

Routledge Studies in Development Economics

UNLOCKING PRIVATE INVESTMENT IN SUSTAINABLE INFRASTRUCTURE IN ASIA

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14 Land Pooling

A Public–Private Partnership Model for Sustainable Infrastructure Investment in Delhi

Gaurav Verma

14.1 Background

Infrastructure plays a vital role in economic development of a city or state or nationwide. It promotes economic development and enhances welfare of the society. In the past decade, Asian countries have built more infrastructure than any other developing regions. Nevertheless, there are major differences in the quantity and quality of infrastructure in developing Asia, both across economies and compared to other developed regions. Central or state budgets are an obvious source of investment in infrastructure, which includes not only national and state governments, but also public sector companies. How much investment is needed in Asia or can one quantify investments in infrastructure?

Viable options are federal budget records, national accounts with an adequate breakdown of gross fixed capital formation (GFCF) data, and international databases of private sector infrastructure expenditures. Developing Asia will need \$26 trillion investment from 2016 to 2030, or \$1.7 trillion per year, if the region is to maintain its growth momentum, eradicate poverty, and respond to climate change (climate-adjusted estimate) (ADB, 2017). Without climate change mitigation and adaptation costs, \$22.6 trillion will be needed, or \$1.5 trillion per year (baseline estimate) (ADB, 2017). The \$1.7 trillion annual estimate is more than double the \$750 billion Asian Development Bank (ADB) estimated in 2009 (ADB, 2017).

The analysis from Figure 14.1 covers the transport, power, telecommunications, and water supply and sanitation. The report describes how much the region will need to invest in infrastructure to continue its economic growth momentum, eradicate poverty, and respond to climate change. It examines how much countries have been investing in infrastructure, using data from a variety of sources—including government budget data, components of gross fixed capital formation, and information on private sector investment. It concludes with a discussion of the financial and institutional challenges the region must overcome to meet future infrastructure needs.

If we consider climate adjusted estimated of infrastructure investments and gaps for 2016–2020 from Figure 14.2, India would require \$261 billion, making

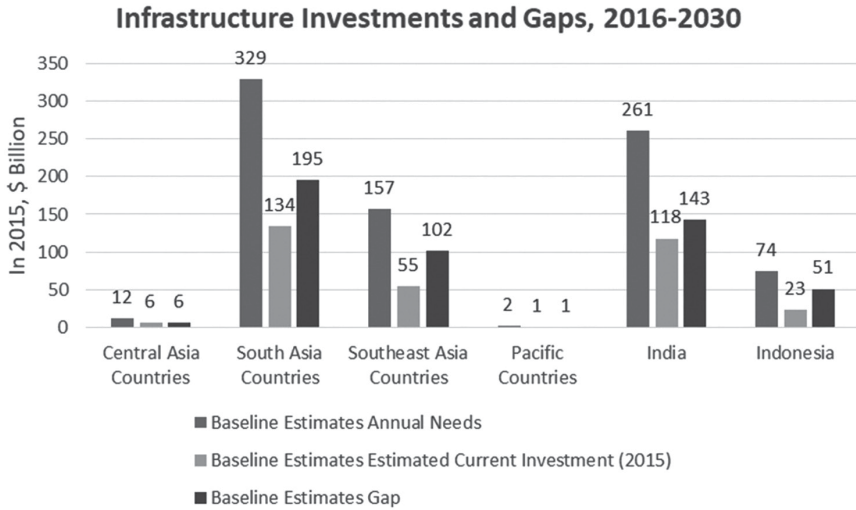


Figure 14.1 Baseline Estimate of Infrastructure Investments and Gaps, 2016–2030. Source: ADB Data Library.

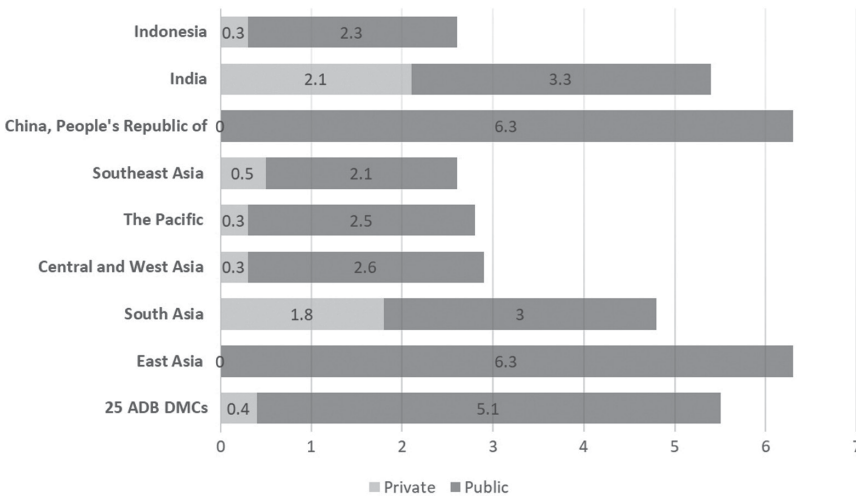


Figure 14.2 Climate-Adjusted Estimate of Infrastructure Investments and Gaps, 2016–2030. Source: ADB Data Library.

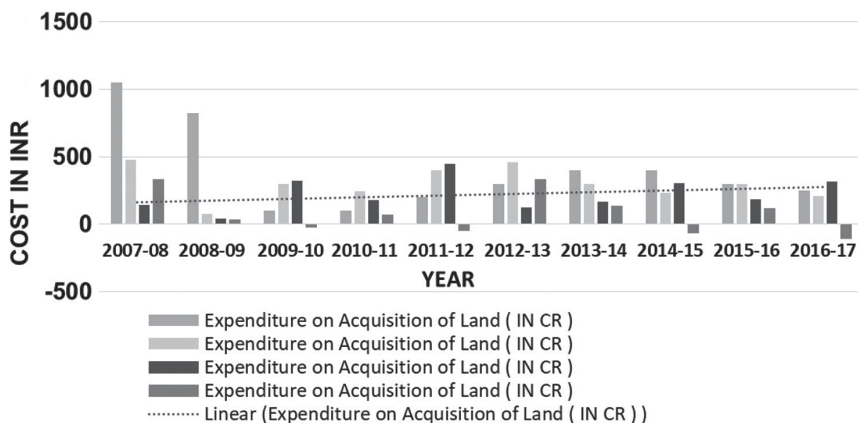


Figure 14.3 Public and Private Infrastructure Investments in Asia, 2010–2014 (% of GDP).

Note: ADB = Asian Development Bank, DMC = developing member country.

Source: ADB Data Library, <https://data.adb.org/dataset/infrastructure-needs-asia-and-pacific> (accessed 27 June 2021).

it fall short by \$143. Analysing Figure 14.3 shows over 90% of the region's overall infrastructure investment is still primarily done by the public sector. This constitutes 5.1% of gross domestic product (GDP) annually, which is far above the 0.4% of GDP coming from the private sector.

From Table 14.1, it can be deduced that there are huge infrastructure investment needs in Asia and the Pacific. In many regions of Asia and the Pacific, these infrastructure needs are very high compared with tax revenues. Based on the above estimations in the baseline, it is clear that Asia and the Pacific as a whole needs 26.3% of the total tax revenue for infrastructure investment. Fully 49.1% of the infrastructure projects are financed by tax revenues in South Asia. In this situation, private sector investment is the key to the sustainable development in infrastructure.

Land acquisition is one of the main obstacles for infrastructure development in many Asian countries such as Bangladesh, India, Indonesia, and Thailand, which delays the completion of projects and lowers the rate of return of private investment. By contrast, if we take the example of Japan, land trust has been extensively used in the field of commercial building and apartment buildings. Like, for a project of high-speed railway linking Narita Airport with the center of Tokyo city, which got delayed due to the opposition of a few landowners who did not want to sell their land, results in construction of the high-speed rail project was hindered. Borrowing the concept of land trust and sustainable infrastructure, this chapter will discuss the potential framework for land pooling in Delhi, using a framework that unlocked private investments in sustainable infrastructure in Delhi.

