huge. Although private spending has stayed relatively low for the last few years, plenty of private and foreign investors are willing to invest in the infrastructure sector. To attract this funding, it is essential to show matching returns to the investors based on the risk they take. For this process to smooth out, there is a need to plan out revenue streams for every project and the cash flows for the next 15-20 years. Once the revenue streams are in place, the private investment will start flowing in, and the infrastructure deficit can be covered.

Second, there is a need to understand and chalk out the different funding options in the market. Private funding will not always come in the form of a PPP or through direct investments in a project. Plenty of options are available in India and across the globe to finance infrastructure and development projects. Sadly, as our study suggests, for most experts and stakeholders, funding from the market is available only through loans. For loans, most experts also focused on commercial banks or relied on grants and loans from multilateral agencies. The study suggests a knowledge deficit amongst the officials about understanding different debt and equity options available to finance infrastructure. The next chapter (Chapter 4) elaborately discusses India's various debt and equity options.

Third, while financing the project is one part of the process, funding the project by repaying the capital raised initially is the central part. As discussed earlier, since repayment is a challenge due to the system's failure to generate cash flows and fix revenue streams, the thesis focuses on tax increment financing and value-capture financing methods as repayment options. Concerning TIF, while most experts believe

it is a good concept, they feel that the mechanism is not feasible in India. The TIF mechanism followed globally relies on an escrowing mechanism using property taxes to generate a stream of cash flows for repayment. While the escrowing mechanism has been observed in India in various projects, increasing taxes is challenging.

On top of that, given the condition of property taxes in India and the inefficient collection mechanism, collecting incremental property taxes in cities seems like a distant dream. As discussed in the TIF section, there is a need to develop an escrowing mechanism that uses property taxes and focuses on other VCF tools and user charges. VCF tools and their applicability in India is another subject covered in the thesis and discussed with the experts. The majority of the experts liked the concept of the instruments as they were based on user charges rather than taxes; hence, it was easier to implement these. These tools have been used in India in various projects, but the officials in the government, especially in the local bodies, lack understanding of these tools and their applicability. Training the staff and officials to use these tools to club them in the TIF framework and use them for repayment is essential. An escrowing mechanism by streamlining the values captured from a project using the VCF tools can help solve the funding challenge in the infrastructure sector. Chapter 5 discusses the various values that infrastructure development generates and quantifies the surplus value in different markets. The chapter has used these incremental values in the TIF framework to transform the TIF model into a VIF mechanism in India.

Fourth, reforms are required to strengthen the system at the level of the local bodies. As evident during the study, the staff of the local bodies is untrained, insufficient, and inefficient in working towards bringing in reforms in the infrastructure sector. The staff can hardly carry out the routine activities in the ULBs and cannot think of bringing any reforms in the system or trying out new mechanisms

in their ULBs. Apart from a handful of big municipalities in India, all the local bodies are in terrible shape both in case of monetary resources and human resources. First, there is a need to run capacity-building programs at the ULB level to train the staff to use the tools available in the system and try new models of providing infrastructure and services. To strengthen the ULBs on the fiscal front, many reforms have been suggested throughout the thesis and in this chapter, but one major reform proposed by the experts has been to make ULBs a part of the GST revenue-sharing pool. The cities generate maximum revenue in the GST, and the local bodies provide all the services required for the cities to run smoothly. Thus, the GST sharing mechanism must be in the ratio of 2:2:1 for the centre, state and local bodies. In the end, for expecting any reforms at the ULB level and expecting ULBs to take the initiative and levy user charges, it is essential to give autonomy to the ULBs. For this, state governments have to properly deviate powers to the ULBs following the 74th Amendment of the Constitution. Autonomy and decision-making powers with the ULBs will be the first step towards strengthening the ULBs in India.

Fifth, there is a need to understand the condition of the private sector to bridge the infrastructure deficit existing in our country. It is vital to bring reforms in our country's existing PPP framework to make a conducive environment for private partners. To begin with, the private stakeholders must be treated as partners in the PPP framework and not dealt with as contractors. One of the significant steps required to strengthen the PPP mode is creating revenue streams and generating cash flows, as discussed in the above points. This will fall in place if the projects are appropriately structured.

Along with this, the vision of the government towards PPP and the attitude of the government officials and leadership must change. Government officials must move

out of the mindset that privatisation is terrible or the private sector is just there to extract the money. The private parties have the right to earn a decent return based on the risk they take in the projects.

In addition to these broad reforms, there have been a few more takeaways from this study. Administrative challenges significantly threaten the private sector's participation and the infrastructure sector's overall functioning. Single window clearance and process reforms are required to aid the development process. Land acquisition is another area that requires the government's attention. The government must bring reforms and required legislation to ease the process of acquiring land for development. The government must also form a dispute resolution cell and offer a renegotiation option to the private players in litigation cases. There must be a mechanism to bail out private partners when they are stuck in unnecessary judicial procedures. In addition to this, land and asset monetization must be seriously taken up by the relevant authorities. These two forward-looking schemes have tremendous potential to generate resources for all levels of the government. Asset recycling must be encouraged by the central government. Once created, the asset must be sold or leased out, and the funds mobilized from this deal must be used to develop the next infrastructure project. This can start a cycle of developing infrastructure, capturing and using this value to develop infrastructure further.

At last, the institutional support system must be strengthened. Institutes like NIIF, NaBFID, HUDCO, IIFCL, etc., must work in tandem to build a healthy environment in the infrastructure sector and aim to solve the infrastructure deficit in the country together. Apart from working for the central government, these institutions must work with and support the development authorities, state governments and the local bodies.

Chapter 4

Exploring Models of Debt and Equity Financing in Indian Cities

4.1 Introduction

According to the World Economic Forum estimates, infrastructure spending accounts for over 14% of global GDP. With the growing global population, greater urbanization, and increasing development and trade, governments around the World have been increasing their share of infrastructure spending. However, these shares are insufficient to meet current transportation, water, energy, sanitation, telecommunications and other infrastructure demands, particularly in developing countries. Developing countries require an additional Gross fixed Capital formation of \$1.3 trillion per annum to keep up with the pace of the rest of the World. (*City Creditworthiness Initiative: A Partnership to Deliver Municipal Finance*). With the traditional sources of financing infrastructure, which primarily includes Central government budgets, the infrastructure investment gap is likely to increase. World Economic Forum has estimated that this gap between predicted infrastructure investment and the amount required to address the World's infrastructure needs will reach \$15 trillion by 2040. Thus, it is evident that we are in the midst of a worldwide infrastructure financing crisis. It thus becomes all the more imperative to include all the stakeholders and tap all the possible sources to bridge this gap.

Infrastructure development projects and provisioning of civic amenities are capital-intensive and require a considerable amount of funds. The development projects have long gestation periods and provide stable cash flows only over a long period. Since the projects require substantial upfront investments, the public sector,

especially the ULBs, does not have access to such a large amount of resources, and investment is not feasible for the private sector since the gestation period is extended. Thus, borrowing is a method that can provide a large amount of capital in a short time frame to the developing authority or SPV by spreading the repayment over a long period. The benefits of infrastructure developments are enjoyed by more than one generation, and based on the ‘beneficiaries pay’ principle, the cost should be recovered from all. If the cost is recovered from only one generation, as in the case of short-term borrowing, the future generations will become free-riders. Thus, long-term borrowing for big infrastructure projects is efficient and maintains equity.

A significant advantage of borrowing is that it makes the ULBs more disciplined as the obligation to repay compels them to judiciously plan, design and execute projects that can maximise revenues, minimise O&M cost, and generate a surplus over O&M cost in a sustained manner over the lifespan of the asset. However, given the local bodies' institutional and fiscal conditions and credit ratings, borrowing is not an easy task. Also, the local bodies can only borrow with the permission of the state governments. The state governments have to give a guarantee when the local governments borrow funds. The local government must place revenue streams in escrow accounts to smooth debt repayment if it wants to borrow without the state government's guarantee. The state governments decide based on the credit rating of the local body, the property tax base of the ULB, and permits only if the borrowing term is less than 30 years and the interest rate on borrowing is less than the interest rate on state government securities. All tiers of the federal structure must undertake various government reforms to promote borrowing as a method of financing infrastructure. To encourage the ULBs, the central government should incentivise states and cities that use borrowings to finance infrastructure. The government should

also intervene in the credit market to ensure the easy availability of funds, reduce interest rates and ensure that even small local bodies can access credit. As the results of the previous chapter indicate, most of the borrowing has been chiefly done through commercial banks and publicly owned institutions like HUDCO, NIIF, IIFCL, etc. However, as the infrastructural needs have escalated, the World has made significant progress in exploring various domestic and international sources of infrastructure financing.

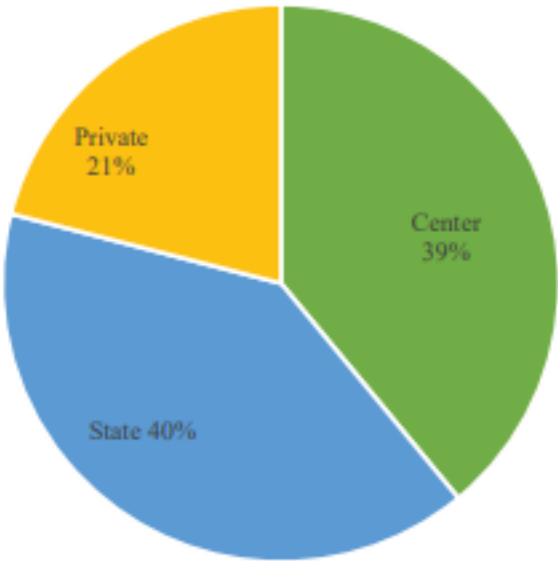
4.1.1 Domestic Sources of Financing

Domestic sources of financing include tapping those financing options available within the country. These can be broadly classified into i) public-sector investment, ii) private-sector investment, and iii) public-private partnership. Historical data suggests that the onus of providing infrastructure has remained on the government for several decades. Only in the late 1980s did the advent of the private sector become visible. Over the years, the government has tried to encourage more and more players from the private sector to participate in infrastructure investment through various policy incentives and other mechanisms. However, the idea of private sector investment has raised several eyebrows, especially when linked to Public good provision. With time and deliberations, a compromise between public and private investments was sought, which led to the creation of another source of financing- public-private partnership (PPP).

4.1.1.1 Public sector investment: In India, major infrastructure financiers are the national and state governments. In August 2020, with the aspirations of achieving world-class infrastructure, the Government of India announced the National Infrastructure Pipeline (NIP), under which the onus of financing has been mainly on

the National and State Governments (Figure 1). The most common way a government can finance infrastructure projects is through the revenue collected from taxes, fees and other sources. However, the World has realized that these are not sustainable in the long run. In addition, these revenues must be allocated for revenue expenditures, which usually take priority over capital expenditure. Thus, the governments have to borrow. Hence, public investment usually takes the form of debt financing. Governments can raise these funds at a much lower cost than the private sector because of stable sources of collateral, reducing the risk for the investors. Public assets and taxes act as collateral for the governments against which they can borrow at lower rates.

Figure 4.1: Funding under NIP

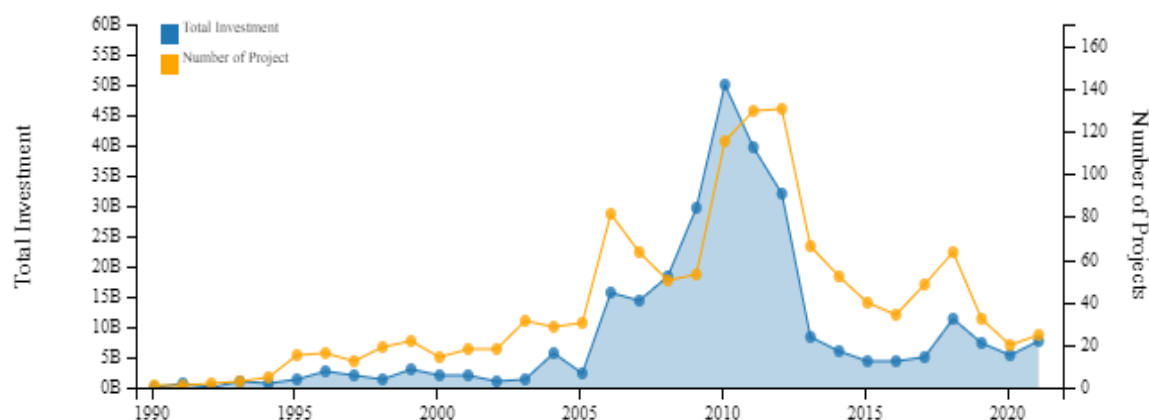


Source: Economic Survey Volume 2 (2020-21)

4.1.1.2 Private sector investment: The budgetary constraints and rising public debt to GDP ratio have made way for private sector investment. Private sector investment is relatively more expensive than the public sector and has a higher risk component. Governments incentivize the private sector by tax deductions and other ways to reduce

their financing cost. Thus, there are few conditions under which private sector investment is considered to be more feasible-(a) non-recourse financing of infrastructure, (b) Public sector's balance sheet has a high debt component, (c) Delivery efficiency gains are more significant than financing cost for the private sector, (d) cost of incentivizing private sector is lower than the differential between costs of public sector financing and private sector financing. The recent trends of private sector investment in infrastructure in India are not very optimistic. The falling trends reflect the lack of encouragement to the private sector. It also implies the need to create an enabling fiscal environment for the private sector to expand the avenues of financing infrastructure.

Figure 4.2: Private Participation in Infrastructure (PPI) in India



Source: World Bank

4.1.1.3 Public-Private Partnership (PPP): Under this arrangement, the Public and Private sectors pool their resources and share their risks through joint investments. The lifeline of an infrastructural project involves various phases- (a) project designing, (b) financing, (c) construction, (d) delivery, and (e) operation/maintenance. Under PPP, some of these are delegated to the private sector and the rest are undertaken by the

public sector. Empirical studies have found that projects financed through PPP allow for faster completion and at a lower cost.

4.1.2 International sources of financing

The United Nations has laid down 17 Sustainable Development Goals (SDGs) to address the global challenges, particularly in Africa, South Asia and other low-income regions. Infrastructure indeed has a role to play in achieving all of these goals. However, SDG 6 (Clean Water and Sanitation), SDG 7 (Affordable and Clean Energy), SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure) and SDG 11 (Sustainable Cities and Communities) are mainly linked with infrastructure development. To ensure that developed nations cooperate with developing countries, the UN introduced SDG 17 (Partnership to achieve the Goal) in 2016.

With the same purview, International Development Organizations (IDOs) are critical in financing infrastructural projects in regions with limited access to basic infrastructure. IDOs constitute multilateral development banks, development finance institutions and individual bilateral donors. These IDOs aid these projects in developing countries through financing, advising and technical assistance. They provide finances at lower interest rates and offer a more extended repayment period. In addition, they try to mitigate the associated risks through their technical assistance. Besides these international organisations, India can tap the funds available with pension funds and insurance companies in other countries. The savings rate in many developed countries is close to zero and well below the rate of return that investment in India guarantees. Hence, such agencies of various countries are keenly collaborating with Indian authorities and funding multiple infrastructure development projects.

Although this might seem to be a convenient route for financing the projects, it has some grave concerns that should be tackled carefully before signing a contract.

1. Risk associated with foreign exchange rate: International organizations lend through sovereign bonds and other sub-sovereign financing instruments. If these finances are received in foreign currency, they bring with them the risk of unanticipated foreign exchange changes. Some cities with shallow and underdeveloped capital markets find it extremely difficult to mitigate these risks due to a lack of hedging instruments. For example, the Turkish Lira currency has strongly devaluated in the last six years, making the Eurobond issued to Istanbul extremely expensive because the principal amount doubled in local currency terms (Kopany-Oguz 2016).

2. Foreign financing increases the economy's exposure to financing institutions. It has been observed that most of the time these finances are tied to several stringent conditions. In addition, they might try to exercise their influence in related policy matters. For example, some international authorities make agreements about purchasing raw materials from the lender country before signing the borrowing amount.

As evident from the above discussion, there are several sources through which infrastructural investment can be sought. A diligent cost-benefit analysis during project planning is a prerequisite for efficiently delivering the project. The World has significantly progressed in developing financial structures and instruments to finance infrastructure requirements. Some of these include market-based financial tools with well-established regulatory authority, such as debt and equity. For infrastructure investment, various financing options are available under debt and equity, each with

its own attributes. The following sections discuss the different financial instruments through which Public, Private and IDOs invest in infrastructure projects.

4.2 Debt Financing

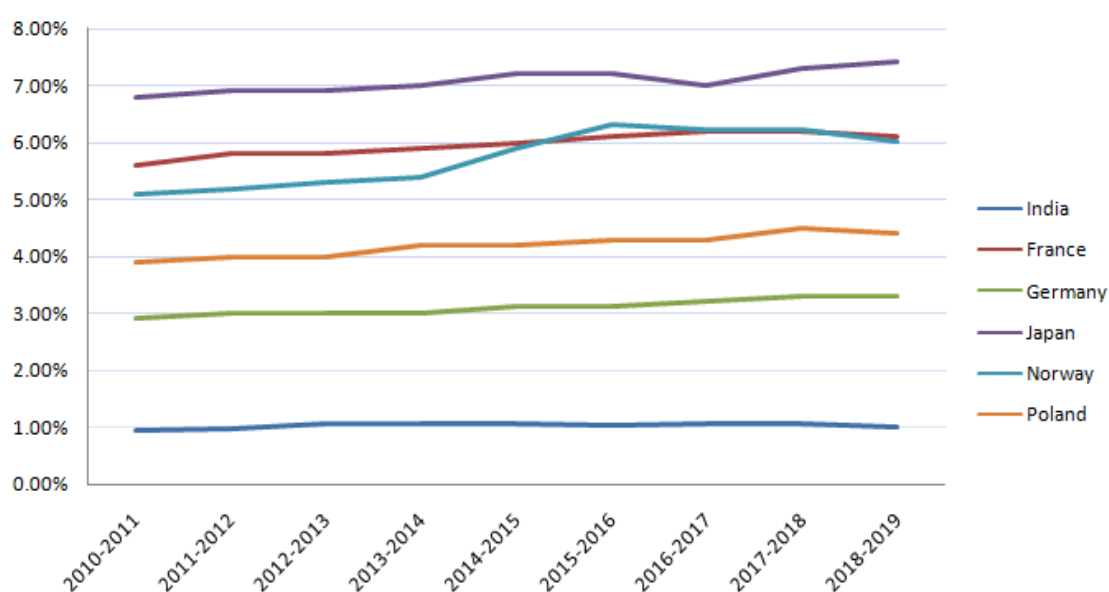
Debt financing entails borrowing money without surrendering the right to ownership. It has well-specified repayment terms, including dates for payment of interest and principal. Thus, debt financing is considered safer due to its pre-specified conditions and stable revenue streams. Therefore, as per the risk-return relation, they give assured but lower returns on investment than equity. Historically, 70-90% of total infrastructure project capitalization is through debt instruments (Infrastructure Financing Instruments and Incentives, OECD 2015). Most urban infrastructure projects have long gestation periods and enormous fund requirements. Infrastructural financing is done through two broad debt instruments- Bonds and Loans. These instruments differ from one another in terms of structure, marketability, players, etc. Some of the commonly used debt and equity instruments have been discussed below.

4.2.1 Municipal Bonds

When it comes to understanding citizens' needs for infrastructure, local governments are most suited for this task, and thus, they should be primarily responsible for it. However, the absence of funds and poor borrowing capacity of municipalities, especially in developing countries like India, make them highly dependent on Central governments. According to a Coalition for Urban Transition 2017 study, 93% of low and lower-middle-income cities have sovereign credit ratings below international investment grade. 55% of the municipalities identified a lack of public funding as a significant barrier to sustainable urban growth. Indian municipalities are no outliers.

Indian municipalities are amongst the weakest globally regarding resource access, revenue-raising capacity and fiscal autonomy (Mohanty, 2016). Historical data suggests that Total Municipal Revenue as a % of GDP has remained abysmally low compared to other countries. For India, this ratio has converged to approximately 1% from 2011-2019, while for Poland, it has mostly remained above 4% and recently, in 2019, France and Norway crossed 6 %.

Figure 4.3: Share of Local Government tax revenue as a % of GDP



Source: Data from ICRIER analysis (for India) and OECD.STAT

The above data provides sufficient evidence of the gloomy state of Municipalities in India. A new financial instrument called Municipal bonds or Muni-bonds was introduced to expand the financing options for cities. This is one of the most commonly used debt-financing methods, which helps the ULBs raise capital from the market from the investors in exchange for regular interest payments and repayment of principal on the maturity of the bonds. Though municipal bonds have been successful in various countries worldwide, India's experience with municipal bonds has not been very smooth. One of the primary reasons for the failure of municipal bonds in India is

the excessive dependence of local bodies on central and state grants. Rather than depending on these grants for expenditure requirements, the local bodies should use these grants as seed money to raise more revenues. To improve the credit rating and win investors' confidence, the ULBs need to improve their governance and become more transparent and accountable. To ensure smooth debt servicing, the local bodies should use an escrowing mechanism, like TIF, which will make it a robust financing option. The state and central government should help the local bodies become fiscally more disciplined and incentivise them to raise funds from the market and explore more borrowing options. Insurance funds, pension funds, state-owned banks, etc, have been the major investors in the municipal bond market around the globe.

History of Municipal bond market around the World

The history of Municipal bonds dates back to 1812, when New York City issued a bond to finance a canal. With a positive response and growing popularity, Municipal debt escalated to \$25 Million by 1843. Urban development and public education infrastructure started deriving their funding from these bonds. However, in 1873, Jay Cooke and Co. and the stock market collapsed. The state and local governments in the country started defaulting, bringing a pause to municipal financing. Municipal bonds saw the light of the day during the Great Depression and expanded in the West. All infrastructural projects were again halted due to the reallocation of funds during World War II. With the end of WWII and rising urbanization in the US, Municipal financing picked up in the 1960s. The US announced Municipal bond insurance to encourage more participants in the Municipal bond market. In the 1980s, most economies witnessed high growth rates, followed by fast urbanization. With rapid urbanization in the 1990s, the market for Municipal bonds expanded substantially in the 1990s.

History of the Indian Municipal Bond Market

India's first municipal bond was issued by Bangalore Municipal Corporation in 1997, five years after the 74th Amendment in the constitution decentralized and gave powers to local urban bodies. In the following year, in 1998, Ahmedabad followed the paths of Bangalore and issued municipal bonds. However, the growth in the Municipal bond market did not pick up well and soon came to a standstill. To strengthen the Municipal Bond market, in 2006, the Government of India approved a **Pooled Finance Development Fund (PFDF)** scheme under which municipalities can come together to access funds from the market by issuing bonds jointly. It was believed that this would reduce the cost of borrowing, facilitate access to financial and capital markets and encourage municipalities to undertake more infrastructural projects. In 2015, with the vision to provide essential public infrastructure like water access to the urban areas, PM Narendra Modi launched the Atal Mission for Rejuvenation of Urban Transformation (AMRUT) scheme. Under this scheme, ULBs were particularly incentivized @ Rs 13 crore per Rs 100 crore Bonds issued, i.e. the government would pay Rs 13 crore for every 100 crore raised through bonds.

This was preceded by SEBI guidelines, which imposed three conditions for eligibility. These conditions were Issuer of Municipal bonds must not have had a negative net worth in any of the three previous years, the issuer must not have defaulted in the last year in debt repayment, and there was no mention in RBI's willful defaulter's list. The timing of these two reflects the government's vision of achieving fiscal prudence and enhanced participation in the bond market. In 2019, on the requests received by ULBs, this scheme was re-implemented as the government, too, felt that there was still immense potential in the bond market left untapped. In addition, RBI

has allowed Foreign Portfolio Investment (FPI) into municipal bonds from February 2019 to attract investments from non-residents.

Table 4.1: Municipal Corporations That Have Raised Money Via Bonds

Municipal Corporations	Year of Issue	Amount Raised (in Rs. Cr)
Ahmedabad	1998, 2002, 2004, 2005, 2009	598*
Surat	2018	200
Amravati	2018	2000
Pune	2017	200
Indore	2018	140
Bhopal	2018	175
Vishakhapatnam	2019	80
Hyderabad	2019	395**
Lucknow	2020	200
Ghaziabad	2021	150

*For five issues combined; ** For two issues in the same year

Source: Story of Indian Muni Bond market so far

However, the Indian Municipal bond market continues to be in a nascent stage. So far, very little has been raised from this market by 10 issues, which is far less than the actual potential. Raising such meagre amounts from the capital market is insufficient for a country like India with tremendous infrastructural requirements. The USA has the most robust and largest Municipal bond market, with its size reaching 20% of GDP in 2016. After implementing the muni bond swap programme, China has emerged as the second-largest Municipal bond market (Beeferman, 2016). Most developing countries have still not ventured into the municipal bond market. A pre-requisite for these countries and those with negligible presence is to ensure a basic institutional framework, more participants, domestic and international, credit-enhancing programmes for issuers, access to market information for all participants, and sustainable government budgets.

Over the years, local governments have explored different variations of municipal bonds, like Pooled Finance Bonds. Since small and medium ULBs cannot access the capital markets directly due to their credit rating, balance sheets and the cost of transactions, pooled financing mechanisms have become an option for such weak local bodies. This method enables small municipalities to come together under one umbrella and raise capital investments to reap the benefits of economies of scale. It allows the ULBs to tap the debt at a lower cost than if they had each attempted to access the markets individually. The government of India also set up the Pooled Finance Development Fund (PFDF) to facilitate infrastructure building in small and medium towns. It provided grants for implementing various reforms in the ULBs. Even though the mechanism looks interesting, it has not been successful in India. One of the significant drawbacks is the interest rate cap of 8 percent per annum on tax-free municipal and pooled bonds. The capping saves the municipalities from high-cost debt

but has invested in these bonds, which is unattractive for the investors. To encourage pooled finance bonds, the government should remove the fixed capping and define restrictions based on the prevailing competitive rates in the market. The government should also extend the PFDF scheme to taxable bonds. The State Pooled Financing Entities (SPFEs), created to promote pooled finance in India, should be operationalised in all the states.

4.2.2 General Obligation Bonds

GO Bonds, or General obligation bonds, have been the most feasible and economically viable source of borrowing for the local governments. These bonds are backed by the issuer's full faith and credit and guarantee the investor that Ad valorem property taxes can be levied to service the debt if needed. Therefore, ideally, these bonds are to be serviced from the local government's general budget. Still, in case of failure to meet the repayment obligation, local governments can levy additional taxes and fulfil their duty. General obligation (GO) bonds can be of two types-

- Limited tax General Obligation bond: Local government can increase taxes to a regulatory limit.
- Unlimited tax General obligation bond: Local government is entitled to raise taxes to the extent required to meet its obligation

Because these bonds involve taxation, local governments may require voter approval before using them to raise funds, thus making it time-consuming. No public asset is used as collateral in the real sense; the credibility and ability can be considered as the pseudo collaterals against which local governments borrow. As the name suggests, these are general bonds that can finance infrastructural projects. Still, they are used explicitly for non-revenue generating tasks such as airports, hospitals,

wastewater, etc. Mostly, GO bonds are issued to fund infrastructural projects serving the general public. GO bonds enjoy wider acceptance among investors owing to the strong backing and the added benefit of tax exemption on income accruing as interest in some countries.

GO bonds have been used extensively in the US and other developed countries since the 1980s, while they have a limited presence in developing and low-income countries. The justification for this stems straight from the definition of GO Municipal bonds. Most local governments are fiscally constrained and have highly unsustainable budgets. Moreover, they have a poor taxation structure with high tax avoidance and tax evasion. Issuing GO bonds to pay for infrastructure in fiscally constrained cities influences their overall debt capacity and credit rating, making future borrowings more difficult and expensive.

4.2.3 Revenue Bonds

Revenue bonds are predominantly used to finance those infrastructural projects that are ‘revenue-generating’. These bonds are serviced directly through revenue created from the infrastructure projects; thus, they do not add to the government’s deficit. Thus, unlike the General Obligation (GO) Bonds, these are not backed by the government’s credibility or pledge to levy taxes but rather by the revenue streams generated from the project. These bonds are issued directly to the investors via bond markets and are given credit ratings by the rating agencies. Like other bonds, they have long-term maturity and may be agreed upon as fixed or floating coupon bonds. While the fixed coupon bond, as the name suggests, would offer a constant payment to the investor throughout the bond’s lifetime, a floating coupon bond may be adjusted

cyclically to the business cycle or any other parameter specific to the infrastructure asset being created.

Governments have popularly started using revenue bonds for several projects. One such example is a toll revenue bond being issued to construct roads. In such cases, how will the debt be serviced is contracted in the beginning itself. The issuer may agree upon various ways of repaying this debt depending upon the nature of revenues being created from the project. In the above example, the issuer grants the investor the right to collect tolls on the constructed road from the raised funds for a specific period. Thus, revenue bonds may involve the setting up a service charge levying authority. An airport revenue bond is another example where the airport's revenues back the bond. Mostly, revenue bonds are “non-recourse” in nature, meaning that if the revenue generated from the project dries up in the future, the investor cannot seize full or even partial part of the public asset. Due to this risk arising from the uncertainty of the project's revenue stream, investors demand a higher yield. Thus, revenue bonds are costlier than the GO bonds secured by the government's taxing power.