Table 14.1 Estimated Infrastructure Investment Needs by Region, 2016–2030 (\$ billion in 2015 prices)

Region/Sub-region	Projected Annual GDP Growth	2030 Projected GDP per Capita (2015 \$)	Baseline Estimates				Climate-adjusted Estimates		
			Investment Needs	Annual Average	Investment needs as % of GDP	IG/TAX (% of 2015)	Investment Needs	Annual Average	Investment needs as % of GDP
Central Asia	3.1	6,202	492	33	6.8	29.6	565	38	7.8
East Asia	5.1	18,602	13,781	919	4.5	21.4	16,062	1,071	5.2
South Asia	6.5	3,446	5,477	365	7.6	49.1	6,343	423	8.8
Southeast Asia	5.1	7,040	2,759	184	5.0	36.4	3,147	210	5.7
Pacific	3.1	2,889	42	2.8	8.2	30.9	46	3.1	9.1
Asia and the Pacific	5.3	9,277	22,551	1,503	5.1	26.3	26,166	1,744	5.9

Source: ADB- Meeting Asia's investment needs.

14.2 Introduction

Land is the most basic asset for revenue generation by development authorities and urban local bodies (ULBs). Intervention in infrastructure appreciates the adjoining property value in and around the area. A city can capture rising land values by owning land or taxing it. In many developing cities, the government does not own much land and large-scale acquisition is a political impossibility (Paul Collier, July 2018). ULBs can utilize the value addition by providing infrastructure, and in turn, can capture its value partly or wholly. Property development at the station nodes and development of air space are some ways to capture land value to finance transit-supportive infrastructure.

In 2013, India's Ministry of Urban Development carried out a study on land-based fiscal tools and practices for generating additional financial resources for ULBs. To meet the Rs 3,250,000 (INR) annual urban infrastructure investment under the smart city mission was keenly felt by the ministry. Thus, the Ministry prepared a "value capture policy framework" in 2017. Simultaneously, the Metro Rail Policy 2017 requested the state government to adopt this policy to fund the infrastructure projects (MoHUA- Ministry of Housing and Urban Affairs, Government of India, 2017). The fundamental concept underlying land value capture is that owners legally generate value. Thus, if there is an increase in the valuation of immovable assets due to investment in infrastructure investment by the government, the government has the right to catch this increase in value.

At present, while private developers are interested in making use of the benefits of land value increment, ULBs are yet to capture this rise in land value (Abhishek Das 2016). Gujarat is seen to be extremely proactive to provide urban, land services and trunk infrastructure. It exhibits a successful model of land pooling mechanism for a self-sustaining financial tool for the provision of infrastructure. Since its inception in AUDA (Ahmedabad Urban Development Authority) Development Plan 2021, under the Gujarat Town Planning and Urban Development Act (GTPUDA), land pooling is gaining wider acceptance as a tool to improve the existing peri-urban areas of Gujarat and Maharashtra. After the division of Andhra Pradesh into the states Telangana and Andhra Pradesh, the state has opted for land pooling over land acquisition for its new capital Amravati. Also, with MoHUA's recent initiative for expanding this tool in Delhi, it has received nationwide recognition.

Since British rule, Delhi has had a long history of land acquisition with the objective of building infrastructure to transfer the army to different parts of the country. With an intention to extend, control, and further consolidate its rule throughout the country, the government acquired land belonging to rural land-owners. Ownership and control of the infrastructure built after land acquisition remained completely with the government for utilization in public purpose.

After independence, the government acquired land from farmers for developing housing colonies, and industries. Even in the recent decades, large-scale land acquisition has been made for companies proposing to use it for a public purpose. In the name of development projects, large chunks of land belonging to

farmers have been acquired by the government at throwaway prices. Changing of land use regulations results in land being handed over to private builders for construction of residential and commercial complexes, industries, etc. Even if land-owners/farmers are paid by the government, they do not receive any monetary gain, as the money they receive is either lost or expended unwisely restricting it to landless/unemployed people. Moreover, there are many more obstacles in this land acquisition act by which many projects have been undergone delay in the past decades as they are not compensating individuals enough or are making acquisition mandatory.

On 7 September 2018, the Delhi Development Authority (DDA) approved the long-awaited Delhi Land Pooling (DLP) policy; the policy has received approval from the housing ministry. The new system will replace the existing policy of government land acquisition, which became increasingly unpopular because the high compensation payouts were uncompetitive (DDA, DELHI LPP, 2016). Land pooling has a strong potential for unlocking the private investments for infrastructure in land pooling zones of Delhi.

In land pooling, land monetization could be a significant tool to capture value. The revenue generated in rural areas is so low that they are unable to fund the infrastructure projects. The collection of these levies results in loss of revenue. Because of this, the levies, which are capable of financing up to 90% of infrastructure projects are left with only 5%–6% in practice. Robust, development-based value capture strategies need to be formulated as a self-financing/sustainable model for developing infrastructure that can overcome these pitfalls.

14.3 Concept Study

14.3.1 Overview of Financing Alternatives for Urban Development in The Region

There is a need to understand the value capture strategies for exploring the development-based value capture (DBVC) as a self-financing model for developing sustainable infrastructure in transit-oriented development (TOD) areas in land-pooling zones for Delhi. To capture value, there is a need to first create value. As ULBs need funds for development, they depend upon state and central grants to a significant extent. The development in the TOD zones requires infrastructure; land acquisition is required, which of course adds additional cost to it. There is a need to liberate the burden of land acquisition cost. Land pooling could be a better alternative because it is not only cheaper but also generates higher revenue as compared to land acquisition. A generous amount of capital is required to develop infrastructure and amenities around the TOD zones and thus prompts the need to calculate the expenditure cost for sites. To cover the cost of expenditure and generate revenues, value capture tools must be worked out extensively for developing sustainable infrastructure investments in Delhi's Land Pooling zones. Although Delhi has numerous value capture tools based on taxes and fee charges yet none of them contributed in the development of the TOD.

In Indian cities, infrastructure investments and development are carried out by different hierarchies like the central government, state governments, and private agencies. Sometimes for large projects, such as metro rails, special bodies are created. These bodies do not have the power to impose a tax on land, and often do not coordinate with ULBs. This raises the question of possible solutions to make ULBs capable of generating sustainable revenues to improve or promote sustainable infrastructure development in areas of Delhi. It is in light of the current predicament situation solution that land pooling has emerged as a viable and popular alternative to direct land acquisition in India. Land pooling could be the best DBVC tool for the state to allow this mechanism to be implemented. Land monetization would be the purest form for unlocking the private investment for sustainable infrastructure in TOD zones in land pooling zones of Delhi.

The selling of property would generate some income, and compensation comes from homeowners now opening up land that has risen in value after growth. It also makes it possible to rebuild irregularly formed and small parcels of land as more suitable plots for development. Land pooling is not new in India, having been used in Gujarat under the mechanism of Town Planning schemes (TPS), where the area of single TPS would range from 100 to 1,200 ha and cover around 1,000 to 2,000 individual land parcels. It has allowed Ahmedabad to both build a 76 km ring road and to amass the land needed for developing the Dholera special investment region.

This chapter will conclude that land monetization would be the purest form of value capture for unlocking the private investment for sustainable infrastructure in land pooling zones of Delhi around the TOD influence areas. The next section will provide an understanding of DBVC for Delhi. Also, assessing the need for an alternative to the current land development approach in Delhi which identifies appropriate DBVC tools for sustainable infrastructure development in TOD areas of Delhi's Land Pooling zones.

14.3.2 Assessment Framework

The assessment of the research framework focuses on formulating a sustainable model for developing infrastructure around TOD zones in Delhi's land pooling zones under PPP. It articulates the contexts through which DBVC mechanism can contribute to developing infrastructure around TOD zones and complementary land use of the surroundings. Identifying a model that allows the authorities and local bodies to capture value from the increase in land and property prices by the provision of infrastructure in and around the TOD zones. The research synthesizes transit's impact on property values, financial instruments, and supportive legislation related to land value capture.

The methodology follows an understanding of the need for DBVC strategies for Delhi, with the need for an alternative to the current land development approach. Also, it focuses on land pooling as a value capture tool to finance sustainable infrastructure investments for Delhi. With the concluding new framework of simplified Development Based Value Captured Strategies and

recommendations for sustainable development investments in land pooling zones of Delhi. The expected policy implications make land pooling an emerged way as a PPP model to finance and develop sustainable infrastructure in TOD influence areas/zones of Delhi.

14.4 Identification and Designing of Instruments—Assimilation of Analysis

14.4.1 Assessing the Need for an Alternative to the Current Land Development Approach in Delhi

The need for an alternative to current land development (land acquisition to land pooling) in Delhi is acute, with a population projection of 37.2 million by 2030 as per a 2018 UN Department of Economics and Urban Affairs report (Affairs, 2018). From 1961–1981, the total proposed acquired land in Delhi was 27,487 ha, out of which only 15,540 ha were actually acquired. During 1982–1992, 6,763 ha of land were acquired, and from 1992–2000 another 2,744 ha were acquired. The pace of acquisition was far short of the requirement. The annual acquisition during 1981–2001 was 475 ha as compared to the planned requirement, which is 1,200 ha. Land acquired during 2002–2011 was even less than what it was during 1981–2001. The resulting need to acquire more land for the projected population and expanding the urban limits naturally concerns higher budget allocations.

Reviewing the Ministry of Housing and Urban Affairs’ audit during the years 2005–2010 reveals that there were abnormal variations (up to 70% in respect to acquisition of land and up to 49% in case of development of land), which indicates the budget provisions were not realistic. The variations were higher than the permissible limits of 10% during 2006–2007, 2007–2008, and 2008–2009 in cases of land acquisition and all five years in cases of development. The DDA clarified that the budget is requisitioned based on the land acquired in the previous year and the amount of compensation paid.

Table 14.2 and Figure 14.4 show details from the Ministry of Urban Development regarding funds allocated for acquisition and development of land during the last 10 years.

This whole unspent amount under the budget allocation is due to landowners being reluctant to sell off their lands because of conflict of interests. Thus, for such development projects, the consent of landowners is skipped and the intention of acquiring the land is not disclosed or defined. Previously, “public purpose” was not defined but after the LARR Act, 2013 Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, the government can take land only for national security, natural calamities or any other emergency with parliament’s approval.

Though the rate of compensation was as per the market rate was not defined, it ended up being much less (after the reformation of 1894 Land Acquisition Act, the rate of compensation has been fixed for rural areas at four times the rate

Table 14.2 Expenditure on Acquisition of Land (Amount in CR-INR)

Financial Year	Budget Estimate	Revised Budget Estimate	Actual Expenditure	Unspent amount
2007–08	1,050.0	475.0	141.29	333.71
2008–09	825.0	75.0	40.41	35.41
2009–10	100.0	300.0	324.10	-24.10
2010–11	100.0	246.0	175.75	70.25
2011–12	200.0	400.0	447.71	-47.71
2012–13	300.0	459.0	124.75	334.25
2013–14	400.0	297.0	163.50	133.50
2014–15	400.0	234.30	300.57	-66.27
2015–16	300.0	300.0	182.73	117.27
2016–17	250.0	210.0	317.34	-107.34

Source: Ministry of Urban Development, and Ministry of Housing and Urban Affairs.

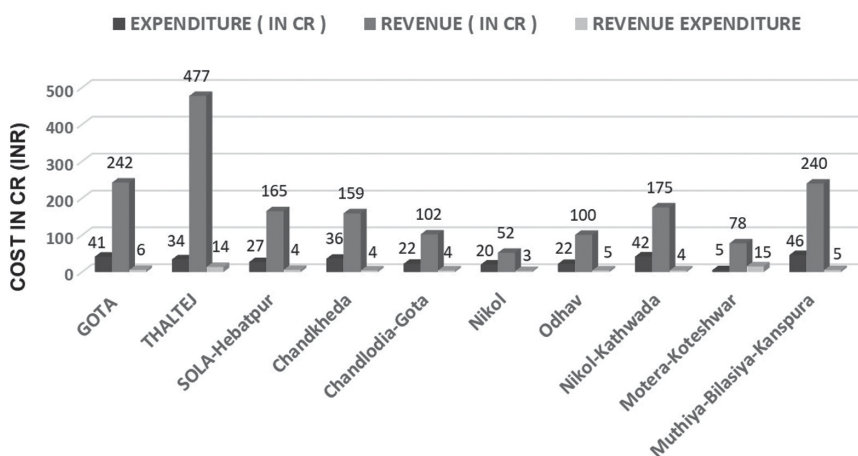


Figure 14.4 Expenditure on Acquisition of Land in India.

Source: Author.

of market value whereas for urban land it is twice the market rate). The acquisition of agricultural land needs serious attention, since there will be a shortage of agricultural land for cultivation if not checked upon seriously, thus food security becomes a major concern. Therefore, the agricultural land which needs to be acquired should not exceed 2% of the sown area in a district and the total acquisition in the state should not exceed 5% of the sown area in the state and no irrigated multi-crop land should be acquired.

Another major issue with high compensation is that there is no government procurement for rehabilitation and resettlement. The compensation on the acquisition of agricultural and non-agricultural land cannot be the same, unlike

the present scenario. The compensation on acquisition of agriculture land is determined on the basis of yielding capacity of land and, in the case of non-agriculture land, it is determined on the basis of the market value of the land. With all of above, the government has not even stopped but also imposed income tax on enhanced compensation for the compulsory acquisition of the agricultural land, which is even worse for the land-owners.

In addition to the acquisition of land, the expenditure of Rs. 84.98 CR was incurred for the construction of just 100-meter road and the lackadaisical approach of DDA resulted in Rs. 8.86 CR as damage charges from landowners; Rs. 25.69 CR was incurred on account of excess payment of compensation to the landowners.

14.4.2 Land Pooling as a Cheaper Alternative

As per Table 14.3, the expenditure for developing raw infrastructure in the town planning schemes of Ahmedabad usually lies between Rs.1,000–1,200 per sq.

Table 14.3 Cost of Work of TPS of Prahaladnagar, Ahmedabad Gujarat, India

<i>DRAFT TOW PLANNING SCHEME NO 23-26 TPS PRAHALADNAGAR</i>	
<i>ABSTRACT OF ESTIMATE FOR COST OF WORKS</i>	
<i>SUBMITTED UNDER SECTION 48(1) OF THE G.T.P AND UD ACT-1916</i>	
<i>TPS AREA- 162 HA</i>	
<i>Name Of Work</i>	<i>TOTAL COST IN CR (INR-RS.)</i>
Construction of bituminous road including excavating, carting, filling, watering, hammering, soiling, metalling, carpentering and prime coat, tack coat, etc., complete including footpath, central verge and tree plantation	36
Providing electricity street light with underground wiring, painting, cow lamp fitting, etc., completely provided at every 30 m. distance	12
Providing and laying of appropriate size drainage line including treatment plant etc.	40.5
Providing and laying of appropriate size water pipeline including tube well, sump well, pump room with pump in connection to adjoining schemes, etc.	21
Green Development	18.8
Storm Water	25
Administrative Overheads	8
Grand Total	161.3
Say	Rs. 1025/ Sq. m.

TPS = Town Planning Schemes.

Source: Ahmedabad Municipal Corporation (AMC).

Table 14.4 Revenue Generation of TPS Prahaladnagar, Ahmedabad, Gujarat

<i>Revenue Category</i>	<i>INR RS (IN CR)</i>
Sale of commercial purpose @60,000 sq_m plot @rate 1,25,000 INR Rs per so.m	750.0
Sale of residential purpose @50,000 sq_rri plot @rate 95,000 INR Rs per sq.m	475.0
Sale of neighborhood purpose @8,000 sq.m plot @rate 75,000 INR Rs per sq.m	60.0
Betterment charges @203 INR Rs per sq.m of reconstitute i.e. @67.6% at 10,95,120 INR Rs per sq.m	21.9
Collection by the AUDA	1306.9

TPS = Town Planning Schemes.