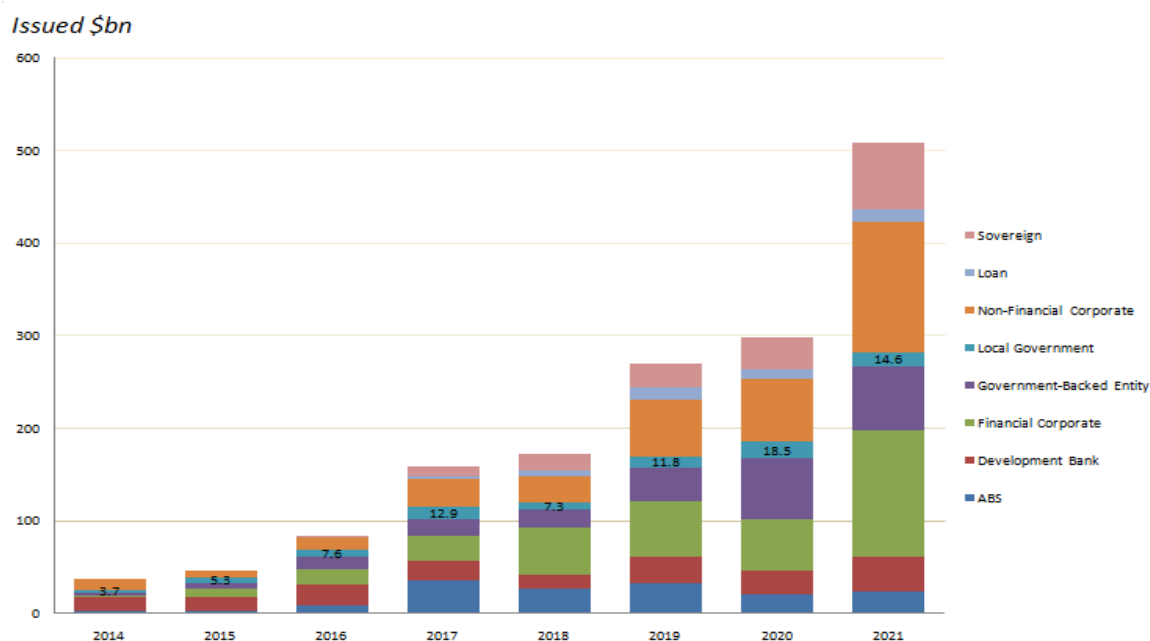
4.2.4 Green Bonds

Green bonds are the latest advent to the list of bonds issued to finance infrastructure. However, unlike other bonds, these are earmarked for “green” projects deemed beneficial for the environment, such as clean and renewable energy, solar plants, water management, reducing carbon emissions, etc. Like other bonds, green bonds are traded in the debt market. Thus, from a financial market perspective, green bonds are not any different. However, due to their growing prominence and appeal to investors and their explicit focus on clean energy and climate change initiatives, they are included separately in this taxonomy. From the demand side, these bonds enjoy a wider

acceptance amongst the investors than the traditional bonds. For instance, in 2013, when the US first state-issued green and traditional bonds simultaneously to fund several energy efficiency projects at the same price, the green bonds were oversubscribed by 30% while the conventional bonds were undersubscribed.

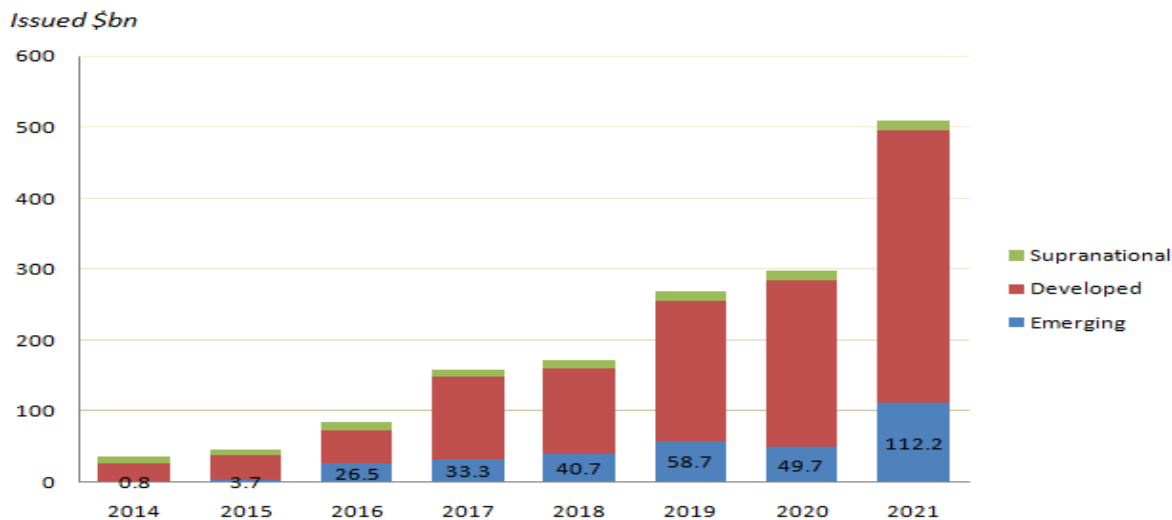
The first Green bond was issued by the European Investment Bank in 2007 and labelled as “Climate Awareness Bond (CAB), and the World Bank followed suit in 2008. Initially, all Green Bond issues were handled by the International Financial Institutions or by countries only at the national level by the developed economies. From 2013 onwards, the Private sector started issuing green bonds, and its share rose tremendously by 2018. As seen in the figure below, financial and non-financial Corporations constitute a major part of the supply side. While sovereign issues have increased in the last few years, local governments are still struggling to tap this opportunity. The first local government to issue a Green bond was that of Gothenburg in Sweden. According to the Climate Bonds Initiative, the annual issuance of Green Bonds could hit the \$1 trillion mark in 2023. However, the distribution of these bonds across the World is highly uneven. Most of the Green bond market is dominated by developed economies with significantly less participation from emerging or developing countries.

Figure 4.4: Amount raised by different Issuers (\$bn)



Source: Data from Climate Bonds Initiative

Figure 4.5: Amount raised by different Economies



Source: Data from Climate Bond Initiative

In the figure above, developed nations have raised a significant funds from the Green Bond issue. Supranational refers to the bonds issued by two or more countries together. As of 2021, 21% of the green bonds were issued by emerging economies, 1%

by the Supranational and 75% by the developed economies. Several reasons like under-developed bond markets, few own revenue sources, high dependence on grants from Central government and poor repayment history are a challenge for emerging economies. India ventured into the green bond market in 2021 when Ghaziabad Nagar Nigam (GNN) issued India's first Municipal green bond. Using the Rs 150 crore raised through the issue, GNN will be setting up a water management plant to clean the water. In September 2021, India's leading NBFC in the Power sector- Power Finance Corporation Ltd, issued India's first Euro-denominated Green Bond. Investors are optimistic about the Indian market, and India should not miss out on this advantageous opportunity.

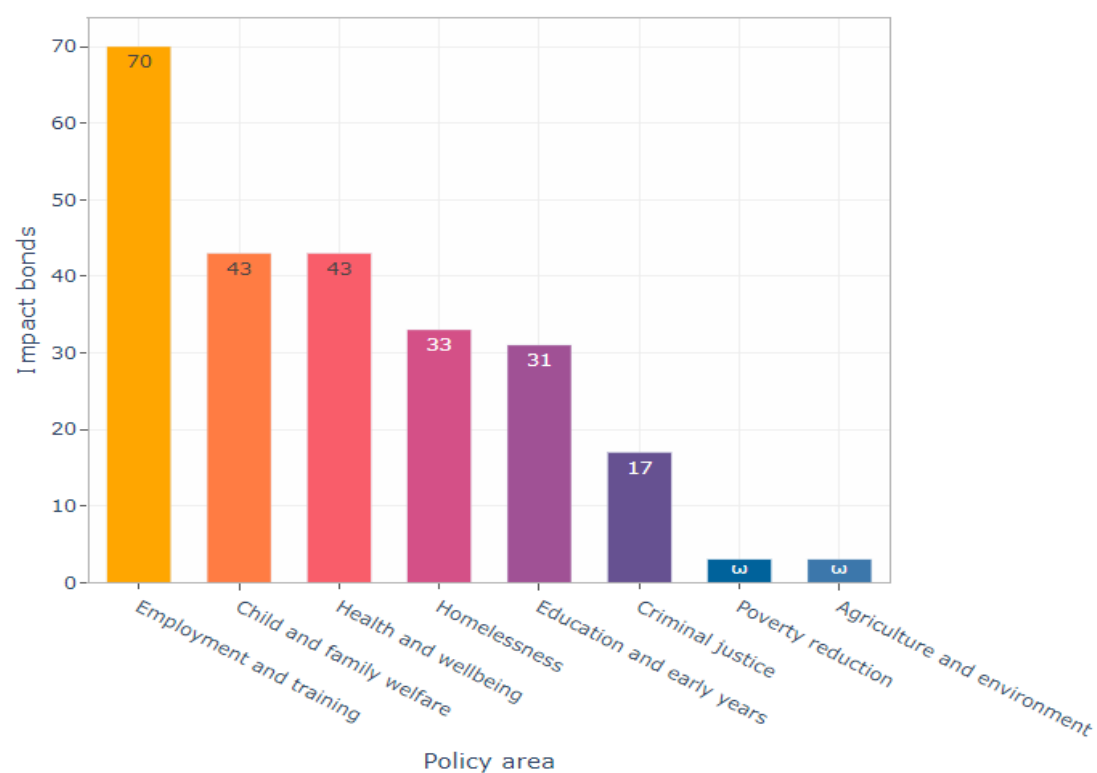
However, amidst this uprise in global green bond issues, there have been several allegations on the issuers concerning green-washing. This means that while issuers access the green bond market in the name of Climate initiatives, they fail to deliver the desired or stated green results. This is primarily because of the absence of a universally agreed-upon criteria to label a bond as "green". Thus, it is essential to monitor the authorities using the green bonds and ensure that the funds are utilized for the same purpose for which the capital was raised from the market.

4.2.5 Social Impact Bonds

A social Impact Bond is another innovative variation of the bond. Social impact bonds are also referred to as "pay for success financing", "pay for success bond", "social benefit bond", or simply a social bond, which is a performance or outcome-based financing tool that enables the governments to pay for programs that meet the expected social outcomes (Chan, C and Bartle 2022). The concept of SIB is still new to the world, but some developed nations have already started exploring it. As of 2022, there

are more than 240 social impact bonds around the World used to raise more than USD 720M.

Figure 4.6: Global impact bonds by policy area

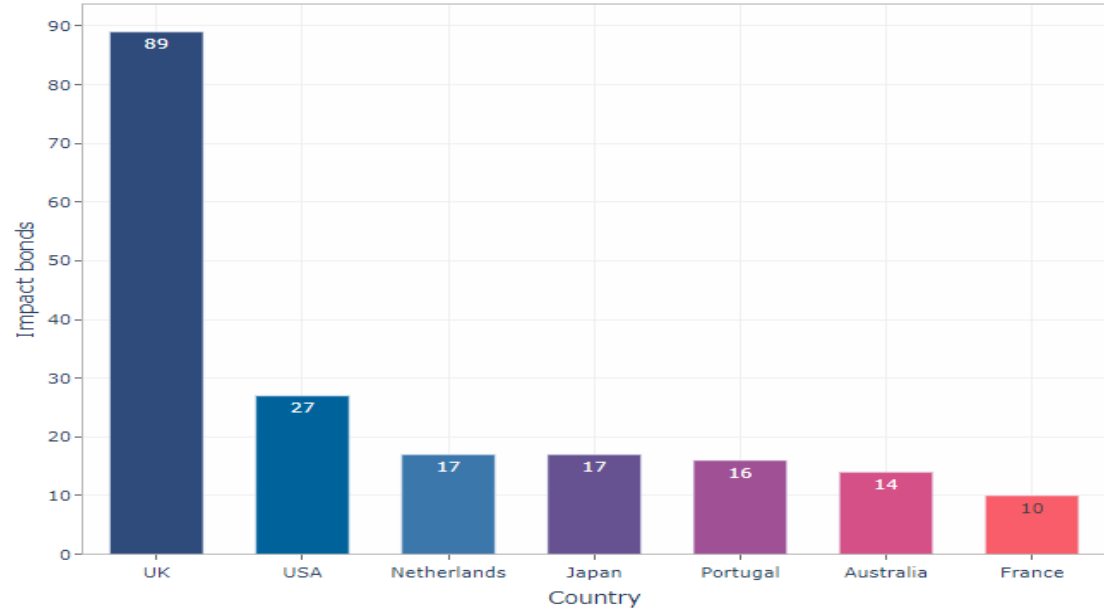


Source: Oxford’s Government Outcome lab-Global SIB database as of May 2022

Social impact bonds are used to build social infrastructure, including public healthcare, educational institutes, housing for the poor, etc. Being in the first layer of contact with the citizens and thus more aware of the social infrastructure requirements, municipalities can make the best use of these funds. They can get resources from generous businessmen, Non-government organizations (NGOs), charitable trusts, and other sources who, in turn, benefit from the reputational gains. In this regard, the decision by the Indian government to be the first country to mandate Corporate Social Responsibility (CSR) legally is appreciable. Under this, companies above a certain turnover threshold and profits must spend 2% of their rolling three-year average on

CSR. These contributions can create a large pool of resources available to the governments for funding various projects without adding to their public debt. How judiciously governments exploit this source of funds will remain the big question.

Figure 4.7: Leading impact bond countries (by number of impact bonds)



Source: Oxford’s Government Outcome lab-Global SIB database as of May 2022

Developed economies have been the first movers to explore this source, like all other bonds. As can be seen from the figure below, the UK has the most significant number of impact bonds, followed by the USA. Among the leading countries with social impact bonds, all top 7 countries are well-developed economies. India got its first social impact bond in December 2020. Maharashtra’s Pimpri Chinchwad Municipal Corporation (PCMC) signed an MoU with UNDP India to jointly create India’s first social impact bond wherein PCMC will have to bear the cost only if the targets set in the beginning are delivered while UNDP would be providing technical know-how, training and knowledge from its previous experiences of SIBs. The best benefit of this financing route is that they do not require a considerable amount at the

start of the project. In addition, they will also ensure the timely completion of the project. Today, India has 3 social impact bonds- 2 in the education sector and 1 in the health sector. India has made an enthusiastic start in social impact bond route financing; however, there is still a long way to go.

4.2.6 Bank Loans

Commercial banks have forever been in the business of lending for various projects, including massive expertise in infrastructure lending compared to other institutes. In contrast to bonds, bank loans offer much more flexibility. For instance, if a project needs funds in 3 stages, the bank loan can be scheduled to disburse in phases. This reduces the interest liability as well. If the same task were financed through bonds, the amount would have to be raised in one go, thus mounting the interest payments. Another alternative would be to issue three different bonds at different phases. Due to the flexible nature of bank loans, it is also easier to restructure the repayment schedules in case of delays, halts and cost overruns. This is because there is just one investing entity- a bank whose only motive is to recover the loan with an interest rate. However, when it comes to bonds, firstly, there are multi-investing entities- bondholders are involved. Secondly, these entities may have conflicting interests and thus may add to the delays. Projects funded by bank loans are perceived to be safer due to the continuous monitoring and faster follow-ups by banks, sending apposite signals in the market. Thus, loans from commercial banks are the most widely used mechanism to raise capital for infrastructure development.

Despite several advantages of bank loans, many experts have expressed their dissent towards using them as an instrument to finance infrastructure projects. The main criticism is that it leads to structural imbalances in the banks' balance sheets. This

is because they use short-term or medium-term deposits to essentially finance long-term projects. This leads to an asset-liability mismatch problem for commercial banks. In addition, it also propels twin balance sheet problems, as suggested by former CEA of India Mr Arvind Subramaniam. During the early 2000s, India experienced high growth rates, and positive sentiments prevailed in the market, especially in the infrastructure sector. By the mid-2000s, banks (especially state-run banks) were lending massive amounts to insurance companies. As per the Economic Survey of 2016-17, “The amount of non-food bank credit increased by 100% from 2004-05 to 2008-09”. Due to the easy credit availability, infrastructure companies kept accumulating debt on their books. However, by 2008, the financial crisis had hit the World along with policy paralysis in India. During that tenure of the UPA government, land clearance and other permissions started getting delayed while companies’ repayment obligations kept increasing, making it difficult for them to service their debt. This situation of over-leveraged companies with bad loans saddled public sector banks was called the “Twin Balance Sheet Problem”. These piling bad loans are not healthy for a stable financial system. Thus, while there are added benefits of financing infrastructure projects via bank loans, it comes at a huge cost beyond the interest rates. These benefits and costs should be weighed against each other before deciding upon the source of financing infrastructure.

4.2.7 Syndicated Loans

A syndicated loan refers to a loan wherein several commercial or development banks pool funds to lend in the syndicated bank loan market jointly. The primary bank which underwrites the loan is authorized to collect the fees for making the deal, while if there are two or more banks involved in finalizing the deal (club deal), the fees are shared

among them. Syndications are commonly chosen for large transactions because of the significant exposure of individual lenders. In some cases, even major international banks would be temporarily overextended if required to underwrite these sizeable loans in their own right or be willing to do so, owing to potential cluster risks. (Weber, 2016). Because of the enormous funds involved, an individual bank might not be willing or able to lend for these projects. Syndicated bank loans are thus preferred over bank loans in such situations. They also help in reducing the risk of asset-liability mismatch for the bank. In addition, the credit risk also disperses instead of remaining concentrated on one bank.

It lies in the middle of bonds and bank loans regarding entities involved. For instance, a bond consists of the number of bondholders to be dealt with, while a bank loan's sole lending entity is the bank itself, but in syndicated bank loans, there are a specified number of banks forming a consortium. Due to these multi-entities, syndicated loans have a comprehensive and detailed out contract involving risk-sharing, interest rates, collateral, etc., to avoid disputes. Freeport LNG liquefaction project is an interesting case study of financing through syndicated loans. The project's objective was to make a centre for the liquefaction and transportation of natural gas in Texas's Freeport. The initial phases of the project were financed through other instruments like debt and equity. The third Natural Gas Liquefaction Train, which required a heavy investment of approximately USD 4 billion, was funded through a syndicate of 27 commercial banks over a 7-year construction time period (OECD, 2015).

Debt financing is one of the most suitable options for financing infrastructure development projects. An immense potential is still left unexploited in India because

of an underdeveloped debt market. Steps like increasing the depth of corporate bonds, expanding the participants to include long-term investors, efficient settlement mechanisms, comprehensive enforcement laws, efficient regulatory authority and easy access to credit information are needed to unlock the growth potential of the debt market in India. The local bodies should be able to access these institutions and methods for raising funds for an extended period, usually 25-30 years, to fund the development activities. Debt-financing, when combined with the TIF mechanism of escrowing taxes and charges for debt repayment becomes a robust financing option.

4.3 Equity Financing

Equity is the next most commonly used financial instrument to finance infrastructural projects. It is a way of raising funds in return for an ownership stake and also acts as a leverage against which debt is raised. In the case of a secondary market, the investor may sell off his shares anytime during the project or at completion. In contrast, in cases where the secondary market doesn't exist, the investor receives a share from the proceeds of the sale after the delivery of the asset. In contrast to debt, investing via equity is deemed more risky owing to a number of factors. For instance, while debt entails a legal obligation on the part of the issuer to pay coupon payments at the end of every period end date, equity has no such obligation to pay out dividends. In addition, one crucial deterrent for equity investors has been the lack of exit options. The lack of put-options in unlisted infra companies adds to the risk component of investors, discouraging them from investing, especially in greenfield projects. These high-risk factors make equity much more expensive than debt. The different methods of financing infrastructure projects via equity capital have been listed in this section.

4.3.1 Public-Private Partnership (PPP)

PPP is often regarded as a joint venture wherein a public infrastructure is funded and operated through a collaborative partnership of public sector parties i.e. government and private sector companies. Two or more private sector companies may form a consortium called a particular purpose vehicle (SPV) for building, operating and maintaining the infrastructure asset. Thus, under this arrangement, the Public and Private sectors pool their resources and share their risks through joint investments. It is to be noted that PPP does not mean privatization. Privatization involves the sale of ownership of the asset. This distinction should be specified, or else it may incite opposition from citizens and opposition parties. Since most public infrastructure cannot be privatized, the only way to incorporate private finances and the efficiencies associated with the private sector is via public-private partnership. A similar distinction is required when the private sector party is providing only operational and maintenance services and doesn't involve any capital formation. It is considered as outsourcing and according to many subject experts, should not be included under PPP.

PPPs form a complex network of various parties involved. From the private sector, there are investors, debtors, financial companies, construction companies and other companies responsible for providing operational and maintenance services, while the key players from the public sector can be departments of Central government, state government, Municipal government or any other public sector company. Another implicit player in a PPP contract is the general public, who is the ultimate user of the infrastructure asset. Thus, it becomes a cumbersome task to reconcile and align the interests of all parties involved.

Although the origin of PPP cannot be traced back precisely, the concept of providing public infrastructure using private finances is centuries old. In the 17th century, a number of canals in France were built with private sector funds. In Britain's 18th and early 19th centuries, groups of local magnates formed turnpike trusts which borrowed money from private investors to repair roads or construct bridges and repaid this debt by charging tolls or user-fee (Yescombe and Farquharson 2018). These arrangements were referred to as Concessions. The term “PPP” was first observed in the United States at the beginning of the 20th century. The Philadelphia and Lancaster Turnpike Road in Pennsylvania was initiated in the 1790s. It was followed by a steamboat line connecting New York and New Jersey, and later, most of the cogeneration power plants were provided under private-sector contract arrangements. The late 20th and early 21st century witnessed a rising trend of governments using and encouraging private sector investments in public infrastructure. The mounting public debt and macroeconomic disturbances of the 1970s and 1980s pushed governments towards various PPP arrangements.

Although PPPs were initially developed in first-world nations, they quickly attracted developing countries, too, mainly due to a shortage of funds. PPP provides a fresh source of financing for infrastructure projects, which are particularly significant for the growth and development of developing countries. However, the success of public-private partnerships in developing economies has been constrained by corruption, permission delays, unstable user-fee cash flow streams, etc. Different names in different countries refer to PPPs. For instance, in North America, it is referred to as P3; in Japan and Britain, it is referred to as the Private Finance Initiative (PFI). In Korea, as Private Participation in Infrastructure (PPI), many countries prefer to use the term P-P Partnership or Public Private Partnership for Infrastructure (PPPI) to

avoid confusion with ‘purchasing power parity’. Over the years, most countries have accepted the term PPP.

The lifeline of an infrastructural project involves various phases- (a) project designing, (b) financing, (c) construction, (d) delivery/ownership, and (e) operation/maintenance. Under PPP, some of these are delegated to the Private Sector and the rest are undertaken by the Public Sector. Depending on which phases are delegated or contracted under PPP, there can be a number of arrangements possible. Some of these have been mentioned below.

1. **Design-build or DB:** Under this arrangement, the private sector is responsible for designing and building the infrastructure as per the specifications given by the public sector at a fixed price mentioned at the beginning of the project.
2. **Design-build-finance-operate or DBFO:** Under this, the onus of designing, financing, building and operating the infrastructure asset is on the private sector. The private sector company also bears the operation and maintenance costs. It is also referred to as Design-Construct-Manage-Finance (DCMF) or Design-Build-Finance-Maintain (DBFM)
3. **Build-Own-Operate or BOO:** The private party finances, builds, owns and operates the infrastructure asset perpetually. The ownership is not reverted to the public sector but is retained by the private sector company. The public sector states the constraints or reservations at the project's beginning.
4. **Build-Lease-Operate-Transfer or BLOT:** Under this agreement, the private-sector company designs, finances, builds and operates the asset. After the construction phase ends, the ownership is transferred to the public sector. However, the private company continues to operate the asset on lease during the lease period. It is also called

as Build-Transfer-Operate (BTO) or Build-Transfer-Lease (BTL) or Build-Lease-Transfer (BLT)

5. **Build-own-operate-transfer or BOOT:** In this arrangement, privatization is granted for financing, design, building and operating phases of the infrastructure project. In addition, the private company may also get the right to charge user fees while operating the infrastructure for a specific time, after which the ownership is transferred to the public sector. It is also called as Build-Operate-Transfer (BOT).

6. **Financing only:** The public sector may partner up with a private sector company only to provide finances at a given interest rate. Financial Services Companies are the critical players in the private sector here.

Evolution of PPP in India

Until the early 1990s, governments had a monopoly in infrastructure provision, with little private sector involvement. However, due to tightening fiscal space and dissatisfaction with the previous methods of providing infrastructure, the government needed to explore different financing and provision options. With the onset of liberalization and globalization, more players were encouraged to participate in the infrastructure industry. Several initiatives have been taken to bolster current infrastructure and create new projects with private funding. Since the initiation of the reform process, measures were introduced to strengthen the existing infrastructure and to develop new projects with private participation. The private sector participation in infrastructure building has broadly taken place through the corporatisation of existing PSUs (e.g. GAIL, ONGC, IOC, etc), greenfield investment for the development of new projects, PPP in the form of BOT or BOOT model in the road sector and concession agreements with the private sector such as rehabilitate, operate, and

transfer; or rehabilitate, lease or rent and transfer; or build, rehabilitate, operate, and transfer basis.

Since 2019-20, India's government has emphasised infrastructure and has taken various steps to highlight its intent. One such step is the National Infrastructure pipeline (NIP) announcement in December 2019. NIP envisages investment of Rs. 111 lakh crores over five years (2020-25), with an annual average investment of Rs. 22 lakh crore, a significant step-up of ~2.5 times vis-à-vis historical levels. PPPs are a key tool for accelerating the development of India's infrastructure vision and narrowing the infrastructure development gap envisioned by NIP. India has had over 1800 PPP contracts worth approximately Rs 25 lakh crore (Source: pppindia.gov.in). In 2020-21, 125 PPP projects—with a total cost of Rs 1,72,314 crore—were appraised by the Vertical, including 123 Central Government projects and two State projects (Table 2). As evident, most of the PPP projects in India are concentrated in Transportation, particularly Roads and have recently been successful in the Ports, Airports and Power sectors. The scope of PPP needs to be expanded to include social infrastructure like schools, hospitals, and prisons. In addition, local governments need to participate in PPP based projects proactively.

Table 4.2: Details of Projects Appraised

Projects Appraised	Number of Projects	Total Cost (in Rs. Cr)
Roads	69	63,279
Ports	12	3,359
Eco-Tourism	10	2,232

Silos	1	401
Petroleum Reserves	4	27,728
Ropeway	1	996
Telecom	9	29,199
Railway Stations	6	7,600
Railways Passenger Trains	12	30,033
Metro	1	7,420
Total	125	1,72,314

Source: <https://www.niti.gov.in/verticals/ppp>

4.3.2 Equity Infrastructure Index

Investors participate in infrastructure financing either directly or indirectly. When investors invest now in an infrastructural asset by acquiring a stake in the asset, it is said to be direct participation. In contrast, if they invest in stocks of an infra company or buy an equity infrastructure index, it is considered indirect participation. An equity infrastructure index is a statistical indicator that reflects the changes in the market value of certain listed infrastructure companies that represent the entire infrastructure industry. This has two added benefits. Firstly, it safeguards the investors regarding liquidity and tradability, thus guaranteeing a certain minimum rate of return. Secondly,

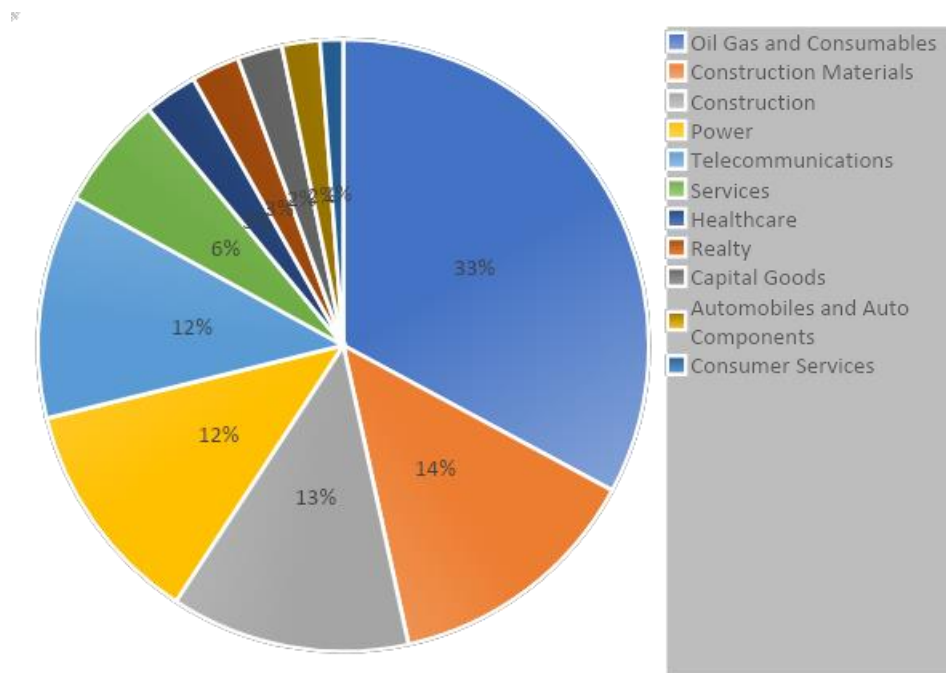
it helps mitigate the risk by diversifying the exposure into subsectors like- transportation, energy, healthcare, etc.

S&P Global Infrastructure Index (S&P GII) was launched on 22nd February 2007 by Standard and Poor's. It tracks 75 infra-related companies around the world. These companies are chosen based on market capitalization, tradability liquidity, etc. Of these 75 companies, only 14 were from developing countries like China, Brazil, Chile, Mexico and South Korea. It is diversified over various sub-sectors like energy, transportation and utilities, including gas, water etc.

FTSE Infrastructure Index tracks and indicates the performance of infrastructure and infrastructure-related listed equity securities worldwide. It is based on a couple of indexes, including companies specific to "core" infrastructure activities and those involved in both core infrastructure and infrastructure-related activities. FTSE Infrastructure Indexes include companies that derive a minimum of 20% of their revenue from either the core infrastructure activities or the infrastructure-related activities, and a 10% cap is placed on the weight of each infrastructure-related activity.