Source: Ahmedabad Municipal Corporation (AMC).

m. Taking the example of TPS of Prahalad Nagar, Ahmedabad, Gujarat, the whole development of TPS has been done within INR 161 CR investment for 162 ha of land. Nearly Rs.1,000 per sq. m. was devoted to the construction of bituminous roads, street lighting, drainage lines, water pipelines, and garden development, including maintenance and administrative overheads. Land was assembled through voluntary pooling by its owners, which could be consolidated, thereby permitting the local agency to develop infrastructure according to a layout plan. This would not be possible if land acquisition was occurring, which may result in a contradictory situation for landowners. Thus, land pooling is not only a cheaper alternative, but also revenue generation is quite high, as shown in Table 14.4.

Analyzing the different TPS in Ahmedabad, the revenue generation here is remarkable as compared to the cost of expenditure in making TPS. Revenue collection from the sale of land, which means land monetization, is the highest rate, whereas the betterment levy is also an additional tool for collecting revenue, as shown in Figures 14.5 and 14.6.

14.4.3 Land Trust and Spillover Effect

With the amendment of land pooling, land trusts would enhance the development of the region. Land trusts are a contractual vehicle for transferring the title of a property to an appointed trustee. The original property owner does not lose their claim of ownership, but the trustee becomes the titleholder for legal purposes. In theory, the landowners can keep the land, but lease it to the infrastructure company for the development against the selling price. A trust bank is the intermediary between landowners and infrastructure companies that monitors whether the land is properly used and pays rent to landowners based on project revenues. The total cost of infrastructure investment will become the land rent cost, replacing the land purchase cost, the construction cost, as well as the

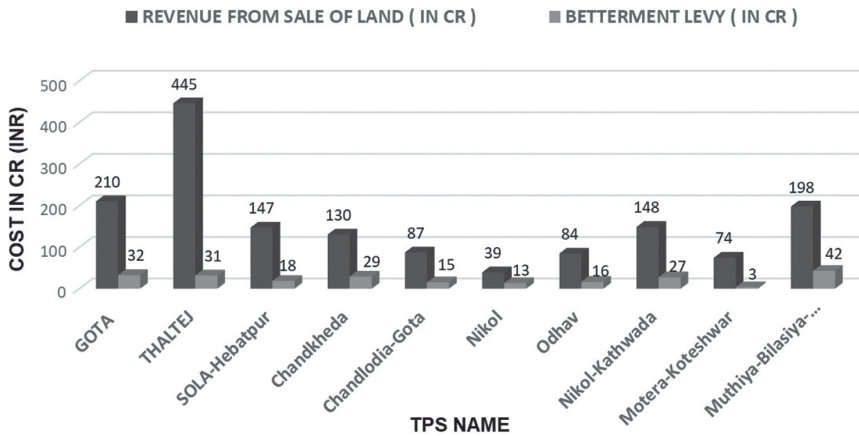


Figure 14.5 Expenditure versus Revenue Generated in Ahmedabad TPS—Praladnagar. Source: Ahmedabad Municipal Corporation (AMC).

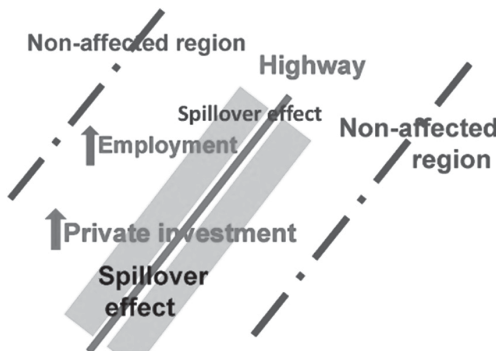


Figure 14.6 Revenue Collection in TPS—Praladnagar, Ahmedabad, Gujarat. Source: Ahmedabad Municipal Corporation (AMC).

operation and maintenance costs under this scheme. The benefit of infrastructure investment is not only of user charges but also the spillover tax revenues created by infrastructure investment.

With the development caused by spillover effects, new businesses will come into the region and create new employment, new restaurants open, and the services sector can be developed. This regional development will increase tax revenues along the infrastructure projects. Infrastructure development has both direct and indirect impacts. An increase in road capacity due to the development of transport infrastructure may constitute a direct impact, while indirect impacts are the short- and long-term effects, such as the improvement of capital inputs

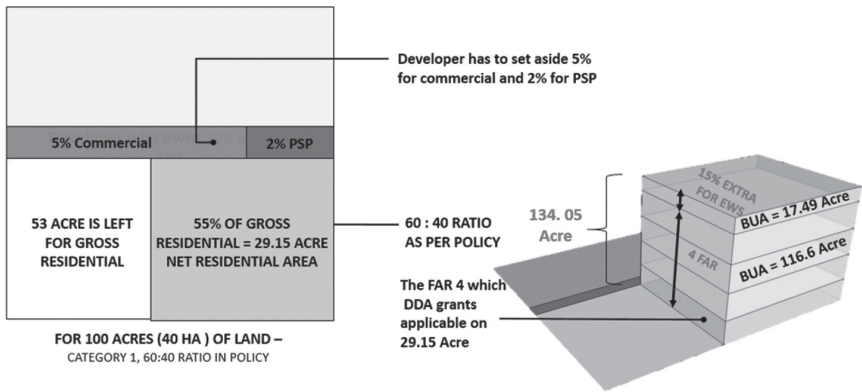


Figure 14.7 The Spillover Effects of Infrastructure Investments.

Source: Naoyuki Yoshino and ADBI.

and employment from regional economic activities, which usually take time. The indirect impact is assumed to be the spillover effect.

For example: The orange line in the middle of Figure 14.7 shows transport infrastructure development, for example, a highway or high-speed rail. The yellow regions along this infrastructure development line represent the area into which new businesses opportunities will come, employment will be created, and small and medium-sized enterprises will be established. The spillover effect around the region by the infrastructure investment will increase the local tax revenues compared with the non-affected regions outside of the blue dotted line. Successful examples include the highway project in Manila City and the high-speed rail project in the Kyushu region. It is usually seen that tax revenues increased along transport infrastructure projects. This increment of tax revenue is the spill-over tax revenue.

14.5 Empirical Analysis

14.5.1 Comparative Analysis of Delhi Land Pooling Policy with Different States

A comparative analysis has been done with different states having a land pooling policy, Development Control Regulations (DCR's), finance, revenue for deeper analysis and conclusions. Three cities have been selected for analyzing the policy along with Delhi: the first is Magarpatta, Pune, which is India's first example of land pooling done by a private individual; the second is Ahmedabad, where land pooling is done by authorities and the municipal corporation; and the third is Amravati, which is being built from scratch (Table 14.5).

Table 14.5 Comparative Analysis of Delhi Land Pooling Policy

CRITICAL ANALYSIS OF LAND POOLING POLICY WITH DIFFERENT CITIES/STATE OF INDIA

PARAMETERS	PUNE—MAGARPATTA	GUJARAT	ANDHRA PRADESH-AMRAVATI	DELHI
GENERAL LEGAL BACKUP	Developed under MTDCCL, 1993	Developed under GTPUDA, 1976	Developed under APCRDA ACT, 2014 (Under section 43 subsection- 4)	Developed Under MPD 2021, supported by DDA act 1957
SECTION / ACT	Special township notification, 2006 under Maharashtra Regional and Town Planning act, 1972	Chapter 5 under section 40	CRDA ACT	Chapter 19- MPD 2021
AREA	430 Acre	It extends to the whole of the state of Gujarat	38,581 Acre	6 land pooling zones of Delhi
OWNER'S INVOLVED	123 Farmer's family (800 individual)	Vary to different-different TP schemes	24 village farmers	Land parcels of any size brought under pooling provided they fall in land pooling area
REHABILITATION	Every native peasant got a parcel of land for house or flat within the Magarpatta City SEZ based on their land and every native peasant got a parcel of land for a house or flat within the Magarpatta City SEZ based on their land.	Within the close vicinity of original plot (minimum displacement) and with at least minimum previous benefits	Plots within the same village with a maximum displacement of 5km	Within the close vicinity of original plot (minimum displacement) and with at least minimum previous benefits

(continued)

Table 14.5 Cont.

CRITICAL ANALYSIS OF LAND POOLING POLICY WITH DIFFERENT CITIES/STATE OF INDIA

PARAMETERS	PUNE—MAGARPATTA	GUJARAT	ANDHRA PRADESH-AMRAVATI	DELHI
ELIGIBILITY	Landowners of Magar area	Greenfield site under public domain with scope/ propose a development project	No eligibility criteria on plot size but all 24 villages near Krishna riverbank are included	Landowner having land 2–20 ha and 20 ha above in Delhi land pooling zones, 70% contiguous pooled land, Min 30m wide road on one side except forest land, unauthorized colonies, Lal Dora villages, heritage, and natural features
DEVELOPED BY	Developed by MTDCCL	Government Body	Government Body	Developer entity
LAND POLICY MODEL	Co-operative movement	Public Participation model	People Public Partnership	Joint Development model
PROJECT SCHEME	Township project	Neighborhood planning scheme	City development scheme	Zonal development scheme
MINIMUM AREA	Land pooled for 162 HA	100 HA	---	2 ha
MAXIMUM AREA	---	100 HA ABOVE	38,581 Acre	20 ha above
LAND DISTRIBUTION UNDER PUBLIC DOMAIN	---	Roads-15%, Parks and open spaces- 5%, Social infrastructure- 5%, sale of residential and commercial- 15% (it may be altered to the nature of development)	Roads and utility services-30%, Parks and open spaces- 10%, EWS- 5%, social amenities—5%	Roads-12%, Recreational—16%, PSP- 10%

LAND DISTRIBUTION UNDER PRIVATE DOMAIN	---	---	---	Gross Residential- 53%, Commercial- 4%
DEDUCTION POLICY	---	40:60 ratio (commonly- but may vary to the site) where 60% is retained by an appropriate authority and 40% by landowners but the ratio cannot be reduced by min 30:70 and maximum by 50:50	50: 50 ratio	40: 60 ratio
COMPENSATION	Company stockholder	Shared amenities, Better transportation connectivity, Infrastructure development, Increased land, and property value	Residential and commercial plots, Annuity, Training and employment and debt waiver of 1.5 lakh to farmers one time	Shared amenities, Better transportation connectivity, Infrastructure development, Increased land, and property value and TDR
SUPPORTING AGENCIES	Pune Municipal Corporation	Gujarat town planning and valuation department	Singapore government-appointed Surbana International consultants	NIUA
BENEFICIARY	Farmers (FDI—Farmers Direct Investment)	State government, Authority, ULB's and Landowner	Farmers (FDI—Farmers Direct Investment) and APCRDA	Centre and State government, Authority, ULB's and Landowner

(continued)

Table 14.5 Cont.

CRITICAL ANALYSIS OF LAND POOLING POLICY WITH DIFFERENT CITIES/STATE OF INDIA

PARAMETERS	PUNE—MAGARPATTA	GUJARAT	ANDHRA PRADESH- AMRAVATI	DELHI
ADDITIONAL BENEFITS	Authorized Registration, Employment, Annuity, Entrepreneur, SEZ	---	Free higher education, Singapore trip, Pension, Free health camps	Tradable FAR—is allowed and can be transferred to another DE in the same planning zone having a licence of a project more than 20 Ha
OWNERSHIP AFTER FP	7/12 registration, part of the land remains with farmers, including companies stock	2 or more original plots which are owned by several persons or owned by persons jointly be held in ownership in common as a final plot	Ownership of residential and commercial	7/12 registration, part of the land remains with original landowners
TRANSFER OF LAND RIGHTS / SHARES	Allowed within native peasants	Possible	---	Not possible
RESERVATION OF LAND	---	Up to 10%	---	---
CHANGE OF LAND USE	---	Land allotted for the purposes referred shall not be changed by variation of schemes for the purposes other than a public purpose	No under section 99 CRDA ACT	Not possible
AMALGAMATION	---	---	Joint/ Individual allotment plot size	Amalgamation and subdivision of plots shall be allowed as per norms of a master plan

DEVELOPMENT CONTROL NORMS

SCHEME PREPARATION BY	Developer Entity	Appropriate Authority (In case of Ahmedabad- AMC &AUDA)	APCRDA	DDA
GREEN BUILDING REGULATIONS	---	---	---	10% Energy consumption by solar fittings and green building norms
DELINEATION	---	Based on roads, No. of land parcels, and development zone	Based on the urban population	Based on sector
DENSITY	---	---	---	800-1000 persons/ hectare
EWS HOUSEHOLD SIZE	---	As per DP	---	32-40 sq. Meter
GROUND COVERAGE	---	---	---	40%
FAR	As per DP	As per DP	As per DP	FAR 400 for group housing and additional 15% EWS in that, Commercial, Industrial and PSP- as per MPD 2021
FINANCE FINANCE BY	HDFC LOAN	Appropriate Authority (Grants, loans, impact fees, and state government)	APCRDA	Appropriate Authority (Grants, loans, impact fees, and central government)
EXPENDITURE	By MTDCCL	The net cost of scheme borne by the appropriate authority	The net cost of scheme borne by the appropriate authority	The net cost of scheme borne by the appropriate authority

(continued)

Table 14.5 Cont.

CRITICAL ANALYSIS OF LAND POOLING POLICY WITH DIFFERENT CITIES/STATE OF INDIA

PARAMETERS	PUNE—MAGARPATTA	GUJARAT	ANDHRA PRADESH- AMRAVATI	DELHI
MARGIN	---	20% of the amount of cost of the infrastructure provided in the adjacent area of the scheme	20% of the amount of cost of the infrastructure provided in the adjacent area of the scheme	---
REVENUE MONETIZATION OF LAND	Sale and auction of land (30% cost of construction get by the cost of the land)	Sale and auction of land	Sale and auction of land	Not mentioned in the policy
DEVELOPMENT CHARGES	Paid by MTDCCL (No discloser of rates)	Paid by individual landowner @ Rs50,000 / hectare for land and Rs 15/ sq. Meter for building	Rs 3,38,825/- and city level impact fee Rs 6,12,490/-	Paid by DE (No discloser of rates)
BETTERMENT CHARGES	Paid by MTDCCL (No discloser of rates)	Paid by the individual landowner (No discloser of rates)	---	---

STAMP DUTY	---	---	---	yes
RESULT SUCCESS	Win-win-situation	Win-win-situation	Win-win-situation—85% rate	Win-No-win-situation as DE is not getting any beneficial profit
INSPIRATION	Inspired many other projects in Pune like Nanded city SEZ, Videocon SEZ	Foundation of land pooling which Inspires many other states like Madhya Pradesh, Delhi, Andhra Pradesh, and Maharashtra	Amravati is one of the largest greenfield ventures in India	---

Source: Author.

14.6 Conclusion

Delhi's land pooling policy lacks the potential to create long-term wealth for its landholders, whereas Magarpatta creates long-term wealth for both peasants and landholders. In Delhi, entrepreneurial or investment opportunities to turn into an entrepreneur or shareholders or the possibility of a permanent job in the company somehow were lost in the policy, unlike Magarpatta. The lack of flexibility of plot sizes and of house sizes has proved unattractive to landowners, which is not the case with the Amravati model. In Amravati, farmers hold equal partnership rights with the state/city government, whereas, in Delhi's policy, the capital expenditure will be raised by external development charges (EDCs). It was found through field interviews that there was unwillingness to pay taxes as EDCs were extremely high. Therefore, land pooling in Delhi is a win-no-win situation, as developers are not getting any profit out of the policy.