The Nifty Infrastructure Index is an initiative by the Indian markets to tap those potential investors who wish to invest indirectly in infrastructure. It tracks the behaviour and performance of a maximum of 30 companies listed on the National Stock Exchange (NSE). It is computed using the free float market capitalization method, wherein the index level reflects the total free float market value of all the stocks in the index relative to a particular base market capitalization value. It is much more diversified, comprising sectors like Telecom, Power, Port, Roads etc.

Figure 4.8: Sectoral distribution of Nifty Infrastructure Index



Source: www.niftyindices.com

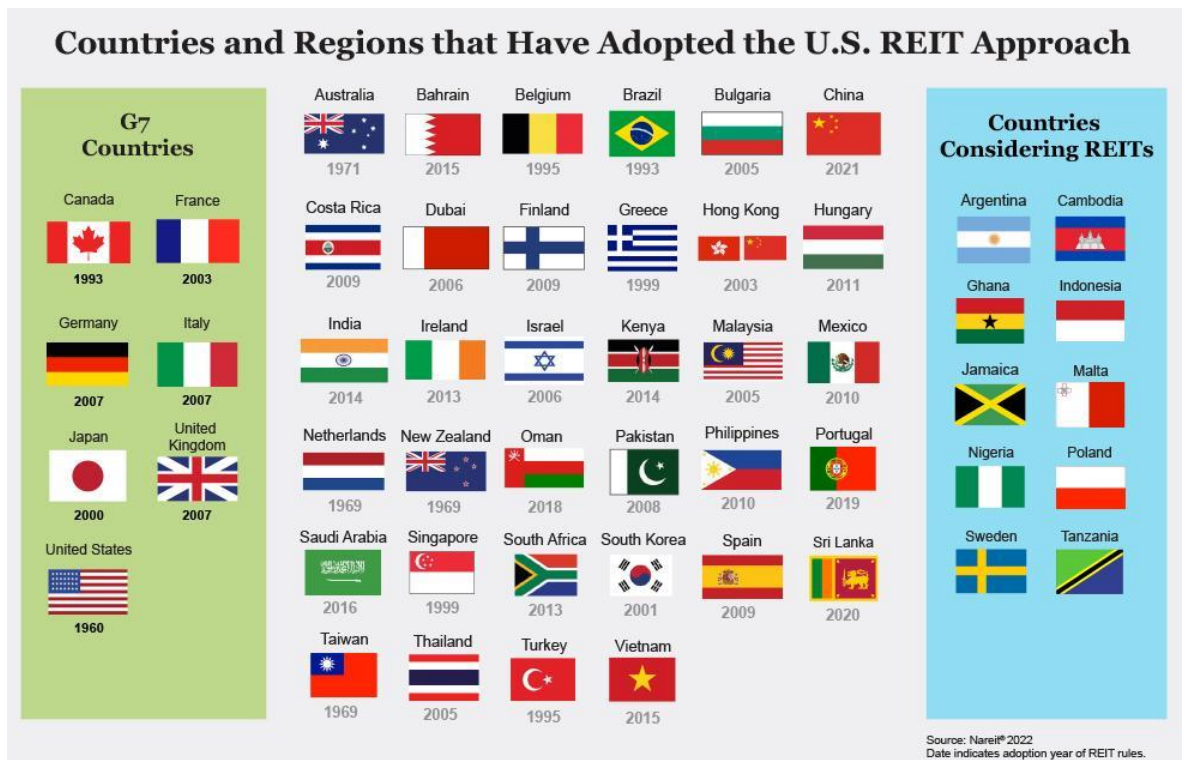
4.3.3 Real Estate Investment Trust

A real estate investment trust, commonly referred to as ReIT, is a special investment company that owns, operates, or finances income-generating commercial real estate. ReITs provide fractional ownership to their investors- institutional and individual. These real estate assets are then rented out, which forms the revenue streams for investors, thus ensuring them secured dividend-based income. ReITs allow small retail investors, who cannot purchase upfront, to invest in real estate. ReITs provide an additional advantage over real estate by offering high liquidity. It provides an easy and faster exit mechanism to its investors, while investments in real estate mean locking up funds for a longer and unexpected duration. ReITs thus allow anyone to invest in portfolios of real estate assets the same way they invest in other industries, by purchasing individual company stock or a mutual fund or exchange-traded fund (ETF).

The stockholders of a ReIT earn a share of the income produced through real estate investment without having to go out and buy, manage or finance the property.

In principle, there are two types of ReITs- Equity ReITs and Mortgage ReITs. In Equity ReITs, they acquire, construct, and operate the commercial income generating real estate. The revenues obtained from renting it out constitute the income of the ReIT which is used to pay out dividends to the shareholders further. Mortgage ReITs, also called mReITs, invest in mortgages or mortgage-backed securities and do not directly acquire real estate. For example, ReIT-A raises funds and buys a shopping mall building, which is rented out. Thus, A has the ownership and receives rent from its tenant. On the other hand, consider ReIT-B, which raises funds and lends it to a real estate developer who buys commercial property. Thus, B does not directly own the property but receives interest on the loan lent to the real estate developer.

The origin of ReITs dates back to 1960 in the United States under the REIT Act Policy. Initially, the growth of ReITs was slow and minimal. By 1968, investors started realizing the latent opportunities in these funds. It was then spread to the rest of the World in a phased manner. Some initial adopters of ReIT are Australia, Canada, New Zealand etc. It was only in the early 2000s when Asia was introduced to this new financing option. In September 2014, the Securities Exchange Board of India notified REIT regulations in India. REITs are thus registered and regulated under the purview of SEBI. A picture below lists the countries that have adopted ReITs since 1960. Given these funds' immense scope and success, more countries are eyeing the adoption of ReITs.



Numerous benefits of REITs are the reason for their growing popularity. As mentioned above, REITs increase participation in the real estate market. It also provides a secured income stream to the investor, accompanied by the inflation hedging characteristic. Since they are listed, they offer a standardized trading mechanism and, thus, easy and fast exit. REIT also reduces the debt rate because it can access public capital. Besides, REITs have an average debt level of 40% of their market value, whereas the real estate industry usually has a debt level of 80% (Scherrer, 2016). In addition, it has expanded the scope of foreign investment in real estate by relaxing the antecedent stringent guidelines. The return to foreign investors is *dividend yield + currency appreciation*. REITs also aid investors looking for portfolio diversification because of their distinct characteristics. In India, investors are relieved of the double income taxation because of tax transparency. Tax transparency means that the Indian REITs do not have to pay corporate tax on their net income if their dividend distribution pay-out to the REITs shareholders is 90% of net income.

Also, due to the mandatory disclosure requirements of SEBI, ReITs will help bring transparency to the real estate market. Given the immense scope and benefits of ReITS, the Indian market must harness this financial instrument for project financing.

4.3.4 Infrastructure Investment Trust

Infrastructure Investment Trust or InvIT is a Collective Investment Scheme similar to a mutual fund which enables direct investment of money from individual and institutional investors in infrastructure projects to earn a small portion of the income as a return. Conceptually, it is the same as ReITs, except that in InvITs, the fund raised is used to finance infrastructure projects, while in ReITs, the fund is diverted towards commercial real estate. InvITs are a crucial discovery for countries which do not want to leave any opportunity to increase their participation in the already-starved infrastructure sector. By pooling funds from many small investors, InvITs ensure a regular flow of funds into infrastructure development. InvIT enables investors to make direct investments and acquire partial ownership in infrastructure projects.

Additionally, because InvITs are managed by experts, investors receive the benefits of ownership without the headaches associated with owning or maintaining infrastructure projects on their own. The revenue generated from these infrastructure projects ensures a long-term stable income stream to the investors through dividends or interests. In addition, InvITs enjoy the benefits of ‘pass through’ treatment wherein the taxes are levied only on the earnings of InvITs received by investors. Thus, it helps avoid the double burden of taxation at the InvITs and investor levels.

Parties involved in InvITs

- **The sponsor** is responsible for setting up the trust and appointing the trustees. He is required to hold a minimum of 15% of the shares issued by the trust for a lock-in period of 3 years from the date of issue.
- **Trustee** holds assets of InvITs for the benefit of shareholders. In India, they are also responsible for ensuring compliance with SEBI guidelines.
- **Investment Manager** makes the key investment decisions and are responsible for managing the assets and investments of InvITs.
- **Project Manager** is the key entity responsible for ensuring the proper execution of the project and is required to monitor its progress time to time closely.

Realizing the need for an alternative infrastructure financing mechanism, SEBI introduced InvITs in 2014 along with ReITs. Thus, all InvITs in India are regulated by the SEBI (Infrastructure Investment Trusts) Regulations, 2014. SEBI has provided detailed guidelines for the public issue of units' InvITs vide its circular CIR/IMD/DF/55/2016 dated 11TH May 2016. An InvIT is designed as a tiered structure with the Sponsor setting up the InvIT, which invests in eligible infrastructure projects directly or via Special purpose vehicles (SPVs). In India, InvITs are allowed to invest in completed and under-construction projects. However, both have to be listed. Currently, there are 5 InvITs, of which two are public-listed and three are privately held.

Consider an example of IRB InvIT Fund wherein investors must invest Rs 3,32,500 with a lot size of 5000 units @ Rs 65.5.

We take the following assumptions to calculate the per unit returns to investors at the end of 3rd and 4th Year.

1. Interest distribution of Rs 12 per unit p.a.
2. Tax on unit holder @30%
3. Capital appreciation to Rs 71 per unit at the end of 3rd and 4th year.

Table 4.3 Return to Investors

Year (t)	Interest received at the end of t year	Tax on interest income (Rs)	Net income (Rs)	Capital appreciation (Rs)	Capital gain tax (Rs)	Net Return (Rs)	Net Return (%)
t=3	36	10.8	25.2	4.5	0.675	29.025	44
t=4	48	14.4	33.6	4.5	-	38.100	57

As per the SEBI guidelines, interest income is taxable at the unit holder level. In addition, short-term capital gains wherein shares are held for less than 36 months are taxable, while long-term capital gains are exempted from taxation at the shareholder level. Thus, the return to shareholders at the end of 3rd year is 44%, and at the end of the 4th year, it is 57%. Hence, InvITs have become an attractive investment option for investors.

4.4 Mezzanine Financing

All the economies today have already exhausted the potential of conventional financial instruments. Most governments are burdened with rising fiscal deficits, leading to low fiscal space for infrastructure financing. Banks already suffer from dire asset-liability

mismatches, leaving them with little surplus to be lent out as loans or debt. However, infrastructure being the key growth driver cannot be ignored. Thus, it is imperative to develop and explore new avenues of financing. One such innovation is Mezzanine financing instruments. Mezzanine funding comes with a blend of two conventional sources of financing- debt and equity. It has interconnecting features of both debt and equity. Thus, it can be said that Mezzanine finance instruments have the best of both worlds in terms of having advantageous characteristics of both Debt and Equity. Various studies have proved the edge of mezzanine financing over traditional sources.

Some commonly used mezzanine financing instruments include silent participation, convertible bonds, subordinated loans, preferred stocks, participating loans, participating bonds, etc. For classification, we can classify them based on D-E tendency and traceability. Based on the D-E tendency, if an instrument has relatively higher Equity-like features, it can be classified under Equity mezzanine. At the same time, if it shows relatively more Debt-like characteristics, it can be classified under Debt mezzanine. The debt mezzanine includes Participating loans, Participating bonds, subordinated loans, subordinated bonds, convertible bonds and bonds with warrants, while Silent participation and Preferred stocks come under the Equity mezzanine.

Figure 4.9: Types of Instruments

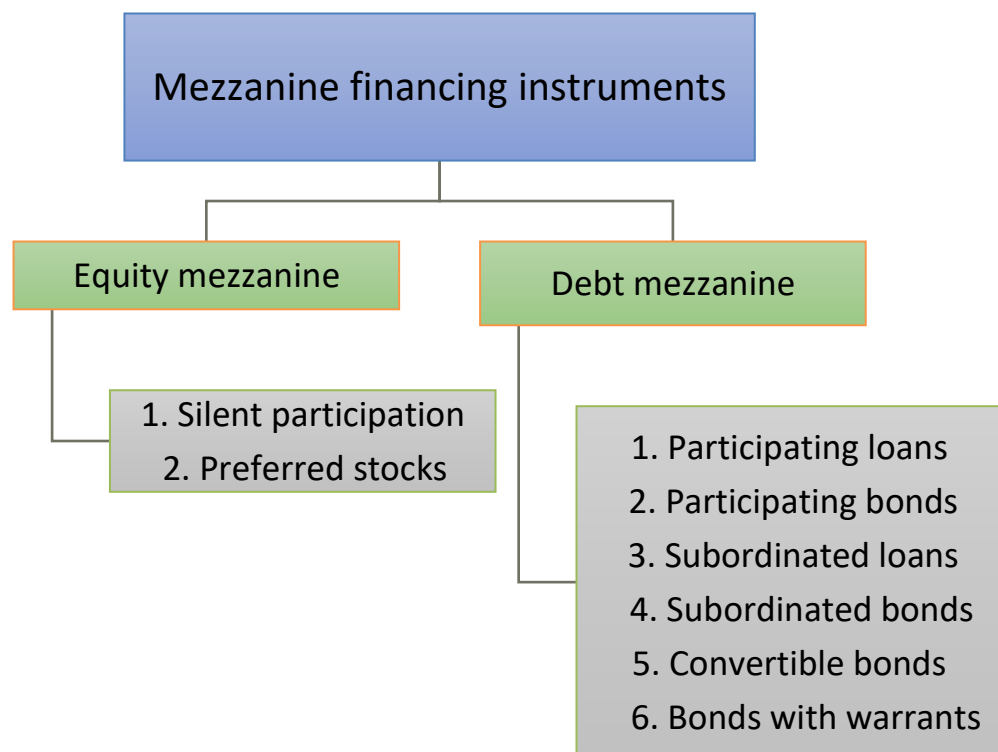
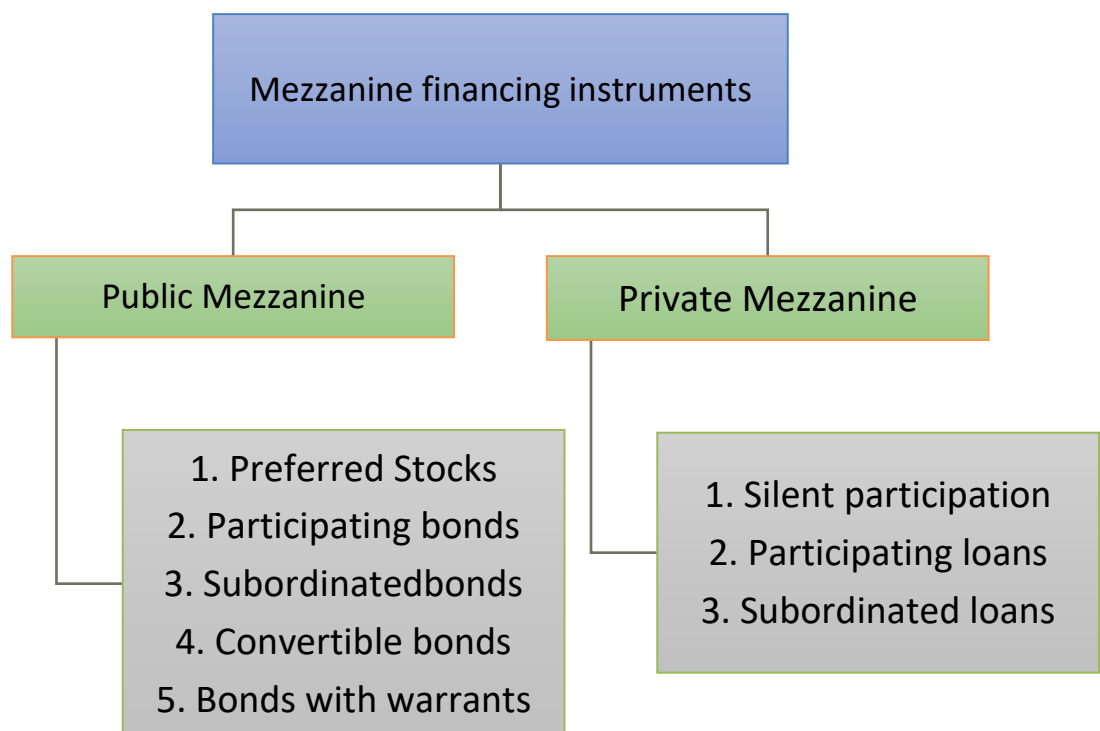


Figure 4.10: Types of Instruments



Similarly, based on tradability, mezzanine financing instruments can be classified as Public Mezzanine and Private Mezzanine. Private mezzanine includes those mezzanine financing instruments that do not enter the open capital market, i.e., those that are not publicly tradable, and public mezzanine consists of those that are publicly tradable on the capital market. Different types of mezzanine financing options have been discussed below briefly.

1. Silent Participation: A silent partnership is like a limited partnership in the sense that though they share the profits and losses of the company, they are not involved in operating or managing the business. The terms and conditions relating to the repayment date are contracted in the agreement, and the company must meet its obligation within the stipulated time frame. It does not include voting rights as typical debt instruments. These partners usually remain hidden, and thus, the agreement is not tradable.
2. Preferred stocks: As the name suggests, it confers priority rights to shareholders in terms of dividend distribution and liquidation distribution. These investors are among the first recipients of dividends, which are fixed in advance. In addition, in case of liquidation, they have a higher claim in the company's assets than other shareholders. However, they are not involved in management and are deprived of voting rights. They often come with a pre-determined maturity date.
3. Participating loans: They are like a special kind of bank loan where the interest payment is not fixed but depends on the company's performance, a typical feature of equity. However, they do not confer any ownership rights in the company to their investors. In the event of liquidation, like other creditors, they get preference over company shareholders.

4. Participating bonds: Analogous to the Participating loans, the returns on Participating bonds are also tied to the company's economic performance. However, the percentage share is fixed at the beginning itself. They are placed the same as creditors in the event of winding up.
5. Subordinated loans: Unlike conventional loans, the lenders of these loans are entitled towards settlement only after the dues of senior debt and other creditors are settled. The primary feature of being placed secondary to other creditors is what sets them into the mezzanine financing category. Because of this characteristic, they are deemed more risky than other debt instruments.
6. Subordinated bonds: These represent corporate bonds connected with the right to the settlement of liabilities (redemption of the nominal value and disbursement of the adequate yield) in the case of winding up only after settlement of liabilities towards any other creditors, except liabilities with the same condition of subordination.
7. Convertible bonds: These are essentially like bonds with the added advantage of converting into equity. The purchasing option is provided to the bondholder in the beginning, to be exercised at a specified date. It carries two benefits: first, it attracts investors by offering them a rate of return which is higher than that of senior debt and second, the balance sheet of the company, is treated like quaise-equity, which makes it easier to increase the component of the usual bank or financial institution loans.
8. Bonds with warrants: These are essentially bonds accompanied by the additional possibility of purchasing freshly issued company shares. The bondholder is provided with the purchase option with the warrant, which can be traded as an integral part of the bonds with warrant, or it can be separated from the bond with warrants and traded separately (Choudhary, 2010). If the investor decides to use the warrant, the existing debt does not cease to exist, as in the case of convertible bonds.

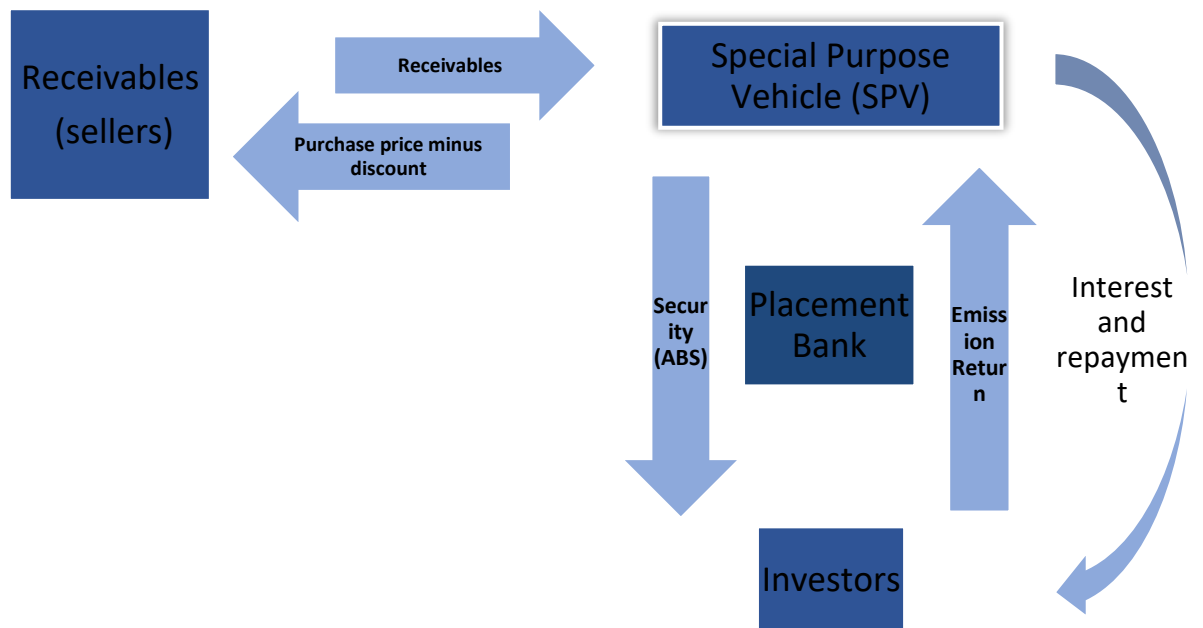
Although Mezzanine financing was first used in the 1970s, India continues to utilise this avenue in the nascent stage. There are certain hurdles concerning this new source of funding. First, a barrier to using mezzanine finance is a shortage of sufficiently many diverse infrastructure projects. When projects and financiers are few and contemporary infrastructure financing is still early, funding institutions prefer to choose conventional loans over hybrid instruments. Second, foreign investors' use of mezzanine finance is restricted by interest rate limitations on external commercial borrowing (ECBs). The interest rate ceilings do not include any provisions for valuing various debt or quasi-equity instruments proportionally to the risks attached. Third, mezzanine finance is hampered by regulatory standards and premium pricing. Senior debt and subordinated debt are not treated differently under the criteria for provisioning against non-performing assets (NPA) despite the latter's quasi-equity status. The 'premium' requested for subordinated debt over senior debt by various risk-averse lenders is also viewed by sponsors with projects on the edge of profitability as being far too exorbitant, enough to render a potentially successful business unviable. As things stand now, most domestic lenders (banks and FIs) would rather risk significant sums of money to make a few hundred basis points more by providing senior debt to "bankable" projects with a lower return. Lastly, there is a shortage of experts in the infrastructure financing domain who have the knowledge and expertise to use such instruments, as was evident in the study conducted in the delphi method, highlighted in the previous chapter.

It is imperative to find solutions to the challenges mentioned above to harness the true potential of Mezzanine financing. Given the risk aversion and the relatively inexperienced financial intermediaries in India in infrastructure financing, mezzanine financing can potentially play an important role in meeting funding gaps.

4.5 Asset-Backed Securities (ABS)

Asset-backed security (ABS) is a type of financial investment collateralized by an underlying pool of similar assets. Such pool generates a sustainable cash flow from debt, such as loans, leases, credit card balances, or receivables. They typically seek to provide additional liquidity by the sale of current assets. In addition, it helps the company transfer the credit and other risks connected to the pool of securitized assets with the aid of a securitization transaction. It also assists the company in churning its portfolio to make room for new asset creation while coming at a better price than that through a debt-financing route. A special-purpose vehicle (SPV) purchases these illiquid assets, bundles them, and refinances them on the credit or money market by issuing securities collateralized by the purchased assets. Thus, ABSs securitizes the underlying receivables' future cash flows. The seller receives a direct cash infusion minus a discount when the assets are sold. At the same time, the buyer obtains a security with broad risk diversification and typically a guaranteed minimum return. The structures of ABS are very flexible, making these finance instruments much more efficient than the traditional sources of finance- loans, equity shares, etc. Typically, any asset with a regular cash flow can be securitized.

Figure 4.11: Working of Asset-Backed Securities



The suitability of securitization for infrastructure funding stems from the fact that cash flows are stable and concession-driven and also because the Government partly guarantees ultimate credit risk (central to the concept of securitization). Securitization plays a significant role, particularly when the project has started generating revenue streams. Infrastructure financing will benefit from securitization because it enables financing organizations with choked sector exposures to continue funding specific sectors. It also allows the issuance of marketable securities, which helps mobilise a significantly more significant number of investors to participate. Long-term financing, a sine quo non for most infrastructure projects, is more feasible and less expensive in securitized structures than traditional loans. Thus, by converting debt into tradable financial instruments, securitization provides an opportunity for efficient reallocation of sector-specific risks among a more diversified set of players,

and by providing an easy exit option, it redirects surpluses that have hitherto gone untapped to the economy's capital-deficient sector- infrastructure.

Securitization is not a new idea in India. CRISIL assessed the first securitization programme in India when Citibank packaged a group of auto loans and sold the paper to GIC Mutual Fund in 1991. Since then, asset securitization has become a recognized method for corporations to raise capital, and many deals involving highly regarded firms have occurred nationwide. The Reserve Bank of India (RBI) has identified commercial FIs, PSUs, Corporates, Government bodies, Mutual Funds, Pension Funds, etc., as the major players in the securitization market. Examples of securitization in some key Indian infrastructure sectors-

1. Power sector: State electricity boards (SEBs) have substantial financial exposure to several public sector units (PSUs), some of which are sub-standard loans since numerous SEBs do not have sufficient solvency to satisfy obligations by the due date.
2. Roads: Toll collections and concessions are anticipated to generate income for private road construction. These ventures do, however, include a variety of hazards. Securitization could combine different levels of risk, considering the many levels of risk enabling financial closure at the lowest possible cost of capital.
3. Urban Infrastructure: Urban infrastructure has been the priority of every developing country with a fast pace of urbanization. It includes opportunities in housing, water supply, sewage facilities, garbage disposal, etc.

Thus, securitization in India has vast potential, with its ultimate condition being that the asset proposed to be securitized is income-bearing. In addition, its scope and success depend on how successful India is in addressing the significant challenges of

missing legislation and simplified foreclosure norms. As discussed in the previous chapter, one of the significant challenges in raising capital from the market is the assurance of stable revenue streams that will ensure repayment. Similarly, the success of asset backed securities in India will depend on the sources of compensation linked with an infrastructure development projects. The next chapter talks about the tax increment financing approach and the value-capture financing instruments, which, can ensure guaranteed revenue streams from the project. This will not only help raise revenue from the market but also help smooth repayments and help cover the operations and maintenance expenditures in the long term. It can also be used to fund other infrastructure projects. The next chapter discusses a couple of case studies and suggests alternative methods for the projects using asset-backed securities and other financing options and combining them with TIF and VCF for repayment.

Chapter 5

Addressing Infrastructure Crisis in Indian Cities

A Comprehensive Economic Model for Value Increment

Financing

5.1 Urban Infrastructure Crisis

India is among the fastest-urbanizing countries in the world. The pace of migration to cities and the natural process of population growth has led to overcrowding in many cities. The shortage of affordable housing to accommodate the rising population has led to a proliferation of slums, especially on the peripheries of large cities. The shortage of safe drinking water and lack of sanitation, drainage facilities, and other civic amenities have led to severe health and hygiene issues in the cities. Lack of street lights, absence of local public transportation, no open spaces, unplanned densities, haphazard extension of city boundaries and lack of disaster preparedness are among the prominent issues plaguing India's urbanization. However, the importance of cities is widely recognized. Various studies have shown a direct connection between urbanization and GDP growth. Cities are thus recognized as the engines of growth and wealth creation for a country. Hence, the development of cities is of utmost importance. Infrastructure development for growth, public health and pandemic resilience is a must. This chapter draws a summary from earlier chapters and suggests a comprehensive economic model for value capture financing of urban Infrastructure in India – escrowing value increments due to (i) enhanced infrastructure accessibility and (ii) complementary policies to enhance such increments, e.g. land use zoning

changes, etc. It goes beyond TIF and calls for value increment financing partnerships between central, state and municipal governments and the private sector.

To sustain cities and enable them to contribute to growth, infrastructure development must happen much faster than in the past to ensure that the system in cities does not collapse in the face of disasters, including pandemics like Covid 19. The shortage of Infrastructure in India has been studied in detail by various committees, and many published reports have highlighted it. Indian cities are faced with a massive backlog of current and growth needs of infrastructure. Despite this, the central and state governments have not taken infrastructure development with long-range socio-economic objectives seriously until recently. Urban local bodies, with no buoyant financial resources other than property tax, are in deep fiscal stress and unable to build lumpy social overheads needed for growth, public health, poverty reduction, and disaster preparedness, including prevention of infectious diseases.

In the last few years, the central government has introduced several initiatives to encourage infrastructure development and has significantly increased capital expenditure allocation. The study done as a part of this research using the Delphi method has shown that there is no dearth of money in the economy. Many private players and foreign investors are willing to invest in the Indian infrastructure sector, but due to various reasons discussed in Chapter 3, they cannot invest in most of the projects. Administrative hurdles, poor project reports, inefficient estimates of costs and revenues, comparatively low returns in urban projects, and risks of getting involved in litigation are a few reasons that the investors have highlighted. Also, it has been noted that despite the availability of several financing tools and funding agencies, the majority of the urban infrastructure development projects are still undertaken using the

funding of the central government or state government and loans from banks. The government agencies are unwilling to explore innovative tools, and the ULBs do not have the knowledge and expertise required to use other financing methods. In this regard, Chapter 4 explores various debt and equity tools available in the country for financing infrastructure projects. The chapter also discusses asset-backed securities, mezzanine financing and various other instruments that can be used to finance infrastructure. However, while raising finances is one end of the process, ensuring that the repayments are made on time, and the project raises sufficient revenues to cover the expenses undertaken during the construction phase and repay debt is equally important. The project report prepared by the developing agency must focus on all aspects of raising revenues from the project. In India, it has been observed that user charges are seen as the sole mechanism of raising finances from the project. While a development project leads to value creation in different sectors and for various stakeholders, the developing agency hardly focuses on it. Hence, it is very important that all avenues of value creation are efficiently identified, and the windfall gains to the stakeholders are captured to ensure sufficient revenue streams for a sustainable infrastructure financing mechanism. In this context, the economics of urban infrastructure must be understood and tapped to adopt a comprehensive value increment financing approach.

Infrastructure development plays the role of a bridge that connects agglomeration and networking externality benefits from cities with economic growth. If the bridge is not built soon, the country will lose on the potential opportunities available from urbanization. As India plans to be a \$5 trillion economy and the third largest economy in the world in the next five years, infrastructure development in urban areas will play a key role in this mission. Hence, all challenges coming up must

be addressed as soon as possible. As discussed, all financing mechanisms, either debt or equity or any combination of the two, including municipal bonds, etc., depend on direct revenue streams and other indirect benefits that can be converted into revenues from the infrastructure project developed. It is important to highlight that the success of a project is dependent not only on the incremental taxes but also on all other values generated, be it accessibility rent, land value increment, real estate development with favourable zoning changes, etc.

In the previous chapters, we discussed the TIF model that has been used in various countries, including the United States and Europe, and has proved successful. TIF has also been experimented with in India but has yet to deliver the desired results. However, the TIF model focuses on incremental property taxes. An extension of TIF covers land values captured by specific land-related taxes like land value tax (LVT) and land value increment taxes (LVIT) and are then escrowed by an SPV to repay the capital raised earlier for developing the infrastructure. The next section highlights the issues with experimenting with TIF in India in its current form and why it may not succeed if the model is not broadened based on sound economic principles.

5.2 Broadening Tax Increment Financing

The tax increment financing (TIF) model started in a city in the United States and spread across the country as the only financing option to take up new projects, and then it spread to other countries over time. The principle of earmarking incremental revenues and escrowing them to repay the debt to finance the infrastructure is recognized as an economically sound and practical option for cash-starved municipalities. Using future revenues to fund a current infrastructure project is an

attractive proposition for policymakers. The property values of beneficiaries of TIF rise manifold, and hence, they may not hesitate to pay by way of incremental taxes. Thus, TIF is considered a win-win model for the municipal administrators and the beneficiaries who take the burden of infrastructure project financing while also enjoying incremental gains in their property values and other benefits from the infrastructure developed. Both policymakers and the residents gain in the infrastructure development process using the TIF model. Most of the studies to evaluate the impact of TIF have shown that there has been an incremental growth in property taxes in the TIF jurisdiction. The growth rate of property taxes in the TIF-designated areas has been higher than in the nearby areas. The studies have indicated that infrastructure development leads to a rise in property values that lead to incremental revenues, much more than the cost of the infrastructure project. Thus, TIF is recognized as a successful model for urban infrastructure development.

However, a few studies are against the belief that infrastructure development leads to a rise in land/ property values in the TIF jurisdiction. The studies have proved that no additional taxes were generated over and above the normal growth rate of property taxes, and hence TIF district provided no additional benefits. To counter these studies, the supporters of TIF have highlighted that the TIF model may fail in cities with high land and property values or in blight areas as they have no scope of growth. Hence, they claim that TIF is a success only in cities where there is a scope for property values to rise or where the property values are already rising and TIF may boost the growth. In short, the success and failure of the TIF model depend entirely on the movement of the property values. Thus, it becomes important to study whether the TIF model should limit itself to property taxes or increase its ambit to cover more taxes and charges generated because of the infrastructure development. In the second

chapter, we studied the idea of TIF, discussed a few prominent TIF models, and highlighted the successful case studies to understand its implementation.

Various researchers have attempted to create different models of TIF based on their understanding based on studying the success and impacts of TIF, a few of which were discussed in the second chapter. However, one thing common in all these models is that their study revolves around house values/ property values or rental values that determine the houses' prices. The studies do accept that implementing an infrastructure development project is accompanied by agglomeration and accessibility benefits and is bound to increase economic activity. Still, they fail to include other variables to capture this incremental economic activity. The movement of the property values in the pre-and post-TIF eras and the difference in the two periods determine the success and viability of the TIF projects. These benefits are compared with the cost of the TIF project to take the final decision on implementing TIF in the given area/district. These models fail to capture the impact of infrastructure development on the entire region or the wider economy. They ignore the wider economic benefits of urban infrastructure.

As discussed in the previous chapters, a major urban infrastructure development project creates incremental values and benefits in multiple ways. The values generated must be captured in order to strengthen the existing TIF model. The restructured TIF model focusses on the whole range of values generated rather than only the property tax element. It can thus be called the Value Increment Financing or VIF models. To understand this better, it is important first to understand the value created by the development project.

5.2.1 Infrastructure as an Asset

When we talk about infrastructure, we must understand that infrastructure systems include bigger projects like roads, railways, airports, and waterways, along with basic utilities like electricity, gas, water supply, sanitation, drainage, open space amenities, etc. All these services are looked at as public utility services that the government has provided for the public. They help in the movement of people and goods and provide facilities to both households and businesses. These are usually accessible to all and rarely provided by private entities as they involve huge costs and have a long gestation period. However, it is important that we move ahead from the narrow idea of 'infrastructure as a public good' to 'infrastructure as an asset'.

Any infrastructure created that passed the benefit-cost test has the potential to generate sufficient revenues required, both for revenue and capital expenditure. By using the revenue generated by levying user charges on people using these facilities, the development authority can cover the revenue expenditure related to maintenance and service of the facilities. Along with this, the infrastructure developed must be used as an asset to raise capital for non-recurrent expenditure, including set-up cost. By using the infrastructure as an asset, it is possible to raise capital, either for the repayment of the project's cost, or it can be used for upcoming development plans or both. Thus, using infrastructure as an asset can help generate long-term finances that can continuously help develop new infrastructure projects. Recently, infrastructure has been presented as a new asset class that can be used in the financial market or can be leased/sold to raise revenues for capital projects.

In the last few years, the Union Budget has also focussed on asset monetization, where the existing infrastructure is used to create new sources of revenue for the government and its entities by unlocking the economic value of the unutilized or underutilized assets. Asset monetization is being used actively by the Government of India, where infrastructure projects have been leased out to the private players for long periods ranging from 20-50 years and sometimes even longer. In these agreements, the private players are responsible for maintaining and improving the infrastructure project. The government gets an upfront payment from the private partner that takes up the project. Similarly, through the asset monetization pipeline, the government has decided to sell off a few infrastructure projects or "assets" that are incurring losses for the government or are not being used optimally by government agencies. In both cases, the government uses 'Infrastructure as an Asset' to generate revenues without any budget burden and can use it for future development projects.

Apart from monetization, 'infrastructure,' which is discussed as an asset, can be used to borrow money for developing other infrastructure projects. It can be used in the equity market, bond market, or to raise resources using 'Asset-Backed Securities' (ABS). In chapter 4, we have discussed infrastructure equity funds and equity indices and how they can be used to generate revenues for the long term for developing infrastructure projects. Similarly, in the case of ABS, the existing infrastructure can be pooled together, called 'securitization, ' and used to raise capital for the upcoming infrastructure projects. ABS are attractive to the new investors as they guarantee a steady stream of interest. ABS have also been discussed extensively in the last chapter. Infrastructure bonds have also been used extensively in many countries. Even India has experimented with infrastructure bonds to some extent, but they are yet to be seen as an attractive form of investment. Infrastructure bonds are usually earmarked for a

specific infrastructure project. Using assets as a mortgage makes raising capital in the long run possible. Unlike equity funds, infrastructure bonds are relatively safer for investors as they guarantee regular interest payments. While all these instruments have been discussed extensively in the previous chapter, the main idea here is to highlight the role of infrastructure as an asset that is becoming increasingly popular as an appealing asset class.

While we have seen that 'Infrastructure as an Asset' provides value, the value multiplies when seen at the system or network level. Even though every infrastructure project has its independent value contributed to the system, when all individual assets are pooled together, they multiply to generate higher value at the system/ network level. For example, while one road or highway generates some value for the area, a network of highways or roads will make transportation and movement smooth and easier, generating a much higher value. Similarly, in the case of utility infrastructure, if only water supply is available to the households in an area, but there is no drainage or sanitation facility, it will never be attractive to the household area. But if all the utilities are provided, as they are equally important, the prices of land/houses in the area will shoot up, thus creating a larger value at the 'network' level. This value can then be captured and used for upcoming infrastructure development projects. Hence, while an infrastructure asset provides value of its own, its effective role in a wider system or network of assets generates a huge value that must be captured and recycled for future development.

5.2.2 Accessibility creates value

For simplicity, let us divide infrastructure into two categories. The first category includes direct components like affordable housing and household amenities like drinking water supply, electricity, sanitation, drainage, cooking gas, etc. All of these form a critical aspect in an individual's life as they are crucial for leading a good and healthy life. However, given the unplanned urbanization and lack of investment in infrastructure, there is a serious shortage of all these amenities, including affordable housing, that has led to urban sprawl, houses being constructed in unliveable areas and areas prone to disasters. The civic amenities must be provided to individuals to live a decent standard of life. Water supply is one of the indispensable ingredients in promoting economic development and the betterment of the human welfare of every country (Abebe and Singh, 2011). Access to safe drinking water and sanitation is not only an important measure of the socio-economic status of the households but is also fundamental to the health of its members (Kumar and Das, 2014). Sanitation is the key to healthy urbanization. The term sanitation is a composite concept involving provision for latrine, drainage, sewerage, solid waste/garbage disposal, etc. It covers the whole field of environmental control to prevent diseases and promote good health (WHO, 1993). In view of the above, it is clear that access to affordable housing and basic amenities is the key to a healthy, organized standard living. An individual values access to these amenities as getting these services in all areas is hard. Hence, when provided, an individual would be willing to pay for these services according to the "value" received.

Similarly, when people live in healthy environments and are provided with safe drinking water and sanitation facilities, etc, they are less prone to fall sick. Staying

healthy is no less than value generation as people tend to prefer health over the majority of things, including monetary benefits. In other words, people might be willing to pay for access to these amenities as it creates additional value for them.

The second category of infrastructure involves the physical infrastructure like roads, highways, airports, railways, schools, hospitals, etc. Physical infrastructure is important for individuals as it helps in smooth movement and provides access to health and education, the two most critical requirements of a household. It is also important for businesses as better connectivity helps smooth the transportation of goods and services and reduces transaction costs apart from other benefits. Access to infrastructure provides benefits to both households and businesses. Owing to the benefits accruing to them, households and businesses would be willing to pay for these benefits in terms of "value" generated. Many businesses would want to shift to a location where a railway station is nearby or near the highway, airport, or port. A separate charge can be levied at such locations that provide access to connectivity, especially during the sale of land or property in these locations that may capture this "value" generated due to access to infrastructure.

Similarly, some residential areas are situated near designated educational and/or institutional areas. Such areas benefit in terms of high rents and price of land and property. Thus, to capture this increase in value due to access to services, the owners must be made to pay a one-time charge or a surcharge with property tax to cover the value generated by accessibility.

As discussed above, infrastructure facilities and amenities create value, and easy access to these services has the ability to generate additional value. These services

are important for a person to focus on their job duties, promote good health and well-being, and adequately sustain their living conditions. For a country to grow economically and reduce poverty, it is important to develop the infrastructure required to support human activity. However, it has been observed that the provision of infrastructure, both physical and household amenities, differs significantly in urban and rural areas. It is also observed that access to these services in urban areas differs with income levels. It is pertinent to note that higher-income areas can provide higher investment for infrastructure and hence are prioritized by development authorities. In order to support businesses and to live a standard life, businesses and households will be willing to pay for infrastructure development.

Similarly, if the infrastructure was developed earlier and land was vacant in that area, it would lead to higher land and property prices, and only those who can pay higher prices would be able to purchase land. Households and businesses pay a higher price to locate here because of the access to these infrastructure facilities and amenities. This shows a two-way relationship where higher income groups attract infrastructure projects and these facilities attract those who can pay higher prices. On the other hand, when there is no access to these facilities and amenities in certain areas, those with higher income are unwilling to settle here, and hence, the poor people settle in these localities. Further, since the poor communities live in these areas, the development authorities are unwilling to bring development projects here as the poor people might not be willing to pay additional amounts owing to which the development authorities might not be able to capture the additional value generated due to access to infrastructure. Hence, we can say that, in general, access to infrastructure generates additional value.

5.2.3 Zoning changes add value

The value of land and properties differ based on the specified land-use and Floor Space Index (FSI)/Floor Area Ratio (FAR) regulations, apart from the other locational and geographical advantages. Land use regulation is one of the key functions of the municipalities in the city. Land use regulations define the purpose for which the land will be used- residential, commercial, farming, recreational or institutional purpose, and the extent to which the land can be built upon, i.e., the density of development. To control for density, the municipalities decide the height of the buildings, the permissible FSI or FAR, etc. Thus, land use and density both affect land prices directly and determine the form of the cities and the pattern determining their physical development. The formal land rights ensure long-term productivity and liveability in cities. Without active land policy, the commercial clusters might not form, and the residential clusters might be haphazard. In simpler words, the municipalities decide the land supply, mainly in the urban areas, and the price of land varies with the supply. Given the basic economic logic, if the supply in the market is controlled, and if demand exists, the municipalities can generate revenue by increasing supply. Hence, land zoning, regarding land use planning and regulation, creates value that the municipalities can capture to generate revenues.

First, it is important to study land-use planning, which is crucial for designing any city. As any town develops into a city or any rural area transforms into an urban area, the municipalities must carefully plan every area, designating the area as single-use or mixed-use and identifying them based on their purpose into residential, commercial, recreational, institutional, etc. When an area transforms into an urban area or a city, there are high chance that a lot of area that was being earlier used for

agriculture or was under the open green spaces category will have tremendous pressure to be converted into the residential area or be used for industrial and commercial activity. Businesses often tend to cluster together as it helps by bringing agglomeration economies and increasing commercial density in the area. The commercial density, in turn, affects the residential density as the population rises with growing earning opportunities. This leads to an increasing demand for developed urban land, which will require giving away agricultural and forest-use land and driving up land prices. Initially, the municipalities will have to decide whether they want to promote single-use zoning by separating residential, commercial, industrial and institutional land into different zones or promote mixed-use zoning by bringing commercial activities into the residential areas, which may improve efficiency for local service providers and make small businesses financially viable. However, with changes in land-use planning and regulation, as more land is allocated for residential and commercial purposes, there is an exponential jump in land values in these areas and in neighbouring localities, especially those with access to infrastructure. Many studies have indicated that simply converting the areas from rural to urban might increase land values by five to ten times. Municipalities must capture this surplus "value" created by converting the land-use by charging the industries and businesses shifting to these areas. Also, the developers planning townships and residential societies in these areas must be made to pay 'exactions' for development permissions to be granted.

As discussed above, another key regulation mechanism by the municipality is to control the density, mainly by regulating the FAR and the building height. Brueckner et al. (2005) mentioned a strong relationship between land values and density, highlighting that a higher allowed FAR increases the local urban land prices. Just as we discussed the zoning regulations restricting the supply of land and reducing

density, the restrictions on building height have the same effect. Various empirical studies have shown a direct impact of the FAR of land parcels on land values. The permissible floor space will vary for residential and commercial properties based on the needs of both groups. In this case, the municipalities can also ask the developers to pay a premium for allowing them additional FAR. The sale of FAR has been used extensively in cities of Brazil to fund infrastructure. If an area has good connectivity and opportunities, allowing additional FAR is feasible for the municipalities, and since the demand for land in this area will be high, bidding for FAR or even simply selling/auctioning FAR can generate sufficient "value" for the local bodies to fund infrastructure projects in the area to support this density. In cases where new residential complexes are being built, the developers may be permitted to build above a certain FAR in exchange for constructing other necessities like parks, affordable housing units or any other amenities required in that locality.

Apart from the regulations discussed above, zoning can also be used to preserve cultural heritage, limit urban sprawl, or preserve the environment. Zoning might be used to prevent development in certain areas, encourage conservation of certain ecosystems such as wetlands, and prevent land subject to natural disasters. In all these cases, development is done keeping the city's long-term vision in mind. Converting all the available land for residential, commercial, and industrial purposes might look attractive in the short run, given the excessive demand for land driving up the prices. However, disturbing nature or using land prone to disasters might lead to catastrophic impacts in the long run.

Similarly, preserving cultural heritage sites is important to save the cultural roots of the city and the citizens. There is no meaningful future without a strong

relationship to the past. To sum it up, zoning plays an important role in regulating land use, controlling density, and preserving nature and cultural roots. By following these measures, municipalities can generate surplus value that can be captured by the municipalities using different tools like betterment levy, unearned increment tax, windfall gains tax, developer exaction, impact fees, development charges, incentive zoning or any other value capture tool. An 'urbanization charge' can also be implemented to collect taxes from landowners who benefit from the land use change.

5.2.4 Central Business District and Urban Morphology

A central business district (CBD) is an area designated within the city to have high economic activity; hence, adequate infrastructure and utilities are provided to support the economic activity. CBDs provide proximity to customers, markets, and partners, making them attractive locations for business. Besides businesses, CBDs have the highest service centralization level and can provide extensive economies for service delivery, management and administration. In India, CBDs in Delhi, Mumbai, Pune, Hyderabad, Chennai, etc have proved to be the foci of economic growth, providing employment and entrepreneurial opportunities. These CBDs tend to be well connected with even distant locations within the city by different transport modes. These areas are usually planned and designed to appear well and provide good quality infrastructure to sustain in the long run. The FAR and building rules in CBDs are different from the city's other areas to promote compactness, accommodate more and more businesses in the same locality, and increase proximity to all services. Due to these benefits, the demand for land/ space in the CBD is very high, which promotes the construction of high-rise buildings to accommodate a more significant number of people; hence, the value of land is exorbitantly high. People will be willing to pay a

premium to locate their businesses in the CBD and live in or around the area. All the residential settlements in and around the CBD will have higher rents and land values to cover the benefits received from the CBD. Hence, this additional value created because of the CBD must be captured by the municipalities to fund projects for further improvement in the area.

As discussed, firms and individuals co-locate in the CBD for various reasons. This co-existence of all firms and the people gives rise to agglomeration economies in retail agglomeration, functional grouping, learning, sharing, matching, labour pooling and the ability to attract young talent for employment. The relocation of several big companies in the CBD creates job opportunities for individuals and attracts business investments. The business district attracts high-quality employees by creating several job opportunities, and people migrate from different areas to or around the CBD for work. The co-location of firms also enhances innovation by exchanging ideas between workers from different backgrounds operating in the same business district. While the direct effect of the CBD creates some jobs, the relocation of firms and individuals gives rise to various other jobs, mainly to provide services to these businesses and individuals. Also, as the population density increases in and around the CBD, the consumption of resources increases in this area. Large volumes of resources are deployed to create a CBD; hence, the population density in the region must increase to promote efficient consumption.

Along with this, the increased consumption of other goods and services generates taxation opportunities for the government. The collection of GST, service tax, VAT, and all other relevant taxes increases in this area. Similarly, since many jobs are created, the income tax collection from people employed in this area will also shoot

up, and the corporate tax from the businesses will also rise. Further, as the population density increases and people will have to travel from far off places to work in the CBD, there might be overcrowding on roads and excessive traffic in the locality, increasing the pollution in the area. The municipality might implement a congestion tax to cover these negative externalities. The formation of a CBD encourages economic activity and creates value in the form of incremental taxes for all tiers of the government.

While discussing the design of the central business districts, it is also important to consider the entire urban morphology concept. The morphology of an urban area is important to understand the network of streets and connectivity in the area that fosters the movement of goods and services. Streets are an important city design component as they support human activities. Jacobs (1961) argued that streets are the heart of a city. Street networks are important as they affect economic functions, provide a framework for interactions, and shape the movement of population and land uses (Peponis, Allen, French, Scoppa and Brown, 2007). If the movement pattern on these streets is studied clearly, we can distinguish the streets based on their connectivity value. These connectivity values benefit both the individuals as well as the businesses. The streets being used commonly are bound to require more maintenance and might also require certain other amenities. These streets will also create opportunities for certain service providers to operate in that region or might attract some businesses on those routes. Also, since it is a preferred route for the majority, people might be getting some additional benefits by commuting through this route. This benefit, or rather additional value, being created on the streets must be studied in urban morphology, and once the data is readily available, these values must be captured.

5.2.5 Demography and Land Value

The region's demography and population density impact the price of land in the area. Density and land values usually have a concave relationship. Assuming other things to be constant, as population density increases, the price of land shoots up exponentially with the rising demand for land and property. However, after reaching a certain optimum level, a further increase in density leads to congestion and negative externalities. This negative externality is much more than the agglomeration economies generated by co-location. Hence, beyond this point, the price of land starts increasing at a diminishing rate and then stagnates. If the congestion in the area keeps increasing, the land values might start falling. This clearly depicts that population density is a very important component of land values. Looking at it the other way round, the land values can be used to control the population density and avoid congestion in cities or some specific areas. People co-locate or migrate to a particular area when benefits exceed the cost of buying or renting a house in that area. To keep density under check, this incremental value, the difference between the benefit and cost, can be captured by the municipalities by levying a charge for locating in that particular area. This will serve twin purposes. First, it will generate revenues for the municipalities, and second, it controls the population density and avoids congestion.

The demography of an area contributes to variations in land values. While various studies have been done in western countries to see the impact of ageing on land values, no specific studies have been done in the context of India. The cultural ethos of India is very different from that of Western countries, so the studies cannot be replicated in India. In western countries, children usually look for their accommodation after completing their studies. There is a concept of complete

distinction between central areas and suburban districts. However, our country tends to have a strong foundation in the concept of family. Although the concept of nuclear family is increasing in India, children continue to live with their parents unless they migrate to a different city or state for work. Hence, the demand for housing in India varies from that in other countries. As observed in India, cities that provide many job opportunities, like Mumbai, Gurgaon, Hyderabad, Pune, Bangalore, etc, tend to have higher land and rental prices. It is also observed that these cities usually see a large influx of younger crowd that migrate to these cities for work. It is observed that most people migrate in their 20s due to work and then settle down in their 30s. When people migrate from a smaller city, rural area or any other area for work, they tend to look for a rental property in the central area closer to their workplace. The increased demand for rental properties drives the rent high. As people decide to settle down in the city in the 30s or maybe even earlier, they tend to buy land or a house. Hence, the prices of land and houses are high near places of work. The price of land near the central areas is high and diminishes as we move further from the central area. As people grow old and retire from work, they tend to look for properties away from the congestion. However, given the Indian family system, the parents continue to live with their children as long as their children don't migrate to other locations for work. As the children migrate to other cities for work, the parents usually continue living at the same place in the short run. Eventually, they either migrate to live with their children or return to their ancestral properties, which cools down city property values.

The real estate prices will also vary based on the size of the family. Bigger families will demand bigger houses and hence more space will be required. However, as fertility rates decline, the family size shrinks, so families need less space. It has been observed that in cities, especially in Indian metropolitan cities, fertility rates are going

down faster than in tier 2 or tier 3 cities and rural areas. Also, as the young crowd migrates from smaller cities and rural areas to metropolitan cities in search of work and to fulfil their dreams, the land values in those more miniature cities and the rural regions will start falling as the population ages there. Thus, to sum it up, we can say that the land values will vary based on the age and density of the population. Cities or regions with a younger crowd will tend to have higher land values as the demand for land will be increased. Also, as the fertility rates decrease in this area and family size becomes smaller, the families require a smaller area, which cools down the land values. In the long run, when the effects of decreasing fertility rates set in, the land values will cool down further to maintain the relationship between demography and land values.

5.2.6 Environmental, Liveability and Visual Amenities

While infrastructure development is thought of as a positive externality, the creation of cities and co-location of people and firms due to the availability of infrastructure can generate negative externalities. As the density increases beyond a particular point and people start commuting, it creates negative externalities in the form of air and noise pollution. People living in urban areas survive in an environment with lousy air, which is known to lead to several medical conditions. Various studies have indicated a strong relationship between environmental factors and non-communicable diseases like cardiovascular diseases, cancers, etc. The lack of sufficient infrastructure, facilities, and amenities further affects the city environment. Shortage of solid waste management and garbage disposal facilities or proper drainage facilities in the residential and commercial areas has ill effects on residents' health. Infectious diseases like dengue, tuberculosis, etc, are bound to increase because of insufficient sanitation services.

Similarly, the unavailability of clean drinking water can lead to various health challenges like diarrhoea, typhoid, etc. In short, a significant relationship exists between the urban physical environment and various health outcomes. As people are aware of the health challenges arising from poor and unhealthy environment, people living in cities are willing to pay to receive the benefits of a clean environment. These environment challenges tend to increase with density, or in other words, with congestion. Hence, charging a congestion tax for people living in high-density areas is important to prevent the environment from deteriorating. Since people prefer to live in nice places and value clean and healthy environments, they will be willing to pay for these benefits, which will help the municipalities promote sustainable city development.

Mental health is a commonly discussed topic in recent years. Interestingly, this term is more commonly used in urban areas and cities that are actually called "developed". Another interesting point to note is that mental health challenges become more frequent as the level of urbanization in an area increases. As discussed in various sections above, space becomes a constraint in the cities, significantly closer to the central areas as the land values shoot up. Thus, we can say that mental health challenges increase as space decreases or as the access to open and green space decreases. There is empirical evidence that exposure to nature, such as greenness and open space, benefits mental health (Svoray et al. 2018; Kang et al. 2019; James et al. 2015). Physical activities like walking, cycling, etc., have various health benefits, including improving mental health. These options are also an alternate mode of transportation for nearby and connecting areas and are environment friendly. The development of walking paths and cycling tracks can thus provide enormous value

both for individuals, in terms of alternate transportation and health benefits, and for society by reducing congestion and decreasing pollution.

Apart from providing these services, their visual impact on a person also tends to affect human perception and sentiments. Safe, beautiful, and lively environments positively impact the person and society. The perception of a safe neighbourhood environment may offer a safe place for children to play, reducing psychological stress and improving living satisfaction. Safety and security in an area are added benefits not discussed often but tend to create large premium value in terms of mental satisfaction. In addition, urban design must focus on improving objective and subjective aesthetic qualities, including visual-form and conceptual-cognitive qualities, as it plays a fundamental role in forming original and legible cities. In other words, while planning a city or implementing a new project, it is important that the project's location is studied by giving attention to the visual aspect without creating any obstruction in the view of original, historical, and cultural sceneries. For example, suppose there is a historical monument visible from distant locations and provides a satisfactory feeling to many people. Now, suppose a huge society or a corporate building or a flyover, is planned in such a way that it obstructs the view of the monument for majority of the people. In that case, it will give more negative externalities than benefits to the commuters. Hence, while planning any infrastructure or development project, it is important to consider the visual aspect, as people might value it more than the benefit of the development project.

5.2.7 Economic Activity and Value Generation

Infrastructure development strongly correlates with GDP, as discussed in detail in the first chapter of the thesis. Before affecting the GDP, Infrastructure affects the economic activity in the area. It is observed that infrastructure promotes inclusive growth and, in turn helps in reducing poverty and inequality. Conceptually, infrastructure helps poorer individuals and underdeveloped areas get connected to core economic activities and allows them to access additional productive opportunities (Estache, 2003). When an infrastructure project is near an underdeveloped area or passes through an area with marginalized communities, it will bring enormous opportunities for people from that region. For example, a recently announced expressway in India will pass through a tribal belt. This initiative will not only provide connectivity facilities to the people living in that area but will also provide them with a lot of earning opportunities. As the expressway passes through that region, it will encourage the opening up of restaurants, hotels, repair shops, etc. This provides both entrepreneurial and job opportunities for those in that region. Hence, we can say that infrastructure development encourages economic activity even in depressed areas, uplifts people from poverty, and reduces inequality in society by providing employment and income opportunities.

The development of transport infrastructure has various benefits. Apart from the social impact discussed above, it boosts the economy with a multiplier effect both in the short and the long run. A famous saying says, "If you want to be rich, first build roads". All developed economies have well-built roads and transport networks. It is often said that they have a strong transportation network because they are developed but because they have a strong transportation system. Transport infrastructure boosts

economic growth by providing connectivity and easy movement of people and goods. It also has indirect impacts by reducing transaction costs/ transportation costs and making goods and services more competitive in the market. By providing access to the markets, both domestically and internationally, it improves trade and promotes exports. To facilitate trade, it is important that all transport facilities, including ports, road and railway networks, etc., are well connected.

Along with this, improvement in transport infrastructure connects the economic activities of one region to other areas by breaking city boundaries and overflowing into nearby smaller cities and towns and promoting economic growth in those areas. Looking at it from a micro level, when connectivity is smooth, people can commute to office and the market smoothly, increasing commercial activity and boosting economic growth. Similarly, all other infrastructure projects, like affordable housing in cities, provision of civic amenities, construction of flyovers, etc., also help support public interactions, running businesses and promoting residential complexes near markets, which increases economic activity in the area.