14.6.1 Empirical Findings - Delhi Land Pooling Policy Challenges

Failure of land pooling of Delhi will undermine other master plans similar to MPD 2021. This makes it imperative to secure sufficient land for providing housing and infrastructure to the forecasted population of Delhi. Higher land and property prices will eventually spur out-migration to satellite cities like Noida, Gurugram, Faridabad, Meerut, and Ghaziabad. The major challenges to land pooling are:

- Statutory Law
- Spotted development—lead by the developers
- On-the-ground reality of Floor Area Ratio—what the policy says
- Unwilling to pay EDC—by landowners

14.6.1.1 Statutory Law

The policies produced by the Government as well as other planning-related documents and reports become statutory law when written by a legislative body. It's a law that a government deliberately creates through elected legislators in a formal legislative process. It's up to the judiciary to interpret and enforce statutory law, but the judiciary can't create it. Delhi's land pooling policy is not a statutory law set down by a body of the legislature, but rather is part of Delhi's 2021 master plan that might get modified or deleted in the future. Policy needs to have a legal backing for the implementation. States like Gujarat have a separate land pooling legal origin, i.e., GTPUDA Act, 1976 section 65, which makes it statutory and provides validity for the scheme. Further, Andhra Pradesh has the APCRDA Act, 2014 section 52, Rajasthan has its land pooling scheme act, 2016, and the Punjab has its town planning and urban development Act, 1995. Delhi also has a DDA Act, 1957, which gives the legal authority of DDA to formulate planning policies, despite there being no legal statutory legal backup as other

cities have. It is imperative to designate the Delhi land pooling policy in DDA Act, 1957 as land acquisition.

14.6.1.2 Spotted Development

In Delhi's land pooling policy, the phasing in of land-pooled areas was not mentioned, thus it does not attract many developers. A developer might be more interested in a sector that has high potential or has a major earning scope like around the metro stations, leading to spotted development. To combat this, Gujarat and Amravati are phasing in development, keeping in mind the market growth patterns.

14.6.1.3 On-the-Ground Reality of Floor Area Ratio

According to DDA, developers get a Floor Area Ratio (FAR) incentive of four in zones demarcated for land pooling but in reality, they only achieve 1 to 1.3 FAR. While fixing FAR for the land pooling policy, DDA made it attractive for the builders by including community and commercial facilities in the area they would be developing and selling.

If in DDA's scheme, community and commercial facilities are part of F.A.R (saleable built-up area), then developers will assume that they will be able to utilize more F.A.R than what will actually be available for them if the Apartment Ownership Act is factored in. There is a need for clarification on this subject from DDA to all stakeholders that the developers can't sell community and commercial facilities. The only saleable built-up area is the apartment in the group housing project.

(Source: <http://delhi-masterplan.com>)

Citing the scarcity of water, the Delhi Development Authority (DDA) has proposed to reduce the Floor Area Ratio (F.A.R) for residential areas from 400 — as approved in 2013 — to 200 in its land-pooling policy that has been hanging fire for five years.

(Source: <http://delhi-masterplan.com>)

This decline of FAR will create a negative impact on the model as it defeats the whole purpose of the land pooling, which is to create housing for all and better infrastructure for the forecast population of Delhi. The reduction in FAR makes the houses more expensive; this diminishes the profit margins of developers, forcing them to raise the cost of unit prices, and undermining the affordability factor.

In addition to the FAR strictures, the waste of land in the current land pooling policy is quite high. Figure 14.8 shows how a developer can only build 36.15 out of 60 acres (60%); analysis of the overall use of the land reveals 48.15/ 100 acres, only 48%. Other cities' land deduction policies are around 60%–70%.

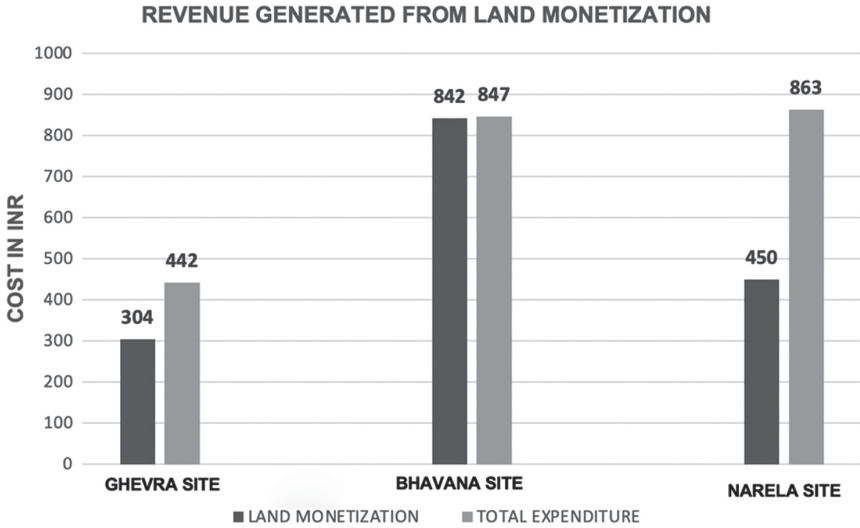


Figure 14.8 On-ground FAR Calculation of Delhi Land Pooling Policy.

Note: FAR = floor area ratio.

Source: DDA & Author.

14.6.2 Unwilling Payment of External Development Charges

As per DDA, EDCs will support the cost of infrastructure in Delhi land-pooling zones as per land rates in different zonal areas. Rates have been worked out after factoring in the cost of acquisition, holding, and EDCs for the non-saleable portion. Both EDC and Internal Development Charges (IDC) are statutory charges, which are levied by the respective state governments; that can differ from state to state. The charges are also variant depending on the location (zone) and type of the land-use within the city. For example: in Gurugram, Haryana, under the residential category, the IDCs are different for hyper-potential zones (Rs. 500 per sq. m), high-potential zones (Rs. 350 per sq. m), medium-potential zones (Rs. 250 per sq. m) and low-potential zones (Rs. 70 per sq. m). Under the commercial category, IDC rates range from Rs. 1,000 per sq. m. for hyper-potential zones and Rs. 190 per sq. m. for low-potential zones.

As per the Delhi land pooling policy, the expenses of the capital investment will be raised from the EDCs levied on landowners and consortiums. In an earlier draft of the policy, DDA had earmarked a charge of Rs 2 crore to be paid by land owners for every acre of pooled. This amount was later scrapped as the policy was revised in 2018. As per the revised policy, EDCs are to be calculated on the basis of “actual cost of providing city-level infrastructure” for the pooled land.

The costs of EDC per acre are hidden and Delhi's are quite high. As per the field interviews, the land holders are not willing to pay the EDCs as there is no declaration of them in land pooling policy and they do not get any attractive benefits like other states' policies. So, the challenge for DDA will be to incur/tackle the cost of expenditure if the imposed taxes on landowners are not being paid.

14.6.3 Existing Value Capture Tools in Delhi

Currently, Delhi has numerous tax and non-tax-based value capture tools which are collected neither by the Municipality nor by DDA. DMRC is also expanding its efforts in capturing the land value by property development. Delhi has mainly focused on tax-based value capture tools, which are quite reliable. The value captured by non-taxed-based tools is less compared to tax-based tools. ULBs are dependent upon taxed-based value capture like property tax which is highest among all. About 60%–70% of revenue is being collected by property tax only in tax-based tools, whereas DDA relies on fee-based value capture, which only occurs once. Despite having numerous land value capture tools, none go for the developing infrastructure. Therefore, a new institutional framework is necessary for selected value capture tools of development in the TOD context.

14.6.4 Appropriate Land Value Capture Tools for Delhi

Table 14.6 identifies the numerous tools that currently exist in Delhi, are efficient and have the highest potential to work in the TOD context in Delhi land pooling zones. Based on market and statistical analysis, the following tools are appropriate:

1. DEVELOPMENT BASED VALUE CAPTURE TOOLS

- a) Sale of Land
- b) Land lease agreement
- c) Land Readjustment
- d) Air rights sale / TDR

These tools are the most effective forms of capturing land value, i.e., Land monetization.