The increase in economic activity is captured by the GDP numbers, which show an increment in that region. The World Development Report (1994) shows that a 1% increase in the stock of infrastructure is associated with a 1% increase in GDP across all countries. While cities are called the engine of growth for a country, infrastructure development is the wheel of that engine. As infrastructure development leads to the co-location of firms and individuals, it generates agglomeration and networking economies, encouraging economic growth. Agglomeration leads to positive impacts through knowledge spillovers, efficient allocation of infrastructure, proximity to customers, matching job opportunities between firms and workers, etc. It

also helps by encouraging innovation, opening up more economic opportunities, reducing distribution costs, and boosting the performance of businesses. Various studies have highlighted the benefits of infrastructure and its impact on economic growth. Infrastructure increases economic productivity, extends the degree of specialization (Bougheas et al., 1999), lowers production costs (Romer, 1987), improves quality of life, alleviates poverty (World Bank, 1997), raises international competitiveness, attracts foreign investment and helps urbanize the economy (Henderson, 2002). Barro (1990) explained that infrastructure services reduce technical inefficiencies and financial losses. Goel (2002) highlighted that an adequate quantity, quality, and reliability of infrastructure are important conditions for overall economic growth. Thus, by its direct and indirect impacts, efficient infrastructure plays a crucial role in the growth of an economy by boosting economic activity.

When the economy grows, the tax revenue generation also grows. As urbanization and its agglomeration impacts lead to job opportunities, many new people join the workforce. This gives rise to income generation and hence increases the tax collection in the form of income taxes. Also, since many businesses become financially viable because of agglomeration effect and co-location, the businesses start earning profit. In addition, many new ideas will come up and many people will be motivated to become entrepreneurs. This will increase the government's revenue in the form of corporate taxes. We have also seen that infrastructure development can boost trade and lead to growth in exports. This will also increase the profits of the businesses, which will generate tax revenue for the government.

Similarly, since many commercial activities will start booming in that region, as residential complexes build up in that area, business activities will increase. This

will increase the VAT and GST collection from these areas. As more and more people settle down in this area, they are bound to purchase vehicles for commuting. This will increase the collection of registration and road taxes for the government. Similarly, as economic activity increases in the area, as density increases and as the city develops and boosts economic growth, many more kinds of taxes will witness an increment in their collection and owing to the new services coming in, there will be a scope of levying taxes on many other activities. Hence, the development of infrastructure will increase economic activity, which will create value in different sectors and forms, which in turn will generate tremendous taxes for all government tiers.

As discussed in the section, infrastructure development directly and indirectly impacts value generation. All three tiers of the government, businesses, individuals, and society tend to benefit from developmental projects. Since everyone benefits from these projects, everyone needs to bear the cost of the project. Since, the society is benefitting at large, it is important to spread out the cost to the entire society by different means. When everyone is deriving benefits, it is not justified for the government to bear the entire cost or the property owners to pay for their incremental gains alone, as observed in the TIF model in the previous section. The benefits of the project are widespread and the spillover effects are visible in different areas and different sectors. Hence, if they all contribute their share of incremental value, infrastructure development projects will not become a burden on any specific group. As discussed above, infrastructure can be used as an asset to raise a large amount of capital by either selling or leasing out an infrastructure project for the long term. It can also be used as a mortgage to raise capital for projects. Easy access to infrastructure, transport facilities, and other amenities creates enormous value for residents and other beneficiaries. All of them must come together to contribute based on the incremental

value/ benefit received by the development project. Land use planning and regulation tools can also generate enormous revenue as land value shoots up when land use changes or the FAR increases. The creation of a CBD not only boosts economic activity but has the potential to generate revenues by various means. The agglomeration effects arising from this co-location and the entire urbanization process generate incremental values for all. To maintain a sufficient supply of all amenities, all households and businesses will be willing to share the cost burden as the benefits received are much higher than the share of the cost. Lastly, with the increase in economic activity in the entire process, the existing revenue sources of all tiers of the government shoot up, which can also be used for the infrastructure development process. All these values can be used together to fund infrastructure development projects.

5.3 Value Increment Financing: A Comprehensive Economic Model

Urban and regional economics, transport economics, land economics and infrastructure economics suggest that infrastructure creates access, access creates value, and value increment could be escrowed to repay long-tenor debt for creating lumpy infrastructure. Such infrastructure creates direct, indirect, and induced benefits, including externalities-related – to local, state, and central governments and private players in markets – goods, labour, land, etc. The benefit principle suggests that beneficiaries must pay for the benefits received. By corollary, polluters must pay, congesters must pay and growth must pay.

An urban infrastructure development project creates values to many actors in many ways. These values must also be considered while studying the impact of infrastructure. If the repayment to fund the infrastructure development project is based

only on property tax, many projects might fail to pass the viability test due to various reasons. In fact, the increment in land value is only being captured by incremental property tax collection, if any. However, property tax can capture only a small proportion of the incremental values. Hence, it is important that all the values generated by the project must be extracted and escrowed together to be used for the repayment/ funding the project. Benefits must include wider economic benefits or WEBs (Venables 2007). This section talks in detail about how values are created by an infrastructure project and value increment financing (VIF) can be designed to succeed. It refers to the effects of infrastructure development on different markets and the values they generate. As discussed in Chapter 4, the development projects can be financed using different debt and equity financing instruments or a combination of the two. The challenge in successfully implementing the projects comes at the time of debt repayment or making payments to the investors. As observed in the previous section, the value generated by an infrastructure or a development project benefits all three government tiers along with benefiting the users and the firms. Thus, for debt repayment, all stakeholders who benefit from the project must come together to generate the required resources. This would require all three tiers of the government to work together to pay for the developmental project. Using a simple rule of thumb, the central, state and local government must pay in the ratio of 40:40:20 based on the benefits generated to the three.

Any infrastructure or development project generates direct, indirect and induced benefits to society by creating surplus value in different markets. For capturing these values, we must use the golden principle of local public finance. According to the Bahl and Linn principles of local public finance, lumpy development projects must be financed by ensuring that user's pay, beneficiaries' pay, congesters

pay, exacerbation pays, polluter's pay and growth pays. To ensure that all of them pay, it is important to understand the values created in different markets and identify the relevant stakeholders to fix the quantum of payment that every category must pay. To understand this better, let us look at different markets and see the change in the equilibrium in all these markets due to the development projects.

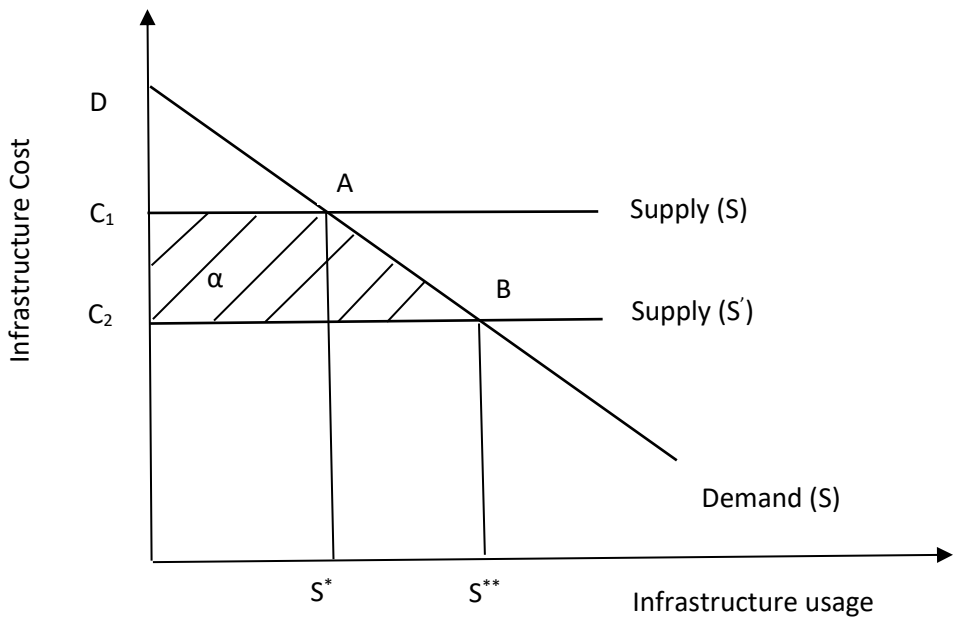
5.3.1 Value Creation: Infrastructure Market

The first and foremost impact of value creation is visible in the infrastructure market. This is called the direct effect of infrastructure development. As shown in figure 5.1, there is a downward-sloping demand curve in the infrastructure development as there is an inverse link between the infrastructure cost and its usage. If the cost of using the infrastructure is less, a greater number of people would be willing to use the infrastructure. Let us assume that the supply curve is horizontal indicating the minimum infrastructure cost for the development authority, irrespective of the number of people using the infrastructure. At initial equilibrium at point A, S^* is the infrastructure usage level and the cost of providing the infrastructure or the cost for users/consumers is C_1 . For simplicity, let us assume that both firms and individuals benefit equally from the infrastructure and are paying the same amount for using the infrastructure.

Suppose the government provides new infrastructure to benefit the consumers/users. In this case, the supply curve shifts to the right per the basic economics principle. Since, the supply curve is horizontal in our case, it will move downwards. Thus, the supply curve shifts from Supply (S) to Supply (S'). The equilibrium point of the market will shift from A to B. This will increase the

infrastructure usage from S^* to S^{**} and reduce the cost of Infrastructure from C_1 to C_2 . This movement in the infrastructure market and equilibrium shift impacts the consumer surplus as well. The consumer surplus increases from ΔDC_1A to ΔDC_2B . The extra surplus generated by increasing supply of infrastructure goes to the users of the infrastructure, who are both consumers and producers. The incremental surplus value is shown by the shaded region AC_1C_2B and is represented as α . This shows the additional welfare gain to the users of the infrastructure. Since the users are benefitted from the additional infrastructure being provided, they must pay for the infrastructure project to support the development authority. Thus, as stated by the golden principle of public finance, users pay is an important tool that has the ability to raise resources. User charges must be escrowed and used for funding the infrastructure project by repaying for the debt incurred while building the infrastructure.

Figure 5.1: Infrastructure Market



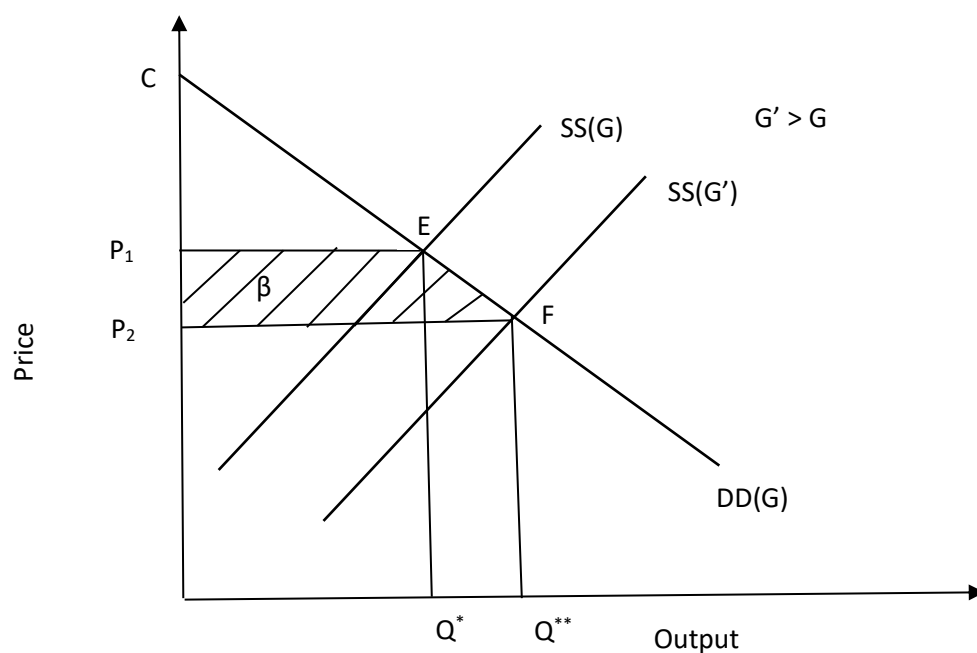
5.3.2 Value Creation: Goods Market

Infrastructure development also has an indirect effect on the goods market. The infrastructure largely influences trade and commercial activity. Goods market operates like a normal market with a conventional demand and supply curve. Let us assume that the goods being considered here are raw materials that the city's producers are using to produce the final output. The initial supply of these raw materials is given by the curve $SS(G)$, where a particular amount of goods G is available at every price level. With the given demand and supply curve, the initial equilibrium price is set at P_1 , and Q^* is the optimum amount of goods traded in the market. However, with infrastructure development, suppliers are willing to supply more quantity at the given price level. Infrastructure development decreases transportation time and cost. This helps in reducing the overall cost for the supplier. Hence, as the markup on product increases, they are willing to supply more at the given price. This leads to a rightward shift in the supply curve.

Since the suppliers are willing to supply quantity G' instead of G at every price level, the new supply moves outwards to $SS(G')$ from the original $SS(G)$ curve. The new equilibrium is attained at P_2 with Q^{**} being the optimal amount of goods being traded in the market. At the new equilibrium, more raw materials are available for the producers at a lesser price. This will help the producers in boosting production. Since producers are acting as consumers of raw materials in this case, their surplus increases just like the increase in consumer surplus. However, since it is helping producer in increasing production and that too at a lesser cost, it provides welfare gain to the producer, denoted by β and is shown by the shaded region between EP_1P_2F . As the producers are benefitting from the infrastructure development,

based on the golden principles of public finance, the producers must pay from the excess benefit received from the construction of infrastructure, denoted by β .

Figure 5.2: Goods Market



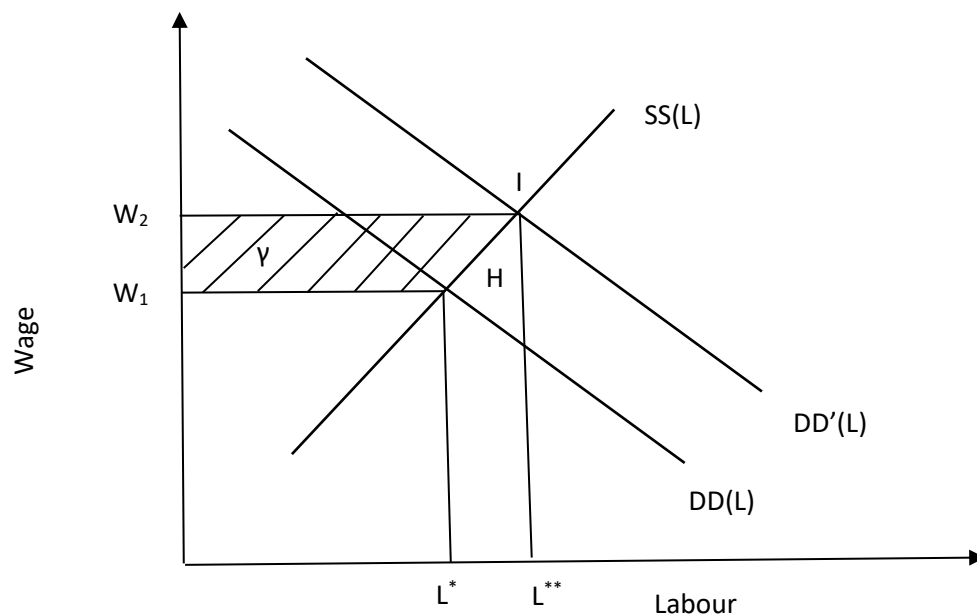
$$\beta = \text{Welfare gain to producers of output} = EP_1P_2F$$

5.3.3 Value Creation: Labour Market

Development of infrastructure has indirect effects on the labour market as well. The labour market operates based on the demand and supply for labour at different wage rates. The demand and supply curves are conventional curves based on basic principles of economics. As we can see in the figure 5.3, the market equilibrium is established at wage, W_1 with L^* being the number of people employed in the market. However, as infrastructure develops, commercial activity picks up, firms

agglomerate and producers decide to increase production. To increase production, the firms need more labour. Hence, the demand curve for labour moves rightwards from $DD(L)$ to $DD'(L)$. This leads to a change in the equilibrium values. The new wage rate established in the market is W_2 , higher than the earlier wage W_1 and L^{**} is the new number of employed people. Hence, infrastructure development provides job opportunities to people and also provide higher wages, both to new and old employees. This will increase the income tax/profession tax of the government. The welfare gain to the workers will also increase, equal to the area given by IW_2W_1H and denoted in the figure below by γ , the shaded rectangle in the graph. This incremental benefit to workers must be captured and used to repay the financiers of the infrastructure project.

Figure 5.3: Labour Market

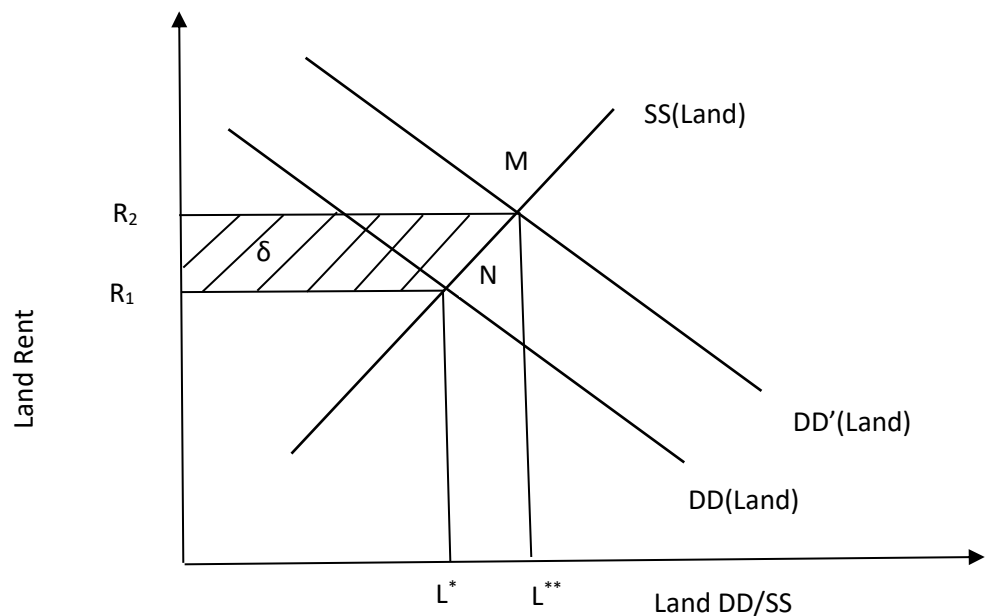


$$\gamma = \text{Welfare gain to Workers} = IW_2W_1H$$

5.3.4 Value Creation: Land Market

As discussed in the previous section, infrastructure development also indirectly affects the land markets. Figure 5.4 shows the demand and supply of land in a typical land market with equilibrium attained at point N where the land value is R_1 and the land DD/SS is L^* . However, with infrastructure development and urbanization, the demand for land for residential and commercial activities shoots up drastically. This can be seen in the graph below. The demand curve shifts rightwards from $DD(Land)$ to $DD'(Land)$. The new equilibrium is attained at point M where the new equilibrium land value is R_2 and the land DD/SS increases to L^{**} .

Figure 5.4: Land Market



$$\delta = \text{Welfare gain to Land holders} = MR_2R_1N$$

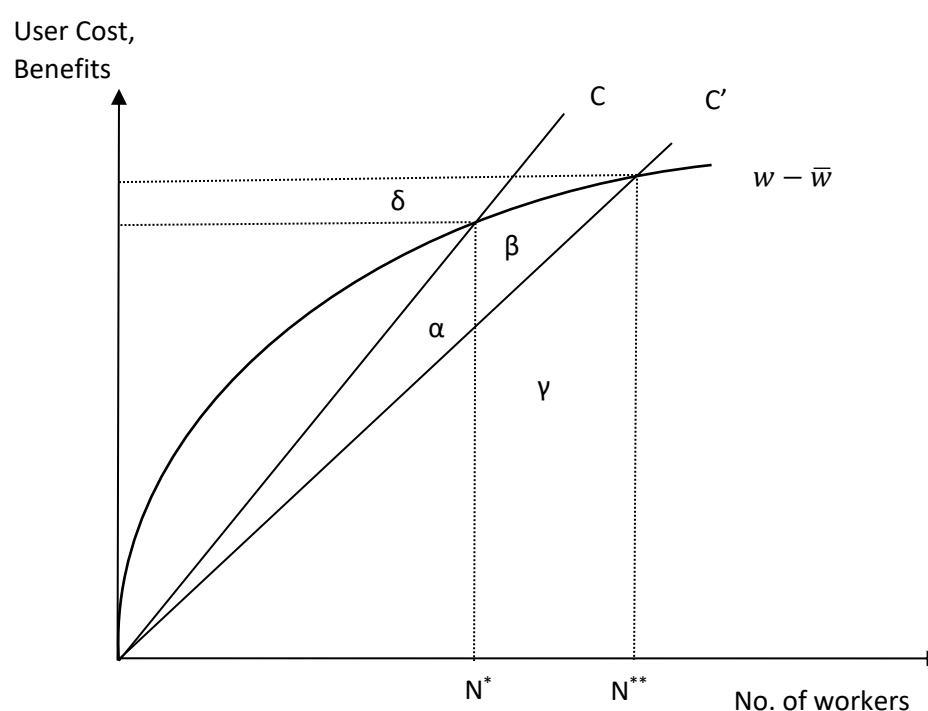
This creates additional surplus in the market for the owners of the land. The land value shoots up, so they can get a higher price on selling the land and earn higher rent if they plan to keep the land. The shaded area in the graph, represented by δ shows the extra surplus generated because of the infrastructure development. This windfall, at least in part, must be captured by the government and must be utilized for paying for the infrastructure development.

5.3.5 Value Creation: Externalities (without Tax)

Along with direct and indirect effects, infrastructure has also induced effects due to the externalities created by development. The agglomeration economies create benefits to many stakeholders. According to Venables (2007), the benefits generated due to infrastructure development – called wider economic benefits (WEBs) – can be quantified if we know the change in agglomeration that will arise due to the development and the amount by which productivity will increase due to the agglomeration. In figure 5.5, we try to quantify the effects of productivity due to agglomeration, in a case where no taxation is imposed. The figure shows the number of workers employed in the major commercial area of the city, the central business district, where the infrastructure is being developed. It shows the wage gap curve $w - \bar{w}$ which represents the difference in wage in pre and post-infrastructure period. The concavity of the curve is due to external economies of agglomeration. Earlier in this section, we had seen the effect of infrastructure development on the labour market, which gives incremental wages. The same has been shown in the diagram below. The straight lines denoted as C and C' show the workers' travelling costs for work. The travel time and cost largely impact the productivity of the customers. 'C' is the original cost curve for the workers before the construction of

infrastructure. However, after development, transportation becomes relatively more comfortable and cheaper. Hence the cost curve shifts down to C' . A new equilibrium is attained where a higher number of workers are willing to work in the central business district. The gain from the development can be measured by the area represented by $\alpha + \beta + \delta$ in the figure given below.

Figure 5.5: Externality- induced effects of infrastructure, without tax



Gain from Infrastructure Investment = $\alpha + \beta + \delta$

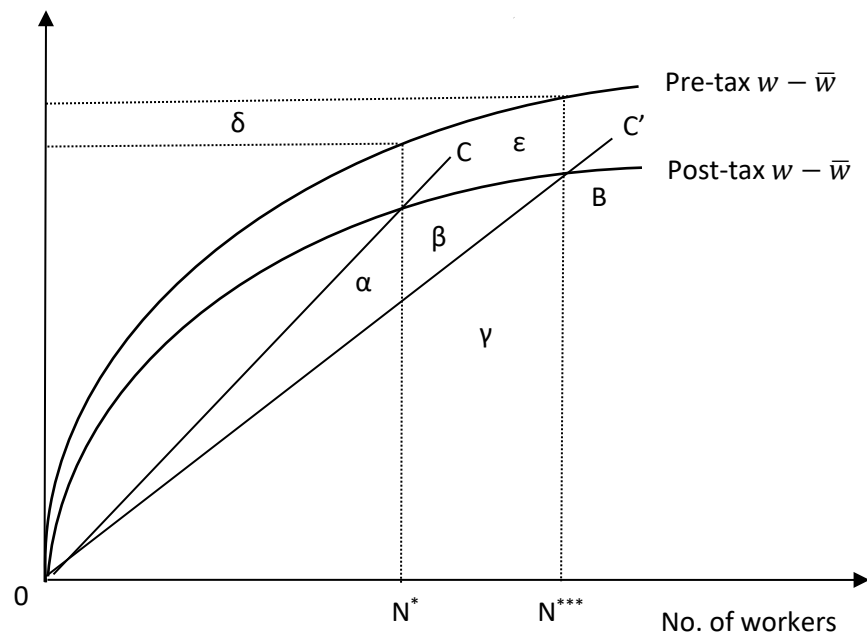
5.3.6 Value Creation: Externalities (with Tax)

This is the extended version of the case discussed above. In this case, we assume that extra taxation is levied on the workers working in the central business district. The taxation pulls down the wage gap curve as shown in the figure below. The new

equilibrium is thus attained at point B where the number of workers is N^{***} which is lesser than the number in previous case, N^{**} . In this case, the gain from infrastructure development can be measured by the area represented by $\alpha + \beta + \delta + \epsilon$ where ϵ represents the tax wedge effect due to the tax levied on the workers.

External economies of agglomeration generate similar results as above with infrastructure development. We have the similar cost curves as observed in the earlier case along with wage gap curves.

Figure 5.6: Externality- induced effects of infrastructure, with tax

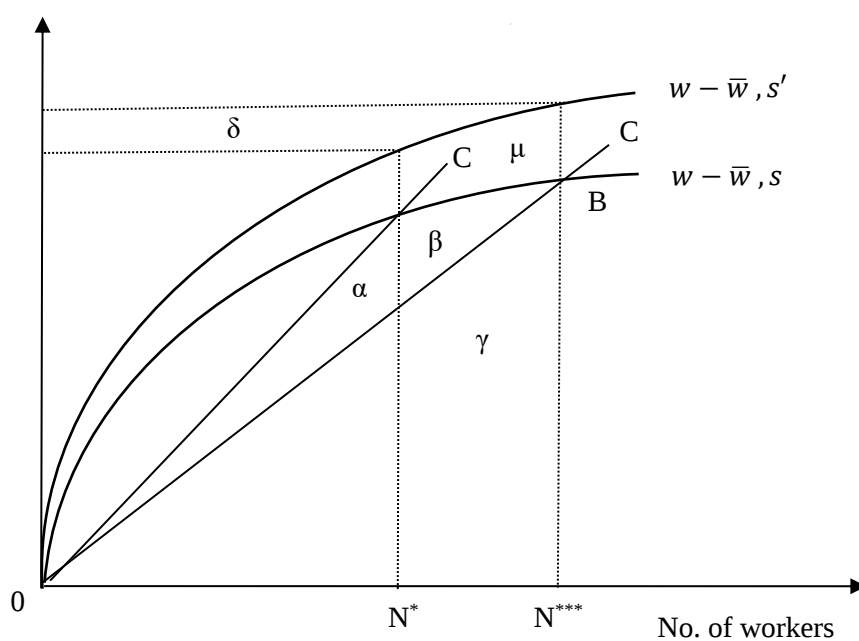


$$\text{Gain from Infrastructure Investment} = \alpha + \beta + \epsilon + \delta$$

5.3.7 Value Creation: Agglomeration Economies in Production due to infrastructure

We assume that the wage gap curve is given by $w - \bar{w}, s$ where s shows the initial level of public good available in the economy (we assume no tax). With infrastructure development or any developmental project in the area, the quantity of public good in the economy increases to s' . The wage gap curve with the higher level of public good moves up as we can see in the diagram below. This upward movement of the wage gap curve with improved level of public good is the effect of the increase in productivity because of agglomeration economies generated due to infrastructure development. The diagram below shows the incremental value generated because of agglomeration induced effects.

Figure 5.7: Externality with productivity-enhancing infrastructure



$$\text{Gain from Infrastructure Investment} = \alpha + \beta + \mu + \delta$$

5.4 From TIF to VIF: Cooperative Federalism

In the Chapter 2, we had discussed about the TIF based model presented by various authors and its success around the globe. However, we had noted some flaws in the model. Given the flaws discussed and the given condition of Indian ULBs starved with a grossly narrow tax base, it is very difficult for the TIF model to be successfully used for infrastructure development by Indian ULBs. Hence, based on the discussion in this chapter, the incremental values generated because of infrastructure development must also be incorporated for the TIF model to succeed in India. We must transform the Tax Increment Financing model to Value Increment Financing model where rather than focussing on the incremental taxes to local government being generated alone, all incremental values are captured. The basic structure of the financing model shall remain the same. Just as incremental taxes are earmarked into a separate escrow account and then used for repayment later by the ULBs, incremental values must be captured and diverted towards the account. Since, the taxing and charging authorities will be different in this case, it is important to have a SPV where all relevant stakeholders, including all levels of government and possibly private players, are partners in the project and can contribute based on their share of the incremental value. Given the 74th amendment, it is important that while all tiers of the government partner together in the spirit of cooperative federalism and mutual benefits to contribute and develop the project, the project must be led by the ULBs or SPV with ULB a major partner. If the Value Increment Financing model is used based on the structural foundation of the TIF model implemented in various countries, infrastructure development in the Indian cities will see a boost in the coming years. The ULBs will gain confidence in leading developmental projects and VIF will continue to be used as a sustainable method of financing infrastructure development in the country. United all governments gain; divided they also lose as there will be no value increment in the absence of infrastructure development.

Chapter 6

Conclusion and Policy Recommendations

6.1 Summary and Conclusion

India has a growing urban population, and the need for infrastructure to sustain cities has been increasing enormously. According to a World Bank report, more than 50% of the Indian population lives in areas with urban-like features. However, given the shortage of data and the politically motivated reasons to continue classifying certain areas as "rural", despite the development and population concentration in those areas, the official statistics for the urban population is a little over 31 percent. With development taking a centre stage and the increase in employment opportunities in cities, there is a large-scale migration, especially of the younger population into the cities. Owing to the increase in foreign capital inflow in the country, the shift of manufacturing units of various global industries into India, the ever-increasing surge in the service sector, and the growing entrepreneurship opportunities in the cities, migration to the cities has increased manifold in the last ten years. As discussed earlier in the first chapter, cities are an engine of growth for a country, with studies suggesting a correlation coefficient of 0.85 between urbanization and GDP per capita. Given that the GDP per capita in India has jumped in the last ten years, we can be assured that this is a byproduct of the increasing urban population in the country.

To channelize the strength of the urban population and utilize the benefits of agglomeration discussed earlier, it is important to supplement the human capital resource with the physical capital, infrastructure. As long as the cities are not provided with the required infrastructure support, the country will lose the opportunity to

growing exponentially. The problems of slums, urban sprawl, lack of affordable housing, environmental challenges, lack of sewage and waste disposal facilities, shortage of water supply, lack of disaster preparedness are some key challenges that hinder economic development. Given the abysmal status of municipal finances, and the limited and ineffective capacity of its own revenues generating capacity due to their narrow tax base, the ULBs are fiscally strained and not in a position to fund the infrastructure development. They mainly depend on the grants and transfers from higher tiers of the government which are inconsistent and fluctuating. Hence, ULBs are not in a position to plan infrastructure development under these circumstances where they can hardly cover their revenue expenditures. However, various studies and high-level committees have suggested the need to spend lakhs of crores on infrastructure development every year to sustain the cities and reap the benefits of agglomeration in India. To ensure consistent efforts for infrastructure development, ULBs will have to play a key role in providing the infrastructure and collecting the revenues generated out of the infrastructure. The cities have a huge potential to raise resources, not only for its own development but to fund the development in the nearby areas. The NUPF 2018 highlights 'Urban Finance' as an important function that binds and facilitates other functions of the NUPF.

Despite various studies indicating the importance of infrastructure and the role of ULBs in managing it and generating revenues, the pace of infrastructure development has been very slow. With the urban population increasing faster than the pace of infrastructure development, the infrastructure deficit has been growing continuously in the country. To understand the major reasons behind this, a study was conducted using the Delphi method, wherein different stakeholders were interviewed to get their expert opinions and to understand the major challenges that are affecting

the development of infrastructure in the country. As stated in Chapter 3, despite the availability of private and foreign capital in the market and the various tools for financing infrastructure, public money is still being used as the primary source of funding for infrastructure development. However, the availability of public funding is limited and the capital requirement is huge. It is the private sector investment that has to be channelized to cover up the infrastructure deficit. It is interesting to note that there is no dearth of private and foreign capital in India's infrastructure sector. However, the investors are not sure about the returns that the infrastructure can generate and the tools that the government plans to use to repay the loans. It is important for the authority and/or the government, whoever is executing the project to identify the potential revenue streams in the future efficiently, define the collection mechanism and estimate the revenue generated from the project.

The ULBs in India, being closest to the people, need to play a major role in the entire urban development process catalyzing growth. In fact, according to the 74th Amendment, the ULBs must take care of the core public health infrastructure development in the area of its jurisdiction. However, in the delphi method study, while talking to the experts from the ULBs, it was noted that the majority of the ULBs are not even aware that it is the responsibility of the ULB to take up infrastructure development. The staff in the ULBs is untrained and unaware of any tool for funding or financing the infrastructure project. They do not have the capacity to plan or execute any infrastructure project. They are only interested in ensuring that they are able to take care of the day-to-day activities and the revenue expenditures of the ULBs are taken care of. Even the senior officers are hardly interested in taking up long term projects as they know that they would be in the present municipality for a relatively short period. Any new project or innovative mechanism will come with high risk and

might provide high returns. But the officer is aware that he will not be around for reaping the benefits in the future or to share the returns, and thus, is unwilling to take the risk as that might affect his career, if the project fails. However, it is important to boost the revenue of the ULBs and a capacity building program must be initiated across the country to strengthen the ULBs before expecting them to use the tools effectively and generate resources while providing infrastructure.

While talking about foreign capital and private investment, it is important that the officers and employees at all levels of the government, who are involved in the process, are aware of the exact role and responsibilities of the investor. It is also important that the government looks beyond PPP when talking about private investment. Although PPP appears to be an attractive option for financing infrastructure, it is high time that we look beyond PPP while partnering with the private sector. Even in the PPP model, many private players are unhappy with their role in the project. The government must look beyond the 'contractor' mindset while talking about PPP. In order to bring efficiency in the projects, the private players must be given some autonomy to participate and suggest ways and mechanism to plan the infrastructure based on their experience.

Apart from PPP, the government must explore other debt and equity financing mechanisms to cover the country's huge infrastructure deficit. Both these methods can provide large amounts of capital in a short time frame. In the case of borrowings, the repayment can be spread out over a long period, often covering more than 2-3 generations; hence, the present generation does not have to bear the entire burden of the infrastructure. Hence, long-term borrowing for infrastructure development is efficient and maintains equity. Since borrowing brings along an obligation of

repayment, it makes the borrowing authority more disciplined and compels them to plan, design and execute the project to maximize revenues and minimize cost. This might help in improving the quality of the ULBs in the country. The government may borrow capital from domestic sources, either through the private sector or other public authorities like LIC, etc., or plan for international funding through multilateral banks, development finance institutions, or individual bilateral partnerships. Municipal Bonds, General Obligation/Revenue Bonds, Green Bonds, Social Impact Bonds, etc are among the common bonds used for financing infrastructure worldwide. Despite various authorities experimenting with these bonds for developing infrastructure, they have not been successful in India for various reasons and are not being used extensively. Loans from banks and external agencies are the most common method of financing infrastructure projects in India.

Another commonly used technique for financing infrastructure across the world is equity financing. It frees the developing authority by the obligation of repayment by making the investor a partner by giving a stake in ownership. This is crucial for any large infrastructure development project as it acts as a leverage against the debt being raised. PPP is the most common equity financing mechanism that is used in India in various forms including DBFO, BOT, BOO, BLOT, etc. Apart from PPP, equity infrastructure index, REITs and InvITs are tools that have been used successfully worldwide and are now being explored in India for financing long-term infrastructure projects. Mezzanine financing and Asset-Backed Securities are other financing mechanisms, apart from the traditional methods, that have been tried by other countries and have proved successful for infrastructure development. These mechanisms have been discussed in detail in the previous chapter. However, for the

success of all these financing mechanisms, the infrastructure development must create the expected values/ revenues that gives the desired results to the investors.

While financing these projects is one part of the process, ensuring that the project generates sufficient revenue streams after completion is another side to it. Hence, the project must be efficiently studied to understand the possible direct, indirect, and induced effects generated by the developmental project. Using the golden rule of public finance, all stakeholders must pay to ensure that beneficiaries pay, users pay, congestion pay, polluters pay, exacerbation pays, growth pays, etc. As discussed in the previous chapter, infrastructure development creates values in different ways and for various stakeholders. It creates high value being a long-term asset for the country. The accessibility that the infrastructure provides benefits stakeholders from various sectors. Zoning can be used as a measure to create value from the project. It has been observed that accessibility, when used together with zoning, can help in increasing the value exponentially. Modelling of central business districts, using urban morphology, giving weightage to visual impact and developing the city by giving sufficient weightage to the environmental goals can further create value in the city. The agglomeration benefits and the economic activity generated by the creation of such centres and infrastructure development have the potential to not just fund themselves but also generate sufficient revenues to fund development in nearby areas. The previous chapter has also discussed the quantum of the value created by direct impact in the infrastructure market, indirect impact in the goods, labour and land market and the induced effects of externality and agglomeration. All these instruments used together will be a game changer for sustainable financing of infrastructure development in the cities.

6.2 Policy Recommendations

To begin with, it is first important that the government understands the need to take up urban infrastructure development seriously. Despite many reports highlighting the urgent need to step up infrastructure financing and increasing investment in infrastructure, the infrastructure deficit continues to rise. Although we are using the numbers provided by the McKinsey report and the HPEC committee reports, these numbers might be irrelevant today. These studies were done more than a decade back and given the pace of migration in the cities and the pressure on cities, the need of infrastructure development has increased manifold. In fact, these reports failed to take into account various other factors that demand infrastructure development. For e.g., the Covid- 19 pandemic in the world a few years back and frequent urban flooding have showcased that our cities are not prepared to deal with pandemics and disasters. Due to these reasons, The need for infrastructure, especially the public health and social infrastructure, has not been considered. Similarly, the cities have to prepared to be disaster resilient. Many cities in India face floods every year. Human livelihood is lost and widespread destruction is witnessed every year. Despite all this, no steps have been taken to solve the root cause of such disaster. Many such reasons have not been accounted for in these reports.

Hence, the actual number of infrastructure investment required is much higher than what those studies have showed. It is time that central government leads and steers urban infrastructure development on a mission mode to ensure seriousness amongst all stakeholders. The central government has increased its budgetary allocation for capital expenditure exponentially. The state governments have also provided various incentives for boosting capital expenditure to take up infrastructure projects. The 15th

Finance Commission report has also tried to incentivise local governments to take up development projects. Suppose all three tiers of the government start investing in infrastructure projects and continue to boost capital expenditure for some years. In that case, the private sector and the foreign investors will jump in to fill the deficit. The continued investment by the government will boost investors' confidence and private and foreign capital will crowd in. This will help in solving the problem of infrastructure deficit in the country.

To begin with, the local bodies must be made the epicentre of infrastructure development in the cities. There is no alternative to a sustained infrastructure development in cities without ULBs. The 74th amendment must stop existing only on paper. To ensure that the local bodies are able to fulfil their duties, as laid down by the 74th amendment, it is important to create a matching municipal finance list to strengthen the local bodies. The central and state governments must provide them with all required support to ensure that the ULBs start working efficiently. The ULBs earlier had taxes like octroi, advertisement tax, entertainment tax, motor vehicle tax, etc. which were later taken over by the central and state governments or subsumed under the GST or some other tax. The ULBs are only left with property tax and user charges. Both the sources are grossly underexploited. However, expecting ULBs to bring reforms into their existing sources is insufficient. Majority of the buoyant taxes in our country, including the income tax and the GST, are not exploited to their optimum. Thus, it is important to give the ULBs some autonomy to fix user charges and levy taxes on services under their jurisdiction. Issues of fiscal federalism, cooperative federalism and competitive federalism must be considered seriously by all tiers of the government. The states and the ULBs must compete to get additional grants to boost their performance. Incentives have proved to augment productivity. Similarly,

cooperative federalism is the base for successful infrastructure development in the country. The infrastructure and urban development programmes will success only if all three tiers of the government come together to take up the task of development,

In addition to this, to increase expenditure on infrastructure, the government needs matching revenues to manage their finances. To start with, the governments must make a thumb rule of contributing in the ratio of 40:40:20, where the local governments pay 20% and the state and centre pay 40% each for the development of more significant infrastructure projects. In the last chapter, we have seen that infrastructure development creates values and surplus that accrue to all tiers of the government and therefore, since everyone benefits, all of them must come together to pay for the development as well. For example, since there is a surplus in the goods market, that must be captured by an increment in the GST. The connectivity from the shopping complex might have made it easy for customers to go and shop. Also, the connectivity decreases transportation cost, reducing the cost of the product and hence the sale at the given price increases. In both cases, infrastructure boosts economic activity and increases GST collection; therefore, a part of it must be used to repay the debt taken to finance the project. Also, cities are the centre of economic and commercial activity. Cities run smoothly because of the civic amenities provided by the local governments. Hence, since the services of the ULBs are a pre-requisite for the commercial activity, thus, the result of the commercial activity, the GST collected by the government, must also be shared by the ULBs. Like the states are a partner in the GST revenues, the local bodies must also be partners. The ULBs gave up several taxes with the implementation of but still act as a facilitator to boost GST collection. Hence, they qualify to be a partner in the revenue and must be given at least 20% share in the total GST collection.

Thirdly, various other taxes shoot up because of infrastructure development. As seen in the labour market, the development increases job opportunities in the city due to increased demand for labour. The increased demand also increases the wages for all the employees. This will lead to an increase in income tax collection for the central government. Similar changes were seen in the land market. Due to infrastructure development, there is a jump in land rent and land values. The rise in land values will increase the collection of property taxes, stamp duty and other land related taxes like the vacant land tax. To supplement this further, the government can use zoning and FSI to generate sufficient revenue in the form of fees for converting the land and/or increasing the permissible construction limit.

Similarly, sale of FSI can be used as a tool to increase resources. As seen earlier, accessibility to infrastructure can create significant surplus by various means. The ULBs must be given authority to charge tax for this accessibility or to levy a convenience fee to those with access. Similarly, based on the principle of local public finance, the users must pay for the infrastructure. In the infrastructure market, we have seen that infrastructure development creates consumer/producer surplus. Hence, user charges must be levied efficiently on all the project users by understanding the benefits it provides and the category of the people using this service. Similarly, the benefits received by all the stakeholders and the values generated in all the markets must be captured by the development agencies to fund development.

Fourth, in order to ensure sufficient availability of capital, the government must start using debt and equity instruments more seriously than ever. Long-term lending is not possible for commercial banks alone. Although many multilateral agencies are ready to finance the debts, the government must explore innovative global

mechanisms, which were discussed in detail in Chapter 4. Many Indian ULBs and developmental agencies have experimented with some tools, but they have been used as an exception rather than a standard policy. For example, some ULBs have used municipal bonds to raise capital in the last two decades. However, raising capital using these bonds remains a challenge for most ULBs. Even those who have successfully used these tools have not used it regularly. For the local bodies to be able to use these tools more frequently, they require some initial handholding by the state and central government and fiscal empowerment. This might help pull the ULBs out of the vicious circle of poor revenues and poor services. Similarly, all other debt instruments discussed in Chapter 4 must be adopted by the government to ensure that the debt market remains competitive and that there is no shortage of finances. Equity options must also be explored beyond the conventional PPP model. The government has taken the initiative to use InvITs and REITs. These instruments must be given their due time to explore and mature in the market. They might not work well in the short run but might prove successful after several modifications. All development agencies must also explore asset-backed securities and mezzanine financing. Hence, it is important for development agencies and the central government to continue promoting such instruments that have been used successfully to finance infrastructure globally.

Fifth, value increment financing must be adopted as a core policy instrument for infrastructure financing in Indian cities. The success of TIF as a policy has been witnessed across the globe. We suggest that VIF be adopted as an overarching principle and will act as a connecting pipe that connects expenditure and revenue ends. For any infrastructure project, it is important to first make an SPV with all three tiers of the government, private partners and all other relevant stakeholders. The SPV must evaluate all details with regard to the project, starting from estimates costs, expected

value generation in the future, benefitting agencies and their shares, etc. and based on all of this, the SPV can take a call on the best-suited instrument that can be used for raising capital. Once the project starts generating values, which can be as soon as the project's launch date, since the land values will start rising, the value-capturing process must start. All stakeholders must earmark the incremental values being realized and escrow it into a separate account being opened by the SPV. This can then be used to repay the debt pay dividends to the investors or payback for whatever instrument was used for initially raising the capital. The stakeholders of the SPV can decide whether to dissolve it after repayment or continue the operations. The SPV may continue to operate to ensure further development of the project or nearby or for maintenance purposes. The VIF mechanism needs to run efficiently to ensure that the surplus values are captured, and based on the estimates of the value generation, the correct instrument is used to raise the capital in the beginning.

Lastly, for all the of this to work, it is important that the administration involved in this process at all levels of the government is aware of these tools and understands the implementation. As shown in the delphi method, the local governments are unaware of these tools for raising capital and the methods for capturing the value generated later. The problem is only slightly better at the state government level. It is thus important to undertake capacity-building programs for officers in all three tiers of the government who are expected to work in the infrastructure development domain. Similarly, it has been observed that the detailed project reports prepared about the projects are underestimated which does not give the correct picture to the investor. As discussed earlier in the thesis, this has become a hindrance for the private and foreign players. Hence, it is important to train the staff to undertake the studies carefully with regard to the project to ensure that the numbers estimated in the project report are

efficient. The government must also ensure that all other administrative challenges that are becoming a roadblock for the partners are re-examined to ensure that the private players continue to provide funding.

If the staff is trained well and the administrative challenges are taken care of, the private and foreign investment will continue supporting infrastructure development. Based on the project, the revenue streams, and the project's life, the development agencies must carefully decide the instrument for raising capital. The government must efficiently identify the revenue streams and capture the surplus value generated in the different markets to ensure that the repayments are done on time. This will boost investors' confidence, and the infrastructure sector will see more investment in the future. Hence, this is a win-win situation for all where the government can develop the infrastructure without taking a hit on its treasury, the investors can earn sufficient profits on their investment and the citizens benefit from the provision of the infrastructure. Thus, if the raising of capital using debt and equity instruments is efficiently linked with the revenue streams arising from the surplus value being generated using the value increment financing approach, it will help develop a sustained mechanism of financing infrastructure in the cities.

Bibliography

Administrative Staff College of India. (2014). *Municipal Finances and Service Delivery in India: A Study Sponsored by the Fourteenth Finance Commission, Government of India*. Hyderabad: ASCI.

Ahluwalia, I. J., Mohanty, P. K., Mathur, O., & Roy, D. (2019). *State of municipal finances in India* (No. 19-r-03). Indian Council for Research on International Economic Relations (ICRIER), New Delhi, India.

Ahluwalia, I. J., Kanbur, R., & Mohanty, P. K. (Eds.). (2014). *Urbanisation in India: Challenges, opportunities and the way forward*.

Alterman, R. (2012). Land use regulations and property values: The 'Windfalls Capture' idea revisited. *Chapter in: 'The Oxford Handbook of Urban Economics and Planning'*(Nancy Brooks, Kieran Donaghy, and Gerrit-Jan Knaap, eds.) pp, 755-786.

Anderson, J. E. (1990). Tax increment financing: Municipal adoption and growth. *National Tax Journal*, 43(2), 155-163.

Asian Development Bank. (2012). *Infrastructure for supporting inclusive growth and poverty reduction in Asia*. Asian Development Bank.

Australasian Railway Association. (2014). *Innovative Funding and Financing for Public Transport: A Review of Alternative, Sustainable Funding and Financing Sources*. Australasian Railway Association.

Balakrishnan, S. (2017). Land-based Financing for Infrastructure. *Political Economy of Contemporary India; Cambridge University Press: Delhi, India*, 260-278.

- Bahl, R. W., & Linn, J. F. (1992). *Urban public finance in developing countries*.
- Bahl, R. W., & Bird, R. M. (2014). Decentralization and infrastructure: principles and practice.
- Banerji, S., Gangopadhyay, K., Thampy, A., & Wong, Z. (2013). Constraints and prospects of financing via municipal bonds in India: An analysis with case studies. *India: International Growth Centre, April*.
- Beeferman, L., & Wain, A. (2016). Infrastructure: Doing What Matters. *Available at SSRN 2714343*.
- Bhattacharyay, B. N. (2010). Financing Asia's infrastructure: Modes of development and integration of Asian financial markets.
- Black, J. (2018). City Creditworthiness Initiative: A Partnership to Deliver Municipal Finance.
- Briffault, R. (2010). The most popular tool: tax increment financing and the political economy of local government. *U. Chi. L. Rev.*, 77, 65.
- Brueckner, J. K. (2001). Tax increment financing: A theoretical inquiry. *Journal of Public Economics*, 81(2), 321-343.
- Byrne, P. F. (2005). Strategic interaction and the adoption of tax increment financing. *Regional Science and Urban Economics*, 35(3), 279-303.
- Carrol, D. A. (2008). Tax Increment Financing and Property Value. *An Examination of Business Property Using Panel Data. Urbana Aff. Rev*, 43, 520-552.

- Chen, C., & Bartle, J. R. (2022). *Innovative infrastructure finance: A guide for state and local governments*. Springer International Publishing AG.
- Chen, Y., Li, Z., Li, P., Zhang, Y., Liu, H., & Pan, J. (2022). Impacts and projections of land use and demographic changes on ecosystem services: A case study in the Guanzhong region, China. *Sustainability*, 14(5), 3003.
- Cho, S. H., Gyu Kim, S., & Roberts, R. K. (2011). Measuring the effects of a land value tax on land development. *Applied Spatial Analysis and Policy*, 4, 45-64.
- Choudhry, M. (2010). *An introduction to bond markets* (Vol. 16). John Wiley & Sons.
- Collier, P., & Venables, A. J. (2016). Urban infrastructure for development. *Oxford Review of Economic Policy*, 32(3), 391-409.
- Conlon, T., & Cotter, J. (2014). Anatomy of a bail-in. *Journal of Financial Stability*, 15, 257-263.
- Connolly, C., & Wall, A. (2016). Value capture: A valid means of funding PPPs?. *Financial Accountability & Management*, 32(2), 157-178.
- Croce, R. D., Paula, J., & Laboul, A. (2015). Infrastructure financing instruments and incentives. *Organ Econ Co-operation Dev (OECD)*.
- Davis, D. (1989). Tax increment financing. *Public Budgeting & Finance*, 9(1), 63-73.
- Dhere Amar, M. (2018). Peasantry to Industry: Innovative Participatory Model of Development for Policy Implications-A Case of Magarpatta City. *Int J Fam Busi Manag*, 1(2), 1-7.

- Dobbs, R., Smit, S., Remes, J., Manyika, J., Roxburgh, C., & Restrepo, A. (2011). Urban world: Mapping the economic power of cities.
- Doherty, M. (2004). Funding public transport development through land value capture programs. *Institute for Sustainable Futures*, 30.
- Dye, R. F., & Sundberg, J. O. (1998). A model of tax increment financing adoption incentives. *Growth and Change*, 29(1), 90-110.
- Dye, R. F., & Merriman, D. F. (2000). The effects of tax increment financing on economic development. *Journal of urban Economics*, 47(2), 306-328.
- Dye, R. F., & England, R. W. (2010). *Assessing the theory and practice of land value taxation*. Cambridge, MA: Lincoln Institute of Land Policy.
- Edwards, N. (2016). An Overview of Local Government General Obligation Bond Issuance Trends—2016 Update. *California Debt and Investment Advisory Commission Report*, (16-14).
- Estache, A., & Garsous, G. (2012). The impact of infrastructure on growth in developing countries. *IFC Economics Notes*, 1, 12-23.
- Fay, M., Martimort, D., & Straub, S. (2021). Funding and financing infrastructure: The joint-use of public and private finance. *Journal of Development Economics*, 150, 102629.
- Freire, M., & Kopanyi, M. (2018). Asset and debt management for cities. *Policy Note*, International Growth Centre, London School of Economics.

- Gandhi, S., & Phatak, V. K. (2016). Land-based financing in metropolitan cities in India: The case of Hyderabad and Mumbai. *Urbanisation*, 1(1), 31-52.
- Grimes, A., Apatov, E., Lutchman, L., & Robinson, A. (2014). Infrastructure's long-lived impact on urban development: Theory and empirics.
- Gupta, S., & Sharma, A. K. (2022). Evolution of infrastructure as an asset class: a systematic literature review and thematic analysis. *Journal of Asset Management*, 23(3), 173-200.
- Habitat, U. N. (2013). *State of the world's cities 2012/2013: Prosperity of cities*. Routledge.
- Haldia, P., & Mittal, P. (2015). Mezzanine finance for the Indian micro finance industry. *International Journal of Management Research and Business Strategy*, 4(1), 192-196.
- Henckel, T., & McKibbin, W. (2010). The economics of infrastructure in a globalized world: issues, lessons and future challenges. *The Brookings Institution, Washington DC*, 10.
- High Powered Expert Committee. (2011). *Report on Indian Urban Infrastructure and Services*. New Delhi: The High Powered Expert Committee (HPEC) for Estimating the Investment Requirements for Urban Infrastructure Services.
- Hu, X., Cojoianu, T., Huang, J., Pant, R., & Hall, J. (2021). The Spatial Dynamics of Infrastructure Development: Evidence from 70 years of Infrastructure Provision in China. *Available at SSRN 3956170*.

Huddleston, J. R. (1982). Local Financial Dimensions of Tax Increment Financing: A Cost-Revenue Analysis. *Public Budgeting & Finance*, 2(1), 40-49.

Hulten, C. R. (2005). Transportation infrastructure, productivity, and externalities. *Paris: University of Maryland and National Bureau of Economic Research*.

Inderst, G. (2010). Infrastructure as an asset class. *EIB papers*, 15(1), 70-105.

Indian Council for Research on International Economic Relations (ICRIER). (2019). *State of Municipal Finances in India*. A Study Prepared for the Fifteenth Finance Commission: New Delhi.

Ingram, G. K. (2012). *Value capture and land policies*. Lincoln Institute of Land Policy.

Ingram, G., Liu, Z., and Brandt, K. (2013). Metropolitan Infrastructure and Capital Finance, in *Financing Metropolitan cities in Developing Countries* edited by Roy Bahl, Johannes Linn and Deborah Wetzel. Cambridge: Lincoln Institute of land Policy.

Jacobs, J. (2015). Cities and the Wealth of Nations (1984). In *The Money Changers* (pp. 100-102). Routledge.

Jaeger, W. K. (2006). The effects of land-use regulations on property values. *Envtl. L.*, 36, 105.

Jain, M., & Joshi, R. (2015). Municipal finances in India: Unresolved issues and way forward. *Cities: The 21st century India*.

Kim, J. (2016). Handbook on urban infrastructure finance. *New Cities Foundation, Paris*.

Kumar, B. R. (2022). Infrastructure Financing Instruments. In *Project Finance: Structuring, Valuation and Risk Management for Major Projects* (pp. 31-54). Cham: Springer International Publishing.

Lawrence, D. B., & Stephenson, S. C. (1995). The economics and politics of tax increment financing. *Growth and Change*, 26(1), 105-137.

Malhotra, A., Mishra, A. K., & Vyas, I. (2022). Financing urban infrastructure in India through tax increment financing instruments: A case for smart cities mission. *Journal of Public Affairs*, 22(3), e2554.

Man, J. Y., & Rosentraub, M. S. (1998). Tax increment financing: Municipal adoption and effects on property value growth. *Public Finance Review*, 26(6), 523-547.

Man, J. Y. (1999). The impact of tax increment financing programs on local economic development. *Journal of Public Budgeting, Accounting & Financial Management*, 11(3), 417-430.

Mao, J., Tian, Q., & Lu, C. (2022). Impact of rapid transit development on urban economic growth: an empirical study of the urban agglomerations in China. *Frontiers in Earth Science*, 10, 920796.

Mathur, S. (2019). An evaluative framework for examining the use of land value capture to fund public transportation projects. *Land use policy*, 86, 357-364.

Mejia, D. L., & Muñoz, R. (2009). The Colombian approach to Urban Mass Transit infrastructure financing through value-capture: progress to date. *TRANSyT Working Paper 2009-01-EN. Universidad Politécnica de Madrid, Spain.*

Merk, O., Saussier, S., Staropoli, C., Slack, E., & Kim, J. H. (2012). Financing green urban infrastructure.

Merriman, D. (2018). *Improving tax increment financing (TIF) for economic development*. Cambridge, MA: Lincoln Institute of Land Policy.

Merriman, D. (2019). Improving tax increment financing (TIF) for economic development. *Available at SSRN 3887676*.

Merriman, D. F., Skidmore, M. L., & Kashian, R. D. (2011). Do tax increment finance districts stimulate growth in real estate values?. *Real Estate Economics*, 39(2), 221-250.

Ministry of Housing and Urban Development (2017). Value Capture Finance Policy Framework

Ministry of Housing and Urban Development (2018). National Urban Policy Framework

Mishra, A. K., & Mohanty, P. K. (2018). Urban infrastructure financing in India: Applying the benefit and earmarking principles of taxation. *Journal of Social and Economic Development*, 20, 110-128.

Mishra, A. K., & Mohanty, P. K. (2017). Urban policy in Asia Pacific countries: a case for inclusionary zoning and housing. *Asia-Pacific Journal of Regional Science*, 1, 191-215.

Mohanty, P. K. (2016). *Financing cities in India: Municipal reforms, fiscal accountability and urban infrastructure*. SAGE Publications India.

Mohanty, P. K., Misra, B. M., Goyal, R., & Jeromi, P. D. (2007). Municipal finance in India: An assessment. *Development Research Group Study*, 26.

Nallathiga, R. (2014). Land-based Instruments for Urban Infrastructure Development: The Experience of TDR in Mumbai. *NICMAR Journal of Construction Management and Research*, 29(1), 51-65.

Nallathiga, R. (2015). Municipal bonds as a source of finance for urban infrastructure development in India.

Nallathiga, R. (2018). The Hyderabad Outer Ring Road (HORR) Project: A Case Analysis of the Project and Its Success.

National Institute of Urban Affairs. (2016). Value Capture from Infrastructure Investments for Smart Cities

Nishant (Civil engineer), & Ravi, R. (2018). *Riding on Debt: Financial Analysis of Delhi Metro After Phase III*. Centre for Financial Accountability.

O'Brien, P., & Pike, A. (2015). The governance of local infrastructure funding and financing. *Infrastructure Complexity*, 2, 1-9.

Oncioiu, I. (2012). Small and medium enterprises' access to financing—a European concern: evidence from Romanian SME. *International Business Research*, 5(8), 47-58.

Oppio, A., Torrieri, F., & Bianconi, M. (2019). Land value capture by urban development agreements: The case of lombardy region (Italy). In *New Metropolitan Perspectives: Local Knowledge and Innovation Dynamics Towards Territory Attractiveness Through the Implementation of Horizon/E2020/Agenda2030–Volume 1* (pp. 346-353). Springer International Publishing.

PHD Chamber. (2015). Transforming central business districts: Taking the Smart Route.

Planning Commission, Government of India. (2008). *Eleventh Five Year Plan 2007–2012*. New Delhi: Government of India.

Planning and research office, state of california. (2020). Report on the use of Tax Increment Financing - California. <https://www.opr.ca.gov/docs/20210203->

Public private partnerships. NITI Aayog. (n.d.-a). <https://www.niti.gov.in/verticals/ppp>

Pratap, K. V., Chakrabarti, R., Pratap, K. V., & Chakrabarti, R. (2017). Financing Infrastructure. *Public-Private Partnerships in Infrastructure: Managing the Challenges*, 41-73.