2. TAX-BASED LAND VALUE CAPTURE TOOLS

- a) Land value tax
- b) Vacant land tax
- c) Property tax

3. FEE-BASED LAND VALUE CAPTURE TOOLS

- a) Impact / Development fees (IDC's)
- b) Betterment charges
- c) External Development Charges (EDCs)

Table 14.6 Existing Value Capture Tools in Delhi

TOOLS	LEGISLATION	LVC IN THEORY	LVC IN PRACTICE	BASE	RATE	FREQUENCY	COLLECTED BY	CAN WORK (YES/NO)
<i>TAX-BASED VALUE CAPTURE TOOLS</i>								
Property Tax / Land Value Tax	Wealth Tax act, 1957	YES	YES	Area Based	7% Residential, 20% Commercial, 10% Industrial	Yearly	Municipality	YES
Vacant Land Tax	Wealth Tax act, 1957	YES	YES	Area Based	Included in Property Tax	Yearly	Municipality	YES
Tax-Increment Financing	Delhi Township Board	YES	NO	Area Based	-	Recurring for area based	-	NO
<i>NON-TAX / FEE-BASED VALUE CAPTURE TOOLS</i>								
Stamp Duty Fees	Registration Act, 1908	YES	YES	Area Based	6%—Men, 4%- Women	when there is a transaction of property	Authority	Yes
Development / Impact fees	DDA ACT, 1957	YES	YES	Area / Project Based	Sewer and water = RS100 square meter	One-time charge	Authority	Yes
Change of Land-use	No law	NO	YES	Area / Project Based	Residential = 14,000–24,777; Commercial and Industrial = 1.5 Times of Residential	One-time charge	Authority	Yes (working but very less)
Lease of Land And Development	Property Act, 1882	YES	YES	Area / Project Based	As per market rate	One time charge	Authority	Yes
Property Transaction Fees	Registration Act, 1908	No	YES	Area Based	6%—Men, 4%- Women	when there is a transaction of property	Authority	Yes (working but very less)

Sale of Naming Rights To Stations	DMRC ACT	No	Yes	Area Based	10 X Fixed annual license fees	For a period of 10 Year	DMRC	Yes
External Development Charges	No law	No	Yes	Area / Project Based	As per Hectare or Acre	One time charge	Authority	Yes
Land Pooling	MPD 2021	YES	YES	Area / Project Based	As per EDC charges	One time charge	Authority	Yes (working but very less)
Air Rights / F.A.R	No law	YES	YES	Area Based	As per category	One time charge	Authority	Yes
Fee for regularizing unauthorized development	DDA Act 1957, Section 57	No	YES	Area Based	As per category	One time charge	Authority	Yes (working but very less)
Betterment Charges	DDA ACT,1957	YES	YES	Area Based	RS 150/ SQ.MTR.	One time charge	Authority	Yes (working but very less)

Source: Author.

The above tools have been identified based on statistics efficiency, amount of revenue collected, popularity or people's willingness to pay the levy and the extent the levy is being charged for collecting the revenue.

14.7 Conclusion and Policy Recommendations - Establishing Land Value Capture Potential for Financing a Project

14.7.1 Implementing Urban Projects Through Land Value Capture

The recommendations are derived from the selected sites of Delhi land pooling zones. The illustrations on the site represent analysis of the cost required to develop the TOD influence area of 500 m. The cost of developing the whole sector is compared with the cost of developing a TOD influence zone. Applying land-based value capture tools on the sites gives a perception of the reliability of these tools. Three sites have been selected in land pooling zones based on three criteria: first, it should fall under Delhi land pooling zones; second, there should be a greenfield site; and third, there should be an existing or proposed metro station in the land pooling zones. The sites are:

1. Ghevera Metro Station—Existing (Zone- L)
2. Bawana Metro Station—Proposed (Zone- N)
3. Narela Metro Station—proposed (Zone- P1)

14.8 SITE 1—GHEVRA METRO STATION (ZONE—L)

The Ghevera site has an existing character of unplanned industrial area around sector 1 and 2 have noxious industries which fall under Nazafgarh zone, Mundaka ward; having circle rate under category H. The cost of expenditure of sector 1 has been analyzed for a total area of 440 ha with a vacant area of 228 ha, which is compared with the cost incurred for developing sample area of 50.3 ha around the 500-meter TOD influence zone.

Table 14.7 suggests that the capital expenditure for developing sector 2 near Ghevera site is approximately 1,188 CR (INR). It includes road construction, street lighting, water supply network, sewerage, storm water network, recreational development, and maintenance costs. Calculating the capital expenditure for developing a sample area of 50.3 ha would be around 442 CR considering the percentage of roads (25%) and recreational (16%). As analyzing the percentage of roads nearby developing the areas is not the same as the percentage of land pooling policy, one cannot apply for sample area as it may or may not have an equal percentage of roads and recreational spaces in the considered sector. So, 37.2% would be the total cost for developing the TOD area on a sample area of the cost of the sector 2.

Table 14.8 suggests the appropriate LVC tools on sample site at sector 2 have been illustrated to capture land value, keeping the potential of workability according to the past trends. Since each tool cannot be applied on the same

Table 14.7 Capital Expenditure for Sector 2 (Ghevra site)

	<i>Const. of Roads</i>	<i>Street Lighting</i>	<i>Sewerage Network</i>	<i>Storm water</i>	<i>Water Supply</i>	<i>Recreational</i>	<i>Cost of Publication</i>	<i>Manpower Cost</i>
RATE (INR)	50,000/Sq.m.	70,000	2,601/ Rmt	10.9 CR/Km	2,516/ Rmt	1,1604/ Sq.m.	10 LAKHS	1 CR
AREA (HA)	27.36	27.36	27.36	27.36	27.36	36.48	27.36	27.36
COST (INR)	227 CR	12 CR	11 CR	497 CR	11 CR	426 CR	10 LAKHS	1 CR

CAPITAL EXPENDITURE FOR AREA 228 HA- 1,188 CR (ROADS- 12%, RECREATIONAL-16%)

CAPITAL EXPENDITURE FOR SAMPLE AREA 50.3 HA- 442 CR (ROADS- 25 %, RECREATIONAL-16%)

37.2% of the total cost for developing TOD area on a sample area of the cost of sector area

Source: Author.

Note: The total cost is the multiplication of quantity with respect to its unit and rate in addition to 20% cost of infrastructure of adjoining schemes, 10% escalation rate for 3 years and 7% miscellaneous cost.

Table 14.8 Value Capture from Selected LVC Tools (Ghevera site)

<i>REVENUE FROM LVC TOOLS</i>								
	<i>Development Based Tools</i>		<i>Tax Based Tools</i>			<i>Fee Based Tools</i>		
	<i>Land For Sale</i>	<i>Air Rights</i>	<i>Land Value Tax</i>	<i>Land Vacant Tax</i>	<i>Property Tax</i>	<i>Impact Fees</i>	<i>Betterment Charges</i>	<i>EDC</i>
REVENUE (INR)	280.75 CR	23.65 CR	38.02 CR	42.25 LAKHS	2.86 CR	84.33 LAKHS	15.55 CR	67.29 CR
68.8% REVENUE FORM DEVELOPMENT BASED TOOLS								

Source: Author.

plot, the total value capture done by all three categories, i.e., development-based tools, taxed based tools and fee-based tools, cannot be compared with the capital expenditure analyzed for sample area of 50.3 ha. If we adopt the purest form, development-based tools would be most appropriate because taxed and fee-based tools are not reliable for capturing the value of any land or developed sector. 68.8% is the total value captured if considering only development-based tools, which is quite sufficient revenue for development infrastructure in an area by the ULBs.

14.9 SITE 2—BAWANA METRO STATION (ZONE—N)

The Bawana site has an existing character of planned industrial area around sector 17. It has noxious industries which fall under Narela zone, Bawana ward, having a circle rate falling under category G. The cost of expenditure of sector 17 has been analyzed having a total area of 193 ha in which the total vacant area is 188 ha. It is being compared with the cost incurred for developing sample area of 79.2 ha around the 500-meter TOD influence zone.