Rani, N., Yadav, S. S., & Jain, P. K. (2014). ME-EC-03: REIT: THE DEBUT IN INDIA AND ROAD AHEAD.

Ramachandraiah, C. (2016). Making of Amaravati: A landscape of speculation and intimidation. *Economic and political weekly*, 68-75.

Rolon, A. (2008). Evaluation of value capture mechanisms from linkage capture to special assessment districts. *Transportation Research Record*, 2079(1), 127-135.

Rouanet, H., & Halbert, L. (2016). Leveraging finance capital: Urban change and self-empowerment of real estate developers in India. *Urban Studies*, 53(7), 1401-1423.

Roukouni, A., Macharis, C., Basbas, S., Stephanis, B., & Mintsis, G. (2018). Financing urban transportation infrastructure in a multi-actors environment: the role of value capture. *European Transport Research Review*, 10, 1-19.

Sahasranaman, A., & Prasad, V. (2014). Sustainable Financing for Indian Cities. *Yojana*, 58.

Sankhe, S., Vittal, I., Dobbs, R., Mohan, A., Gulati, A., Ablett, J., ... & Setyy, G. (2010). *India's urban awakening: Building inclusive cities, sustaining economic growth* (p. 234). Mumbai: McKinsey Global Institute.

Sanyal, B., & Deuskar, C. (2012). A better way to grow? Town planning schemes as a hybrid land readjustment process in Ahmedabad, India. *Value capture and land policies*, 149, 182.

Sari, A. F., Utomo, C., & Rahmawati, Y. (2020, September). Research on real estate investment trust (REIT) as real estate financing for developers: a methodology review of previous study. In *IOP Conference Series: Materials Science and Engineering* (Vol. 930, No. 1, p. 012015). IOP Publishing.

Sharma, R., & Newman, P. (2018). Can land value capture make PPP's competitive in fares? A Mumbai case study. *Transport Policy*, 64, 123-131.

Sheikh, S., & Asher, M. G. (2012). A case for developing the municipal bond market in India. *ASCI journal of Management*, 42(1), 1-19.

Singh, M. B., & Mishra, N. K. (2018). Access to Basic Urban Amenities in India. *National Geographical Journal of India*, 64(3-4), 41-53.

Skidmore, M., & Kashian, R. (2010). On the relationship between tax increment finance and property taxation. *Regional Science and Urban Economics*, 40(6), 407-414.

Smolka, M. O. (2013). *Implementing value capture in Latin America: Policies and tools for urban development*. Lincoln Institute of Land Policy.

Sridhar, K. S., & Reddy, A. V. (2009). Land as a municipal financing Option: a pilot study from India. *Public Affairs Center, Bangalore. Study Report*.

Srinivasan, R., & Parlikad, A. K. (2020). An approach to value-based infrastructure asset management. *Value Based and Intelligent Asset Management: Mastering the Asset Management Transformation in Industrial Plants and Infrastructures*, 123-138.

Suzuki, H., Murakami, J., Hong, Y. H., & Tamayose, B. (2015). *Financing transit-oriented development with land values*. Washington, DC, USA: World Bank Publications.

Svedik, J., & Tetreova, L. (2015). Use of public debt mezzanine instruments in the Czech Republic. *Procedia-Social and Behavioral Sciences*, 210, 449-455.

Orum, A. M. (2019). *The Wiley-Blackwell Encyclopedia of Urban and Regional Studies*. John Wiley & Sons.

Tetreova, L. (2009). Mezzanine finance and corporate bonds. *Finance: Challenges of the Future*, 8(9), 145-150.

Tewari, M., & Godfrey, N. (2016). Better cities, better growth: India's urban opportunity.

United Nations. (2012). *World Urbanization Prospects: The 2011 Revision*. New York: United Nations, Department of Economic and Social Affairs, Population Division.

United Nations. (2015). *World Urbanization Prospects: The 2014 Revision*. New York: United Nations, Department of Economic and Social Affairs, Population Division.

University of Oxford. (2022). May 2022 impact bond landscape. The Government Outcomes

Venables, A.J. (2007). Evaluating Urban Transport Improvements: Cost-Benefit Analysis in the Presence of Agglomeration and Income Taxation. *Journal of Transport Economics and Policy*, 41(2), 173-188.

Verhoef, E. T., & Nijkamp, P. (2003). Externalities in the urban economy.

Vyas, I., Vyas, H. N., & Mishra, A. K. (2022). Land-based financing of cities in India: A study of Bengaluru and Hyderabad and directions for reforms. *Journal of Public Affairs*, 22(1), e2378.

Wade, L. (2020). An unequal blow.

Wagner, M., Bertol, G., & Murphy, A. (2014). Enhancing Private Infrastructure Investment in Brazil. *Oliver Wyman*.

- Walters, L. C. (2013). Land value capture in policy and practice. *Journal of Property Tax Assessment & Administration*, 10(2), 5-21.
- Weber, R. (2014). Tax increment financing in theory and practice. In *Financing economic development in the 21st century* (pp. 297-315). Routledge.
- Weber, R. (2010). Selling city futures: The financialization of urban redevelopment policy. *Economic geography*, 86(3), 251-274.
- Weber, R. N., & Goddeeris, L. (2007). *Tax increment financing: Process and planning issues*. Cambridge, MA: Lincoln Institute of Land Policy.
- Weber, R., Bhatta, S. D., & Merriman, D. (2007). Spillovers from tax increment financing districts: Implications for housing price appreciation. *Regional Science and Urban Economics*, 37(2), 259-281.
- World bank (2009). *World Development Report 2009: Reshaping Economic Geography*. World Development Report. Washington, DC.
- World Urbanization Prospects. (2018). Department of Economic and Social Affairs, Population Dynamics, United Nations.
- Yang, Y., Lu, X., Chen, J., & Li, N. (2022). Factor mobility, transportation network and green economic growth of the urban agglomeration. *Scientific Reports*, 12(1), 20094.
- Yescombe, E. R., & Farquharson, E. (2018). *Public-Private Partnerships for infrastructure: Principles of policy and finance*. Butterworth-Heinemann.

Yoshino, N., Helble, M., & Abidhadjaev, U. (2018). *Financing infrastructure in Asia and the Pacific: Capturing impacts and new sources*. Asian Development Bank Institute.

Zhao, Z. J., Das, K. V., & Larson, K. (2010). Tax increment financing as a value capture strategy in funding transportation. *Transportation Research Record*, 2187(1), 1-7.

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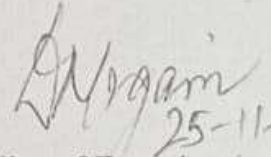
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Financing urban infrastructure in India through tax increment financing instruments: A case for smart cities mission

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This article is targeted at exploring the Tax Increment Financing (TIF) model for financing planned urban development programs and projects in Indian cities—smart cities, in particular. This is founded on the premise that the TIF approach offers an excellent opportunity to Urban Local Bodies (ULBs) for the creation, capture and recycling of values in cities to support funding of core urban infrastructure in a sustained manner. This article identifies the key components of the TIF model and explains why it is a theoretically elegant and practically desirable strategy for potential acceptance by Indian cities at the present level of urban evolution when municipal finances are unstable and the municipalities are also not in a position to generate current tax income surplus. This article is grounded on the precept of “theory follows practice and vice versa”, case studies on TIF as implemented internationally. In the end, this article suggests directions as to how the TIF principles could be integrated into the theoretical account of financing innovative projects under the Smart Cities Mission, including accessing capital market funds through municipal bonds. The key findings of this article suggest that the efficacy of tax increment financing tools in Indian cities will depend on several factors: the versatility of city development strategy and plan; reforms in municipal finance system; reforms in spatial planning; effective design of TIF projects and financing strategies, including mechanisms for value capture and recycling to catalyze economic growth-enhancing enterprises that create further values to land-owners and the city; and human resource capacity to plan, design, finance, implement and monitor projects. If planned well, TIF instruments can act as potent tools to augment external economies of agglomeration and networking and give a momentum to the economic growth, bringing forth a self-financing or even surplus-generating process of planned urban expansion, growth and reclamation.

1 | INTRODUCTION

This article is aimed at exploring the Tax Increment Financing (TIF) model for financing planned urban development programmes and projects in Indian cities—smart cities, in particular. It is based on the premise that the TIF approach offers an excellent opportunity to Urban

Local Bodies (ULBs) for the creation, capture and recycling of values in cities to support the funding of core urban infrastructure in a sustained manner. The major motivation of this study is stemming as follows. Sustained funding for the development of core infrastructure facilities in tune with the demands of economic growth is a key challenge for smart cities and this warrants searching for and adopting innovative instruments. It must be acknowledged that cities contribute to different stakeholders in the economy by providing various benefits, which translate into enhanced tax bases of several strata of

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government. Thus, if a part of the enhanced revenues is escrowed to repay the debt incurred for financing benefit-generating and value-creating projects, then the sustained funding of urban development plans could, in principle, be possible. This is the fundamental thought behind the innovative "Tax Increment Financing" (TIF) paradigm adopted by the United States, Australia, Canada, and other countries. This model is considered desirable for cash-starved cities in India, including those selected under the Smart Cities Mission. These cities could overcome their current revenue constraints by adopting financially sound, innovative, and futuristic plans based on the TIF framework and undertaking current infrastructure projects financed by debt.

Another important motivation of the study arises with the launch of three major missions by the Government of India in 2015 to address the key challenges of urbanization in the country: Smart Cities Mission, Atal Mission for Rejuvenation and Urban Transformation (AMRUT), and Housing for All by 2022. These missions have replaced the earlier national programme of Jawaharlal Nehru National Urban Renewal Mission (JNNURM), launched in 2005—with four sub-missions: Urban Infrastructure and Governance (UIG) and Basic Services to the Poor, applicable to 65 select cities of national importance, and Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT) and Integrated Housing and Slum Development Programme (IHSDP), applicable to other cities and towns. The new initiatives of the Government of India are aimed at making India's urbanisation process efficient, sustainable, equitable and inclusive. In particular, the Smart Cities Mission aims at promoting economic growth, strengthening urban governance and improving service delivery to urban residents through support to "smart" cities, selected based on a nationally competitive process. Smart cities will provide the infrastructure that uses 'smart' solutions to improve civic service delivery, including innovative ways to mobilise resources for planned urban development. The success of the Smart Cities Mission will crucially depend on how city infrastructure development and renewal projects are structured and implemented. Financing core urban infrastructure, leveraging municipal revenues along with state and central grants to raise external resources is a key challenge for not only the smart city managers but also policy makers in India.

Like the Smart Cities Mission, the JNNURM had the objective of using central and state grants to supplement municipal revenues for raising resources from the market. JNNURM committed a central grant to the tune Rs.100,000 crores for projects involving urban infrastructure and basic services to the poor for being spent over the 7-year mission period 2005–2012. As against this amount, the Planning Commission of India allocated a sum of Rs.66,085 crores during the period. However, the actual allocation made based on the progress achieved by cities concerning projects and reforms over the period was Rs.45,066 crores. Against this amount, Rs.40,584 crores could be released by 2011–2012. A key problem with JNNURM was that many ULBs could not mobilize their share in time as they failed to undertake basic reforms in municipal finance and administration. Some State Governments also did not provide their share in time. The 23 reforms stipulated by JNNURM included resource mobilization by

restructuring user charges and property tax. However, these reforms were carried out only partially. At the end of the mission period, the ULBs were far from achieving full cost recovery in respect of core civic services such as water supply, sewerage, drainage, solid waste management. Ironically, the 2017 Economic Survey of India 2016–2017 reveals that Indian cities like Bengaluru and Jaipur hardly collect 5–20% of their property tax potential. The non-exploitation of assigned resources with ULBs has resulted in their inability to finance core urban infrastructure and services.

A conspicuous observation from the implementation of JNNURM is that due to central and state grants being readily available, there was not much "own" effort on the part of municipalities to raise resources from the market. Paradoxically, only three municipal bonds were issued in India during the 7-year mission period, mobilizing a meagre Rs.1,500crores. In a way, JNNURM adversely affected the municipal bonds initiative launched in India in the 1990s. This is an important lesson for consideration while designing and implementing projects under the Smart Cities Mission. It is in this context, this article contributes to the literature by examining different approaches adopted by Indian cities, smart cities, in particular, to finance and implement core infrastructure projects, and make out a case for tax increment financing (TIF) as a robust strategy to promote planned urban development. This article also describes the key elements of the TIF model and explains why it is a theoretically elegant and practically desirable strategy for possible adoption by Indian cities at the present stage of urban evolution when municipal finances are precarious. This article adopted the case studies approach on TIF as implemented internationally, especially in the United States to understand the TIF process, the merits and demerits of the method, and the factors that implement TIF successfully.

The key findings of the article surmised that a TIF approach is very relevant for cities in India, including those selected under the Smart Cities Mission. This is because, while most cities suffer from a lack of current revenue surplus to finance worthwhile development projects on a "pay-as-you-go" principle, they can still bank on future tax increments due to the innovative urban planning and implementation of value-creating projects, innovatively structured. However, a robust approach based on the TIF principle is yet to be adopted by cities in India to finance area-based and citywide infrastructure projects. In-fact many smart cities are yet to adopt the TIF approach.

This article is meant to assist officials of urban local bodies, especially smart cities, in structuring innovative projects and designing municipal finance improvement instruments to sustain the funding of value-creating urban development, redevelopment, renewal and expansion programmes. It is also meant for policy-makers at the state and central levels to bring structural reforms in the municipal finance system in India. Such reforms are necessary for a view of the fact that cities have a fundamental role to play in economic growth due to their agglomeration externalities. They create external economies and multiplier effects for growth at a stage when the economy is resource-deficient.

The balanced of the paper is planned as follows. Section 2 presents features of the Smart Cities Mission and their key implications

for the design of financing strategy for smart projects. Section 3 highlights the challenges of urban infrastructure financing in India; it presents arguments as to why the TIF approach is promising. Section 4 refers to the theoretical underpinnings of TIF and challenges in its implementation to guide policymakers and administrators. Section 5 presents a toolbox of TIF financing instruments for adoption by cities in India to implement urban development, renewal, rejuvenation and expansion projects. Section 6 concludes.

2 | THE SMART CITIES MISSION: INDIA'S FLAGSHIP PROGRAMME

The Smart Cities Mission aims at the creation of replicable models of urban development and renewal for wider execution across the country. It is slated for implementation over the period 2015–2016 to 2019–2020 covering 100 cities. The Government of India has committed investment of Rs.48,000 crores, with each city smart city receiving Rs.100 crores per annum for five years. States and urban local bodies (ULBs) will mobilise another Rs.48,000 crores based on a 50:50 sharing formula between the centre and the states. The central and state grants will act as a catalyst to mobilise internal and external resources, including local user charges, taxes, other inter-governmental transfers and borrowing on the part of ULBs. Some key features of the Smart Cities Mission are summarized as follows:

- Promoting mixed land use in area-based developments—planning for unplanned or under-planned areas containing a range of compatible activities and land uses close to one another to make land use more efficient. The States will enable some flexibility in land use and building bye-laws to adapt to change;
- Housing and inclusiveness—expand housing opportunities for all the sections of the society, especially economically weaker sections (EWS) and low-income groups (LIG);
- Creating walkable localities with focus on non-motorised transport (NMT) modes—reduce congestion, air pollution and resource depletion, boost the local economy, promote interactions and ensure security. The road network is created or refurbished not only for vehicles and public transport, but also for pedestrians and cyclists, and necessary administrative services are offered within walking or cycling distance;
- Preserving and developing open spaces—parks, playgrounds, and recreational places to enhance the quality of life of citizens, reduce the urban heat island effects in areas and generally promote ecological balance;
- Promoting a variety of transport options—Transit-Oriented Development (TOD), public transport and last-mile para-transport connectivity;
- Making governance citizen-friendly and cost-effective—increasingly rely on online services to bring about accountability and transparency, especially using mobiles to reduce the cost of delivery and providing civic services without the need for people to go to municipal offices. Forming e-groups to listen to people and obtain feedback

and use online monitoring of programs and activities with the aid of cyber tour of worksites;

- Giving an identity to the city—based on its main economic activity, such as local cuisine, health, education, arts and craft, culture, sports goods, furniture, hosiery, textile, dairy, etc.;
- Applying “smart solutions” to deliver infrastructure and services in area-based development to make them better, for example, making areas less vulnerable to disasters, using fewer resources, and providing cheaper services.

The role of smart cities as engines of economic growth and structural transformation cannot be sustained unless they are in a position to meet the infrastructure needs of productive economic activities (Mishra, A.K, Mishra, 2019). Such needs are so huge that the only practical way to address them is to resort to market borrowing. But the debt incurred for financing such infrastructure projects will have to be repaid. This calls for the structuring of debt-servicing mechanisms to ensure timely repayment of debt. It is in this context that the Tax Increment Financing (TIF) model offers a promising strategy. Most municipal corporations and municipalities in India do not generate a sizable amount of current revenue surplus to support “pay as you go” (Mishra Alok & Mohanty, 2018) financing of infrastructure. However, while the current municipal revenues remain precarious, cities could hope to come out of their low-level equilibrium trap by smart planning, smart design of development and renewal projects, and effective implementation of such projects and embracing fiscal discipline. Innovative infrastructure projects, if structured well and implemented efficiently will create value and tax increments that can be captured, escrowed and recycled to support a stream of continuing investments, leading to further values and additional tax increments.

3 | CHALLENGES OF URBAN INFRASTRUCTURE FINANCING

India faces daunting challenges of urban infrastructure due to the widening gap between the needs of urbanization and resources available with ULBs and infrastructure authorities. McKinsey (, 2010) projects that India would need to spend Rs.9.74 million crores on cities by 2030, with Rs. 5.31 million crores for capital expenditure. The largest demand for capital spending would come from affordable housing, followed by mass transit. If we exclude affordable housing, the capital spending required until 2030 would be Rs.3.54 million crores. The McKinsey report informs that India's annual per capita spending on cities at \$50, including capital and operational expenditures, is 14% of China's \$362, less than 10% of South Africa's \$508, and less than 3% of the United Kingdom's \$1,772. In terms of capital expenditure, India's per capita annual urban spending is \$17 as against \$116 in China, \$127 in South Africa, and \$391 in the United Kingdom. The report estimates that India would need to increase the figure eight-fold, from \$17 to \$134, raising it from 0.5% of GDP to 2% of GDP a year. The High Powered Expert Committee for Estimating the Investment Requirements for Urban Infrastructure Services projects that

India would need Rs. 3.92 million crores for urban infrastructure investments over the period 2012–31. If operation and maintenance (O&M) costs are added, the figure would increase to Rs. 5.92 million crores (HPEC, 2014).

Table 1 depicts the expenditure needs for core urban infrastructure sectors in India based on HPEC (2014). While the investment needs of urban infrastructure are colossal, the finances of ULBs in India are precarious. The share of municipal revenue in combined central and state revenues declined from 3.71% in 1990–1991 to 2.43% in 2000–2001, and less than 2% presently. The ratio of municipal revenues to GDP in India is about 1% - compared to Poland (4.5),

South Africa (6.0), and Brazil (7.4). Data on municipal finance collected by the Fourteenth Finance Commission reveals that the total revenues of municipal bodies in India were less than Rs.100,000 crores in 2012–2013 (Table 2).

While the funds required for investment in urban infrastructure in India are huge, the resources available with municipal corporations and municipalities are too meagre (Panda, Mishra, & Mishra, 2020). Indian ULBs suffer from a gross mismatch between their functions and finances. With octroi abolished in all cities given the new GST regime, property tax remains the only major “own” tax revenue source with municipal authorities. However, the property tax remains grossly

TABLE 1 Urban expenditure estimates for core sectors (Rs crore at 2009–10 prices): 2012–31

Sector	Total capital expenditure—Rs. Crore	Total Operations & Maintenance Expenditure—Rs. Crore	Average per capita investment cost—Rs.	Average per capita O&M Cost (annual)—Rs.
Water supply	320,908	546,095	5,099	501
Sewerage	242,688	236,964	4,704	286
Solid waste management	48,582	273,906	391	155
Urban roads	941	375,267	22,974	397
Storm water drains	191,031	34,612	3,526	53
Urban transport	449,426	304,386	5,380	371
Traffic support infrastructure	97,985	36,690	945	34
Street lighting	18,580	4,717	366	8
Total	3,098,141	1,812,637	43,385	1806

Source: High Powered Expert Committee on Urban Infrastructure Report (, 2014), Mishra Alok and Mohanty (Mishra Alok & Mohanty, 2018).

TABLE 2 Trends in municipal revenues in India by source: 2007–08 - 2012–13

		2007-08		2012-13	
Sl. No.	Sources of revenue	Total (Rs. Crore)	% of total municipal revenue (%)	Total (Rs. Crore)	% of Total municipal revenue (%)
A. Own sources					
1.	Total taxes	18,366	37.20	30,912	32.00
	Property tax	8,159	16.53	15,110	15.64
	Other taxes	10,207	20.68	15,801	16.35
2	Non-taxes	9,134	18.50	19,002	19.70
	Total own source revenues	27,501	55.70	49,913	51.60
B. Other sources					
1	Government of India transfers	3,515	7.10	5,387	5.60
2	Central finance commission transfers	986	2.00	3,760	3.90
3	State assignment/devolution	9,342	18.90	18,537	19.20
4	State Grant-in-aid	6,653	13.50	14,809	15.30
5	Others	1,355	2.70	4,234	4.40
	Total other source revenues	21,851	44.30	46,727	48.40
C. Total revenues		49,351	100.00	96,640	100.00
Gross domestic product at factor Cost in current prices (GDP)		45,82,086		93,88,876	
Municipal revenue as a % of GDP			1.08		1.03

Source: ASCI (2014)—based on data furnished by state governments to the Fourteenth Finance Commission of India; *Indian Public Finance Statistics* 2013–14; Mohanty (2016).

under-exploited (Mishra, Mishra, & Panda, 2020). A two-pronged strategy is called for to reform municipal finances in India. Firstly, the country needs to strive to significantly raise the size of the municipal sector to enable the cities to function as drivers of economic growth. The basket of 'own' revenues sources needs to be enlarged. Secondly, the ULBs must exploit the instruments already available with them. They must tap the potential of the property and other land-based taxes.

As regards to the strategy of financing civic infrastructure and services, Bahl et al. (Bahl, Linn, & Wetzel, 2013), after a study of urban finance system in several countries around the world, recommend the following golden rules to identify revenue sources appropriate for financing particular types of local expenditures:

- Where the benefits of public services are measurable and accrue to readily identified individuals in a jurisdiction, user charges are the most appropriate financing instruments;
- Local public services such as administration, traffic control, street lighting and security, which are services to the general public in the sense that identification of beneficiaries and measurement of benefits and costs to individuals is difficult, are most appropriately financed by taxes on residents;
- The cost of services for which significant spillovers to neighbouring jurisdictions occur (e.g., health, education and welfare), should be financed substantially by state or national inter-governmental transfers; and
- Borrowing is appropriate to finance capital outlays on lumpy infrastructure facilities, particularly, public utilities and roads, whose benefits spread over generations.

In practice, countries around the world have adopted a mix of instruments to finance their urban infrastructure needs: (a) revenue surplus from local taxes including land and property taxes, (b) local user fees, utility charges, benefit charges and congestion tolls; (c) central and state government capital grants, tax abatements and credit assistance, including revolving loan funds, tax credit, seed capital, venture capital, mezzanine funds and loan guarantees; (d) equity financing, including joint development and public-private partnerships; (e) debt financing, including municipal bonds, pooled finance bonds, green bonds, bond banks, institutional credit and financial intermediation; (f) planning and development-related tools, including development charges, external development charges, developer exactions and impact fees; (g) land value capture instruments, including betterment levies, special assessments, land monetization and tax increment financing; (h) emerging financial market instruments such as structured bonds and infrastructure investment funds, (i) special purpose vehicles that combine equity, debt, viability gap, annuity and other types of funding, and so forth. Borrowing has been a major instrument to finance lumpy infrastructure projects during the urban transition of developed countries.

In the United States, municipal bonds, comprising revenue bonds and general obligation bonds have been the principal instruments to raise resources for building city infrastructure facilities. However, a

fundamental requirement for debt financing, whether through bonds or otherwise is "credit-worthiness" on the part of the borrowing entity and escrowing of "predictable" revenues to repay the debt incurred. This calls for careful designing of urban infrastructure projects along with appropriate structuring of financing instruments. In this context, the Smart Cities Mission warrants that cities structure area-based retrofitting, renewal and green-field projects as well as pan-city initiatives along with innovative strategies to finance them. The basic premise on which the Mission is based is that smart area-based and city-wide projects will be able to generate adequate resources which can be tapped to repay the debt incurred to finance them. The fact that the Government of India and State Governments are providing grant funds for projects taken up under the Smart Cities Mission suggests that such projects should be in a position to bear the burden of a reasonable amount of debt. The "smart cities" of India need to lead the way by adopting smart principles and practices to part-finance projects with debt through municipal bonds. In this context, there is a need to look to the theory of Tax Increment Financing (TIF).

4 | TAX INCREMENT FINANCING: THEORY

Tax increment financing (TIF) is a flexible instrument for financing urban development, expansion or renewal to stimulate local economic development (LED). It aims at escrowing anticipated revenues from such projects, including tax increments due to their execution to service the debt incurred for financing. TIF is an innovative tool that uses future revenue streams to finance current infrastructure programmes. Originally started by California in 1952 to raise local funds to match federal grants under the Housing Act of 1949, TIF has emerged as the "most popular" instrument adopted by local governments in the United States to finance their infrastructure development and rehabilitation needs (Briffault, 2010). When California initiated TIF, it was called a "catalyst for redevelopment". However, the TIF framework is generic, presenting broader possibilities, which can apply to a range of urban development, redevelopment, renewal and rejuvenation projects. TIF is rooted in the "value increment financing" paradigm that uses value creation as a method to finance investments. Today, 49 states in the United States have some form of the TIF legislation. In many US cities, TIF is considered "the only game in town" to finance local economic development. The model has also spread to Australia, Canada and other countries. TIF is regarded as a potentially beneficial tool for developers, residents, communities, businesses and local authorities. It is based on the principles: "growth pays its way" and "beneficiaries pays". TIF has been used extensively in the United States in different formats, including the Special Assessment District and Business Improvement District. Local governments use TIF form any purposes, including attracting new business, revitalizing downtown, rejuvenating dilapidated areas, relieving fiscal stress, providing for off-budget funding of infrastructure to avoid political opposition, capturing tax revenues from overlapping jurisdictions, and retaining or expanding existing businesses (Ermasova & George, 2017).

While the TIF laws vary from state to state in the United States, the basic theory behind TIF is simple. Territorially, a development, redevelopment or renewal district is demarcated in a city or urban agglomeration and the pre-project taxes, especially property tax, based on the assessed valuation of property is determined—called the “base value”. The taxes continue to be levied after the TIF-supported project is executed. But the impact of the project leads to an increase in the local tax base, especially property tax base due to the increase in assessment valuation—called the “tax increment”. The revenues generated from applying the tax rates to the increased tax base in the district, for the life of the district, are set aside and paid to the TIF authority or the local economic development agency to defray expenses or service the debt incurred for undertaking development. In the case of larger TIF districts, the TIF-sponsoring authority may issue municipal/infrastructure bonds backed by the projected increments in revenues. The bond proceeds are used to make upfront investments, jumpstarting development and initiating a spiralling process of value creation, value capture and value recycling, leading to sustained funding of infrastructure. The theory behind the TIF process is captured in terms of the following statement:

In theory, the process is a closed circuit: the incremental revenues pay for public expenditures, which induce private investment, which generates incremental revenues, which pay for public expenditures. Eventually, the TIF program expires, the bond is paid off, and the district's entire assessed valuation—base value and increment—becomes subject to taxation for the general purposes of all the local governments with jurisdictions over the area. (Briffault, 2010, p.68).

As seen from the above, the TIF theory recognizes the close relationship between public and private investments. On one hand, public investment is critical for catalyzing private investment needed to enhance productivity, create jobs, and accelerate economic growth. On the other, private investment is essential to enable growth to occur and sustain; growth also generates the finance needed to support investment in public infrastructure. In this context, research refers to the concept of “public investment multiplier”. However, for the beneficial impacts of public investment on growth to materialize, the government must be in a position to make timely investments in core infrastructure facilities. As TIF captures the infrastructure-induced increases in tax bases, land and property values in particular, and as it does not adversely affect the availability of land for productive activities, it is a versatile method of financing urban infrastructure. In particular, the increase in land value arises with the implementation of various forms of infrastructure such as mass rapid transit, light rail transit, expressways, etc. and capitalization of such infrastructure facilities. This increase in value, called “uplift” or “increment” occurs in different degrees within the “TIF district” or the project-influence area. By generating uplift in properties in the impact zones, the new infrastructure financed by TIF leads to the intensification of development within the TIF district. This causes an increased demand for land which translates into windfall gains in land and property values. If the uplift is sufficiently large, considerable cost recovery in infrastructure will occur. TIF projects focus on increments in property taxes, though in principle, other taxes can be brought to the

ambit of TIF. The test is to establish a rational nexus between TIF investment and tax increments.

Under a TIF program, the concerned local authority first designates a TIF district. It then estimates the natural rate of property tax growth that would have occurred had the new infrastructure development not taken place. This provides an estimate of the national assessment base or “base value” for the TIF district. Over time, the local authority compares this with the actual TIF district assessment base, the difference being “assessment increments” that translate into “tax increments”. With the prevailing property tax rates being applied by the local government to the new assessed valuation in the TIF district, the tax increments are dedicated to financing the TIF infrastructure. In this context, there are two common types of TIF strategies:

Blended: TIF is applied to infrastructure-induced property assessment and at the general tax rate.

Uplift-only: TIF is applied only to uplift—infrastructure-induced increases in land or property value—and at a special supplemental tax rate, which is often equivalent to the value capture rate.

“Blended TIF” is suitable for application under any standard type of property tax system. The “uplift-only TIF” aims at avoiding the adverse effects of the tax on buildings, thereby dampening construction activities. It taxes unearned increments in land values and thus, the landowners are not worse off as long as the benefits of infrastructure accruing to them exceed the costs. “Uplift-only TIF” has greater advantages over ‘Blended TIF’ in terms of economic criteria. However, in practice, the North American municipalities, which have adopted TIF, have opted for the blended approach as it is relatively simple and also avoids political conflicts associated with vested interests in land.

When a TIF district is established, the local taxing body or municipality, equipped with the power to levy a property tax, continues to collect the base amount of the tax that it currently receives from within the district's defined boundaries. When additional tax revenues are generated, the associated “tax increments” go into a special fund or to the TIF authority and can be used to reimburse the developer's qualified costs, make additional improvements, or reduce the outstanding economic developmental costs of the municipality. The public agency that established the district can also use the funds to repay the debt mobilized from the market to finance the development or renewal project. When the TIF districts are abolished—often after 20 to 25 years—the tax base returns back to the original jurisdiction or taxing authority. If the project is successful, however, the new tax base will be considerably larger than what was before the development activities began.

Mathematically, a generic version of the TIF model can be explained as follows. Suppose the TIF law or the agreement between the concerned authorities involved in a TIF project stipulates that only the increment in property tax, based on assessed valuation, is to be earmarked for the TIF authority to enable it to borrow funds and service the debt incurred to finance development or renewal. Let “ V_t ” represent the total assessment or property value in tax year ‘ t ’, and let the property tax rate be ‘ r ’. We also assume that ‘ r ’ is the same before and after investment in the TIF project. Thus, pre-TIF property tax collection = rV_{t-1} and post-TIF property tax collection

(estimated) = rV_t , implying that the “tax increment” will be = $rV_t - rV_{t-1} = r(V_t - V_{t-1})$. The standard TIF model assumes that this tax increment is allocated to the TIF authority or a TIF fund hypothecated toward the financing of the TIF project.

Generally, the formulation of TIF projects assumes that the property tax rate remains unchanged between the pre-TIF and post-TIF scenarios and changes in the valuation assessment primarily lead to increase in revenues. However, often the local authority levies value capture taxes such as betterment levies on the windfall gains accruing to land and property owners, following the implementation of urban infrastructure projects. These value capture taxes apply to both land and property values. Thus, in principle, both increase in land value/property value tax base and land value/property value increment tax base can be combined to finance TIF projects. Alternatively, the local authority could consider a single tax rate that takes into account both the tax base and increment in the tax base. Suppose that the local authority decides to collect, in addition to property tax, a value capture or value increment tax, that is, the authority wants to capture a part of the increase in the values of land/property in the city due to TIF investments at a rate different from that captured by property tax based on assessed valuation.

Let

r = Tax rate applied to all properties in the city.

s = Value capture rate decided by the local authority.

δ = Incremental rate of change in property value

The tax on property value in pre-TIF and post-TIF scenarios can be determined as follows:

$$\text{Base Tax Revenue} = rV_t - 1 \quad (1)$$

The value capture revenue is given by the formula

$$\text{Value Capture Revenue} = (V_t - V_{t-1})s \quad (2)$$

But since property values in the current year equal property values in the previous year, augmented by the rate of change in such values, the expression (2) can be rewritten as:

$$\text{Value Capture Revenue} = (V_t - 1(1 + \delta) - V_{t-1})s \quad (3)$$

The above expression can be simplified as follows:

$$\text{Value Capture Revenue} = \delta s V_t - 1 \quad (4)$$

Adding the two revenue calculations together, that is, (1) and (4) and dividing the total by the taxbase to obtain an overall property tax rate, we have

$$\text{Overall Property Tax Rate} = \frac{rV_{t-1} + \delta s V_{t-1}}{V_{t-1}(1 + \delta)} = \frac{r + \delta s}{1 + \delta} \quad (5)$$

Equation (5) guides the determination of tax revenues that can be escrowed to finance worthwhile TIF projects. It may be mentioned

here that the local authority may decide to levy a property value increment tax only in the TIF district and not the city as a whole. The formulae presented above can be modified accordingly.

In general, a TIF aims at promoting planned urban development, expansion or renewal, with the public authority earmarking a part or whole of the incremental revenues resulting from such development, including charges and taxes to service the debt incurred for such ventures. It essentially allows a public authority to ring-fence “tax increments” within the designated development area or the “TIF district” to finance infrastructure that contributes to this increment. TIF essentially represents a reallocation of a part of revenue growth from the tax-collecting authorities to the TIF agency, which is often a special purpose vehicle of the local government and state government authorities, with or without private developers. Sometimes, tax increments are supplemented by other instruments such as a special assessment, development impact fee and betterment levy. The TIF model is flexible; tax increments can be used to secure a loan, leverage an up-front investment, promote a public-private-partnership (PPP) or undertake development on pay-as-you-go principle.

Under a TIF model, a public authority or a private sector business or a consortium proposes the establishment of a TIF district. The sponsoring local government prepares a detailed proposal for a specific or geographically delineated area. A general estimation of the land and property values in the designated area and the current tax revenues therein is undertaken. The authority assesses whether the proposed TIF district meets the legal criteria prescribed for its establishment. Although the justifications for a TIF project vary from state to state in the United States, they often include “blight” and “but for” tests. The “blight” test measures the area’s degree of deterioration and economic decline, while the “but for” test measures the possibility of future development of the district without the implementation of a TIF program. Passing these tests requires demonstrating that without TIF assistance, local economic growth or development at the proposed level would not otherwise occur.

When the TIF proposal meets the legal tests, the concerned local government or authority sets up a special-purpose agency or TIF authority to undertake development, redevelopment or renewal. This authority demarcates the TIF district, conducts a survey, and prepares the TIF development plan along with cost estimates, adhering to the prevailing spatial planning norms. The plan is prepared in consultation with local and state governments, community groups, private developers and other stakeholders. The TIF authority then issues bonds or raises other forms of debt to meet the upfront costs. TIF bonds are often “infrastructure revenue bonds”, tied to future tax increments in the TIF district. Rating of these bonds to meet the capital market requirements ensures that the TIF project is subjected to rigorous scrutiny. Over some time, the TIF results in property development, higher property values and rise in tax bases in the district. The increments over and above the pre-TIF tax revenues are used to service the debt. The total tax revenues of the TIF district revert to the original taxing authority at the end of the TIF term, which may range from 5 to 25 years.

A representative example for the successful implementation of TIF is Chicago City in Illinois State. The city has used TIF to a greater extent than any other large city in the United States. The TIF program in Chicago started in 1984 with the objectives of promoting business, industrial, and residential development in areas that struggled to attract or retain housing, jobs, or commercial activity. In the past three decades, TIF has been the primary source of funding in the city to promote local economic development. TIF funds have been used for rejuvenating distressed areas, improving neighborhood infrastructure, preventing localities from degrading into blighted conditions, and fostering local enterprise development. TIF has been instrumental in promoting public and private investments across the city. It has been used to build and repair roads, clean polluted land and put underused or unused properties into productive activities, usually in conjunction with private sector developers. In accordance with law, TIF funds are mobilised through growth in the Equalised Assessed Valuation (EAV) within a designated TIF district over a specified period of time. The increase in revenue over and above the base is used to pay back debt or spent on a pay-as-you-go principle.

The legal basis for a TIF in Chicago can be traced to the Tax Increment Allocation Redevelopment Act, passed by Illinois State in 1977. This law allows municipalities to capture property tax revenues derived from incremental EAV above the base EAV that existed before an area was designated as a TIF district. In each TIF district, the TIF revenue depends on two factors: the amount of incremental EAV and the composite tax rate applied to that EAV. Figure 1 presents the total revenue received from Chicago's TIF districts annually

since 2007. It gives the following details: (a) EAV citywide and in TIF districts (including the Transit TIF), by tax year, and (b) total amount of TIF revenue by source. TIF revenue received in a given year is based on the prior year's EAV and the composite property tax rate applied. Property taxes are paid in arrears, and thereby, revenue received in 2016 reflects the 2015 EAV and 2015 property tax rate. The total amount of TIF revenue in Chicago grew steadily through 2008 as new TIFs were added and as property values in TIF districts escalated in line with property values citywide. The increase in revenues in 2011 is attributable in part to the increase in the composite tax rate in that year. During 2016, Chicago received incremental property tax revenue from 134 of the 148 TIF districts that were active during the year, totaling \$493.1 million. This trend is expected to continue as property values grow and tax rates continue to increase to fund municipal activities.

The city has issued the bonds and notes financed with future TIF revenues to fund certain TIF projects. Therefore, the basic concept behind the working of TIF is that public investments in infrastructure and services will induce private development, which in turn will lead to higher property values, more employment, and additional tax revenue. Since this economic activity and revenue growth would not have occurred without the upfront investments made by the public sector, cities can capture the new property tax revenue to pay for the investments that sparked the growth. For localities authorized to assess other types of taxes, additional sales and income tax revenues generated by the new economic activity may offset some of the property tax revenue diverted to the TIF district.

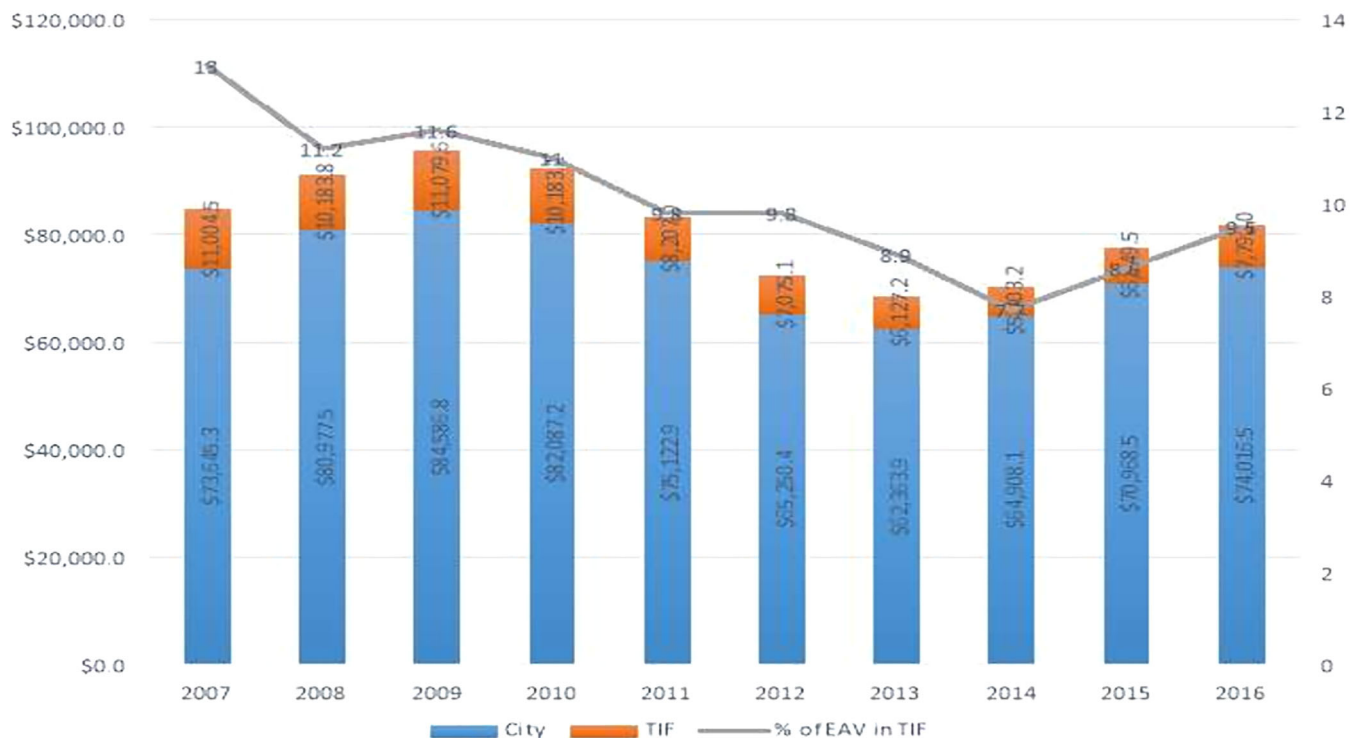


FIGURE 1 Chicago—EAV Citywide and in TIF Districts, by Tax Year. Source: City of Chicago: Annual Financial Analysis 2017—Tax Increment Financing <https://chicago.github.io/afa-2017/TIF> Accessed February 28, 2018

The advantages of TIF are: (a) new development pays for itself; (b) value-creating and resource-generating investments are facilitated even when the local body is not in a position to take up such investments; (c) lacunae in collecting upfront contributions from the developers through development charges, exactions or impact fees, which discourage development, are avoided; (d) a market test for infrastructure funding through debt contributes to rigorous project selection that passes the benefit-cost test; (e) long-term spatial planning and funding of planned urban development are facilitated; (f) authorities attempt to avoid time and cost overruns in project implementation as debt-payment is closely linked to revenue generation; (g) an equitable approach is promoted by spreading cost over generations and making beneficiaries pay a fair share; (h) fiscal discipline and accountability on the part of the local authority are promoted so as to avoid “free lunch”, (i) current fiscal problems of ULBs do not act as a stumbling block to the financing of new projects; and (j) urban planning and infrastructure development strategies are used as resource by the local authority to come out of the vicious circle of “no resources-no development-no tax increments – no development”.

While TIF can be an enormously powerful tool, generating substantial benefits, the model has also several limitations. First, politics surrounding the tool makes it difficult to implement TIF during periods of economic downturn or slow economic growth. In a relatively dampened growth scenario in which the municipal authorities face the prospect of gradually declining revenues, doubts on the efficacy of this tool can translate into accusations that TIF benefits are not distributed equitably. This problem is compounded by the fact that many residents do not fully understand the complexity involved in the designing and implementation of TIF in accordance with timelines. Secondly, the TIF approach may not be effective in the most blighted areas of a city; research suggests that TIF districts tend to be more successful in areas that have at least some momentum for development. Thus, the local government must find tools other than TIF to address the requirements of the most distressed areas which need development the most. Thirdly, TIF may not yield results when conceived in a static framework. Planners need to respond to the changing realities of spatial economies and the needs of development by modifying the TIF to capitalize on emerging opportunities. They must constantly re-evaluate and reposition TIF districts in response to emerging challenges. Fourthly, cost overruns or revenue shortfalls can jeopardize a TIF project's financial feasibility and necessitate additional public subsidies which limit the ability of local government to fund civic services. Fifthly, TIF projects may lead to tax increments to different levels of government in the federation; the local authority may not have access to these increments due to constraints of fiscal federalism. Lastly, TIF plans should be developed cautiously and used in combination with other incentives or part of comprehensive public-private partnership efforts.

With the rising need for city governments to invest in infrastructure, authorities around the world are looking for innovative tools to increase their pool of funds. Tax Increment Financing (TIF) is one among the many possible instruments. However, the ability of TIF to capture local infrastructure-induced property values without

increasing the general rates makes it an attractive instrument. TIF finances infrastructure, using the revenue generated in the form of tax increments from that infrastructure itself. If designed well, it can be self-paying or even surplus-generating, especially in cities with rising land and property values. Overall, this financial tool is expected to be a versatile instrument of urban planning and plan financing in cities when municipal budgets are extremely tight and cities are not able to generate a current revenue surplus to leverage investment. TIF creates hope for cash-starved municipalities, which can rely on robust development strategy and fiscal discipline to develop or renew cities.

5 | FINANCING SMART CITIES IN INDIA WITH TIF

With the changing economic growth scenario, globalization and urbanization, the need to develop and maintain urban infrastructure are escalating. Funding the economic development programs is becoming increasingly difficult for cities. This is true for all developing countries, including India, where the municipalities are faced with huge “backlog”, ‘current’ and ‘growth’ needs of infrastructure, but are constrained by precarious finances. The fiscal crisis in cities is a cause of concern and calls for searching alternative ways for financing urban infrastructure and economic development. TIF is one of the most important tools available to achieve that goal.

TIF is not a new tax or any kind of special assessment on top of the already existing property tax. TIF, in fact, usually applies the same property tax rate that has been adopted by a municipality for all the properties in the city and also uses the same assessment process. It uses public investment to leverage private investment and economic activity within the district. TIF can contribute to the generation of local economic growth, agglomeration economies and mobilization of resources that catalyze the market for municipal bonds, including infrastructure revenue bonds.

While the development of the municipal bond market in India is a highly desirable option, the fact that India could mobilise a meagre Rs.13,531 crore through 23 municipal bonds for more than one and half decades since municipal bonds were initiated in India suggests that the real problem with Indian cities is their lack of credit-worthiness on the part of municipalities. Ironically, unlike cities in developed countries during their urban transition phases, Indian cities are not in a position to generate current revenue surplus that can act as seed money to leverage external funding. One key reason for this is the neglect of land and property taxes. The 2017 Economic Survey of India reveals that Indian cities tap only 5–20% of the potential property tax. Fiscal effort and discipline on the part of urban local bodies are badly needed. The TIF models suggest that there is no “free lunch” and the distressed municipalities can get out of their vicious circles by putting their house back to order. At the current stage of India's urban evolution, an all-out effort is needed to enable ULBs and other urban infrastructure authorities to mobilize resources, enhance fiscal discipline, generate seed money to leverage debt funds and improve credit-rating. This approach is also necessary to promote public-

private-partnership projects based on annuity and other models. It is in this context that the smart cities of India need to adopt the tax increment financing model and make it succeed.

5.1 | Operationalising TIF in India

The Smart Cities Mission is focused on innovative projects: area-based and citywide. Certainly, smartly designed projects will lead to an increase in land and property values due to spatial planning, infrastructure development, induced local economic development and agglomeration externalities that are associated with infrastructure accessibility and business productivity. They are expected to create both area-based and city-wide impacts and benefits. Thus, a combination of area-based and city-wide financing approaches could be used to finance smart city projects. However, the benefits of major investment projects spillover and city authorities may not have all the needed financial instruments to capture their benefits. For example, while an area-based approach will lead to increased land values, the municipal authority may not have the power to levy a land value tax, land value increment tax and betterment levy. When an area-based project such as the development of local transit system cannot be financed based on the rise in the land and property taxes in the project area, recourse to citywide financing mechanism will be necessary. Unlike developed countries, where urban development projects could be financed based on revenue bonds, the inability of local authorities to finance projects with full cost recovery (revenue and capital cost) due to political reasons to make it expedient to combine project revenues and citywide revenue source to finance major urban projects. The reasons for combining both approaches are summarized as follows:

- Area-wide financing instruments like special assessment district, business improvement district, developer exaction, impact fee, betterment levy and tax increment financing may not be adequate to meet the costs of lumpy projects;
- Innovative projects, prepared to serve particular areas, may not be self-sufficient as they need connectivity to city-wide infrastructure systems such as highways, public transit system, water and sewerage trunk lines, stormwater drainage system and city-wide solid waste disposal facilities, etc. whose capacity may need augmentation due to the demand from new projects.
- External economies of agglomeration and networking in cities due to implementation of major projects result in a spillover of benefits and costs which may not confine to the geographical boundaries of the area demarcated for a project, say, 50–500 acres. The internalization of such economies, which result in unearned increments in land and property values or increased tax bases of different levels of government, calls for a broader resource mobilization strategy, not confined to specific areas.
- Cities may not have the required instruments to exploit all the benefits of spatial planning and infrastructure development in an area of say, 50–500 acres. Benefits of area development projects

capitalize into both area as well as city-wide tax bases of all levels of government and require broader partnerships between authorities for financing infrastructure and capturing value.

The above considerations suggest that it will be appropriate for smart cities of India to focus on area-based and citywide resource generation strategies both, although the focus may be on the mobilization of revenues from those who benefit the most.

While the issues of municipal finance in India require systemic reforms, immediate efforts are needed to implement the best practices of value capture mechanisms adopted in India and internationally as they make a lot of sense, but remain grossly exploited. Some area-based projects will require a mix of financing instruments that target at (a) project-vicinity area, (b) broader project benefit zone, and (c) the city as a whole. The discussions in this research suggest that the tax increment financing principle, combining elements of different approaches, could be an appropriate model for financing smart cities in India.

TIF should not be considered as the sole source of financing urban development or renewal. Also, it may not suit all situations in all cities. However, the TIF principle is robust in that it incorporates resource generation into the model of urban development. For TIF to be successful, a flexible land use policy along with a suitable framework for inter-governmental or public-private partnerships will be necessary.

The benefits of TIF may not be limited to tax increments arising for local government alone. Broader fiscal benefits from a TIF reflect in higher income and corporation taxes, goods and services tax, stamp duty on property transfer, etc. Thus, a TIF scheme benefits Central and State governments through increased revenues. They also benefit from the improved employment opportunities, socio-economic regeneration of blight areas, improved public safety, enhanced growth and social inclusion. It is interesting to note that in a “status quo” or “no TIF” scenario, there is no authority that stands to gain. However, on the contrary, when a TIF is implemented well, all authorities get to reap the fiscal and non-fiscal benefits. As taxes subject to increments fall in the domains of different tiers of government, suitable inter-governmental partnerships are necessary for the structuring of TIF mechanism to repay debt. This requires inter-governmental partnerships as envisaged in the Smart Cities Mission document.

Under India's present fiscal federalism framework, different levels of government and their authorities exercise different fiscal powers assigned to them under the Constitution. State governments levy land-use conversion charge and non-agricultural land assessment in cities and their peripheral areas. Urban development authorities, which are parastatal agencies established by state governments, levy charges for the institution and change of land use with reference to the Master Plan. Such authorities and municipalities have the authority to levy development impact fees and internal and external development charges. Water and sewerage boards do not have the authority to collect water and sewerage betterment levies. Though the municipalities have the power to levy such betterment charges, they may be reluctant to share them with water and sewerage boards. Certain value-added taxes

and stamp duty are levied by state governments. Capital gains tax and service taxes accrue to the central government. Goods and services tax is jointly levied by the central and state government. Thus, the tax increments occurring to various authorities due to the implementation of a versatile TIF project may not be available to the project or local authority which incurs a debt to finance such projects. These issues are important and need to be addressed by inter-governmental partnerships, agreements and covenants. One way is to structure partnerships between different authorities through the formation of Special Purpose Vehicles (SPVs) for specific projects based on consensus and ring-fencing of likely increments in taxes, charges and project revenues based on the benefit principle of public finance. The efficacy of a TIF strategy requires that the authority creating benefits must be in a position to capture and recycle some of these to create further benefits to the community. TIF may thus require other instruments like impact fee and incentive zoning facilitating higher density, mixed land use, and so forth in the TIF area.

The broad principle of TIF can be extended to private sector projects as well as public-private partnerships (PPP). One PPP option is that the private developer securitises loans based on expected public monies and undertakes development based on an annuity model. The second option is that the public authority develops connectivity infrastructure and the private sector undertakes development on a revenue-sharing formula. Another option is that the public authority proactively facilitates spatial planning or zoning and the private partner takes up development at its cost.

6 | CONCLUDING OBSERVATIONS

Tax increment financing (TIF) approach is very relevant for cities in India, including those selected under the Smart Cities Mission. This is because, while most cities suffer from a lack of current revenue surplus to finance worthwhile development projects on a "pay-as-you-go" principle, they can still bank on future tax increments due to the innovative urban planning and implementation of value-creating projects, innovatively structured. However, a robust approach based on the TIF principle is yet to be adopted by cities in India to finance area-based and city-wide infrastructure projects. Even many smart cities are yet to adopt the TIF approach. This is on account of several reasons. Firstly, TIF calls for escrowing of suitable revenue sources, especially land and property taxes to repay debt. However, both land and property taxation and debt financing are neglected in India. Secondly, the authorities operating at the city level, such as a municipality, urban development authority, highway undertaking, the public transit authority and other infrastructure development agencies do not follow a holistic approach that includes value creation, capture and recycling as an integral part of the urban development strategy. There is a conspicuous lack of inter-departmental and inter-authority coordination. Thirdly, many authorities undertaking infrastructure development projects are legally not equipped with the instruments needed to mobilize tax increments that arise due to their efforts. Fourthly, the benefits of tax increments accrue to all levels of government,

including state and central governments – to authorities other than those implementing projects at the local level. Thus, the local project authority may not be able to have access to adequate resources unless there are inter-governmental agreements for sharing tax increments. Lastly, the market for municipal debt, including that through revenue, general obligation and hybrid municipal bonds are not developed. Due to these factors, many cities in India are not able to exploit their agglomeration potential by integrating infrastructure development and land use and raise resources for planned urban development to support economic growth.

The recent issues of municipal bonds by Pune and Hyderabad Municipal Corporations have opened up possibilities for a renewed thrust on municipal bonds market development in India to finance core urban infrastructure projects. These bonds have adopted escrowing mechanisms under which user charges and property taxes are hypothecated towards loan repayment. The principle is sound. However, the escrowing mechanism does not fully reflect the tax increment financing (TIF) framework. Most projects required to be implemented by cities, including smart cities are land-based – whether development, redevelopment, renewal or expansion. They are bound to lead to enhanced land values in the "most accessible" nodes of local economic growth and corridors. Such values will multiply, if they are accompanied by favourable land-use changes, for example, from residential to commercial or institutional or from low density residential to high-density apartment complexes. Higher density will also make the transit system economically viable. If infrastructure development, land use zoning, development density and Floor Space Index (FSI) can be combined to suit the needs of contexts under a dynamic framework of urban planning, the bankability of value-creating projects could go up significantly. This calls for urgent attention to restructuring the current model of master planning in India, which is static.

It is important to appreciate that when there is no project developed in an area, TIF or otherwise, no government, whether local, state or central stands to gain through tax increment. However, if a worthwhile project, which passes the benefit–cost test, is implemented properly with success, then all the levels of a federal government can gain significantly by way of increments in their "own" tax bases. Thus, a strong case exists for win-win inter-governmental partnerships for designing, financing and tax increment-sharing in area-based and city-wide urban development projects which create benefit and cost spill-overs. If a part of the increase in taxes, made possible by investments in core infrastructure, is escrowed to repay the debt incurred for such investments, the same could be self-financing. However, in the context of India's fiscal federalism, the authorities or special purpose vehicles taking up planned urban development projects may not have the requisite authority to capture all the tax increments generated by their projects and appropriate them for sustaining investments. Thus, the inter-governmental partnership approach and cooperative federalism spirit are necessary. It may be noted that over the years, ULBs in India have lost taxes like motor vehicles tax, entertainment tax, profession tax, octroi and entry tax. Also, there is an urgent need for powering ULBs with newer resource handles including new revenue-sharing mechanisms in the new GST era.

The efficacy of tax increment financing tools in Indian cities will depend on several factors: the versatility of city development strategy and plan; reforms in municipal finance system; reforms in spatial planning; effective design of TIF projects and financing strategies, including mechanisms for value capture and recycling to catalyze economic growth-enhancing enterprises that create further values to land-owners and the city; and human resource capacity to plan, design, finance, implement and monitor projects. India must harness the power of cities as drivers of economic growth and structural transformation through pro-active policies, including "value creation, capture and recycling" and 'tax increment financing'. Capacity building, including research, training and handholding to facilitate innovative financing of cities is highly desirable. This is important as the design of TIF instruments is the key to their success. The Government of India may facilitate the same in the interest of economic growth and the generation of public finance for socio-economic development, including urban and rural development.

The number of bankable projects in the urban sector has dwindled over a while. This is due to two key reasons. The first is the lack of capacity in ULBs and other authorities in the structuring of innovative projects. The second is the lack of application of innovative instruments such as tax increment financing (TIF) to establish escrowing mechanisms for ensuring that the borrowed funds are repaid in time. In this context, two key reforms are desirable: developing a municipal bond market at the earliest like the one in the United States and enabling municipalities to be credit-worthy. Apart from this, it is also suggested that to meet the short supply of infrastructure capital, the Government of India may set up new Development Financial Institutes (DFIs) dedicated to urban infrastructure activities.

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REFERENCES

- Bahl, R. W., Linn, J. F., & Wetzel, D. L. (Eds.). (2013). *Financing metropolitan governments in developing countries*. Cambridge, MA: Lincoln Institute of Land Policy.
- Briffault, R. (2010). *The most popular tool: Tax increment financing and the political economy of local government*. Chicago, IL: The University of Chicago Law Review. <https://chicagounbound.uchicago.edu/uclrev/vol77/iss1/4>.
- Ermasova, N., & George, A. (2017). Tax increment financing: Learning from research and municipal "best practices". *Ill Munic Policy J*, 2(1), 135–145.
- High Powered Expert Committee (HPEC). (2014). *Report on Indian urban infrastructure and services*. New Delhi, India: The High Powered Expert Committee (HPEC) for Estimating the Investment Requirements for Urban Infrastructure Services.
- McKinsey Global Institute. (2010). *India's urban awakening: Building inclusive cities*. McKinsey and Company: Sustaining Economic Growth.
- Mishra, A. K. (2019). Cities, transport and agglomeration: Addressing the urban mobility challenges in India. *Growth and Change*, 00, 1–19.
- Mishra Alok, K., & Mohanty, P. K. (2018). Urban infrastructure financing in India: Applying the benefit and earmarking principles of taxation.

Journal of Social and Economic Development. 20(1), 110–128. <https://doi.org/10.1007/s40847-018-0059-1>

Mishra, S., Mishra, A. K., & Panda, P. (2020). What ails property tax in India? Issues and directions for reforms. *Journal of Public Affairs*, e2299. <https://doi.org/10.1002/pa.2299>

Mohanty, P. K. (2016). *Financing cities in India: Municipal reforms, fiscal accountability and urban infrastructure*. New Delhi, India: Sage Publications.

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