Table 14.9 suggests that the capital expenditure for developing sector 17 near Bhavana site is approximately 978 CR (INR). It includes road construction, street lighting, water supply network, sewerage, storm water network, recreational development, and maintenance costs. Calculating the capital expenditure for developing a sample area of 72.9 ha would be around 847 CR considering the percentage of roads (35%) and recreational (16%). As analyzing the percentage of roads nearby developing the areas is not the same as the percentage of land pooling policy, one cannot apply for sample area as it may or may not have an equal percentage of roads and recreational spaces in the considered sector. So, 86.5% would be the total cost for developing the TOD area on a sample area of the cost of the sector 17.

Table 14.10 suggests the appropriate LVC tools on sample site at sector 17 have been illustrated to capture land value, keeping the potential of workability according to the past trends. Since each tool cannot be applied on the same plot, the total value capture done by all three categories, i.e., development based tools, taxed based tools and fee-based tools, cannot be compared with the capital expenditure analyzed for sample area of 72.9 ha. If we adopt the purest form, development-based tools would be most appropriate because taxed and fee-based tools are not reliable for capturing the value of any land or developed sector. At least 99.4% is the total value captured if considering only development-based tools, which is quite sufficient revenue for development infrastructure in an area by the ULBs.

14.10 SITE 3—NARELA METRO STATION (ZONE—P-1)

The Narela site has an existing rural fabric, having agricultural land around the proposed metro station, which falls under Narela zone, Alipur ward. Its circle rate falls under category H. The sample site has been analyzed as having total area

Table 14.9 Capital Expenditure for Sector 17 (Bhavana site)

	<i>Const. of Roads</i>	<i>Street Lighting</i>	<i>Sewerage Network</i>	<i>Storm water</i>	<i>Water Supply</i>	<i>Recreational</i>	<i>Cost of Publication</i>	<i>Manpower Cost</i>
RATE (INR)	50,000/Sq.m.	70,000	2,601/ Rmt	10.9 CR/Km	2,516/ Rmt	1,1604/ Sq.m.	10 LAKHS	1 CR
AREA (ha)	22.56	22.56	22.56	22.56	22.56	30.08	22.56	22.56
COST (INR)	187 CR	10 CR	09 CR	408 CR	09 CR	351 CR	10 LAKHS	1 CR
CAPITAL EXPENDITURE FOR AREA 188 ha- 978 CR (ROADS- 12%, RECREATIONAL-16%)								
CAPITAL EXPENDITURE FOR SAMPLE AREA 72.9 ha- 847 CR (ROADS- 35 %, RECREATIONAL-16%)								
86.5% of the total cost for developing TOD area on a sample area of the cost of sector area								

Source: Author.

Note: The total cost is the multiplication of quantity with respect to its unit and rate in addition to 20% cost of infrastructure of adjoining schemes, 10% escalation rate for 3 years and 7% miscellaneous cost.

Table 14.10 Value Capture from Selected LVC tools (Bhavana site)

<i>REVENUE FROM LVC TOOLS</i>								
	<i>Development Based Tools</i>		<i>Tax Based Tools</i>			<i>Fee Based Tools</i>		
	<i>Land For Sale</i>	<i>Air Rights</i>	<i>Land Value Tax</i>	<i>Land Vacant Tax</i>	<i>Property Tax</i>	<i>Impact Fees</i>	<i>Betterment Charges</i>	<i>EDC</i>
REVENUE (INR)	808.31 CR	34.29 CR	109 CR	109 CR	8.31 CR	1.22 CR	22.55 CR	99.29 CR
99.4 % REVENUE FORM DEVELOPMENT BASED TOOLS								

Source: Author.

of 74.3 ha. The site cannot be compared with the cost incurred for developing sector area around the 500-meter TOD influence zone as the sector plan for Narela zone is still in draft phase and has not been published officially.

Table 14.11 suggests that the capital expenditure for developing a sample area of 74.3 ha would be around 863 CR considering the percentage of roads (30%) and recreational (16%). As analyzing the percentage of roads nearby developing the areas is not the same as the percentage of land pooling policy, one cannot apply for sample area as it may or may not have an equal percentage of roads and recreational spaces in the considered sector. At least 86.5% would be the total cost for developing the TOD area on a sample area of the cost of the area.

Table 14.12 suggests the appropriate LVC tools on sample site at Alipur ward have been illustrated to capture land value, keeping the potential of workability according to the past trends. Since each tool cannot be applied on the same plot, the total value capture done by all three categories, i.e., development based tools, taxed based tools and fee-based tools, cannot be compared with the capital expenditure analyzed for sample area of 74.3 ha. If we adopt the purest form, development-based tools would be most appropriate because taxed and fee-based tools are not reliable for capturing the value of any land or developed sector. At least 52.1% is the total value captured if considering only development-based tools, which is quite sufficient revenue for development infrastructure in an area by the ULBs.

14.10.1 Conclusion

The above section presents a researched-based scenario for the implementation of urban projects through LVC for both public and private sectors. The sampled sites in section 14.6 show that the revenue generation from value capture tools are economically, financially, and institutionally sustainable. The above section is also intended to generate discussion amongst key stakeholders and serves as a basis for research and experimentation for unlocking the private investments in sustainable infrastructure in Asia. Since the chapter limited its scope of work to some of the indicators of economic and institutional framework, certain obsolete types of infrastructure may occur due to innovative technologies and business models. New sources of private investments would increase the legal and regulatory challenges faced by government agencies looking to increase investments in sustainable infrastructure.

More private sector involvement may enhance performance and increase efficiency of infrastructure services in addition to reducing the fiscal burden of public budgets. It is evident from the past that governments will not be able to meet projected demand for investment in a sustainable way. Increasing access to long-term capital at adequate rates to support sustainable investments will require enhanced participation from the private sector. This establishes the distinction between standard and sustainable infrastructure.

Table 14.11 Capital Expenditure for Sample Site (Narela site)

	<i>Const. of Roads</i>	<i>Street Lighting</i>	<i>Sewerage Network</i>	<i>Storm water</i>	<i>Water Supply</i>	<i>Recreational</i>	<i>Cost of Publication</i>	<i>Manpower Cost</i>
RATE (INR)	50,000/Sq.m.	70,000	2,601/ Rmt	10.9 CR/Km	2,516/ R mt	1,1604/ Sq.m.	10 LAKHS	1 CR
AREA (ha)	26.01	26.01	26.01	26.01	26.01	11.89	26.01	26.01
COST (INR)	216 CR	12.13 CR	11.24 CR	472 CR	10.87 CR	138 CR	10 LAKHS	1 CR
CAPITAL EXPENDITURE FOR AREA- SECTOR PLAN IS NOT PUBLISHED								
CAPITAL EXPENDITURE FOR SAMPLE AREA 74.3 ha- 863 CR (ROADS- 30 %, RECREATIONAL-16%)								
86.5% of the total cost for developing TOD area on a sample area of the cost of area								

Source: Author.

Note: The total cost is the multiplication of quantity with respect to its unit and rate in addition to 20% cost of infrastructure of adjoining schemes, 10% escalation rate for 3 years and 7% miscellaneous cost.

Table 14.12 Value Capture from Selected LVC Tools (Narela site)

<i>REVENUE FROM LVC TOOLS</i>								
	<i>Development Based Tools</i>		<i>Tax Based Tools</i>			<i>Fee Based Tools</i>		
	<i>Land For Sale</i>	<i>Air Rights</i>	<i>Land Value Tax</i>	<i>Land Vacant Tax</i>	<i>Property Tax</i>	<i>Impact Fees</i>	<i>Betterment Charges</i>	<i>EDC</i>
REVENUE (INR)	415.12 CR	34.89 CR	1019 CR	1.23 CR	4.23 CR	1.24 CR	22.94 CR	99.27 CR
52.1 % REVENUE FORM DEVELOPMENT BASED TOOLS								

Source: Author.

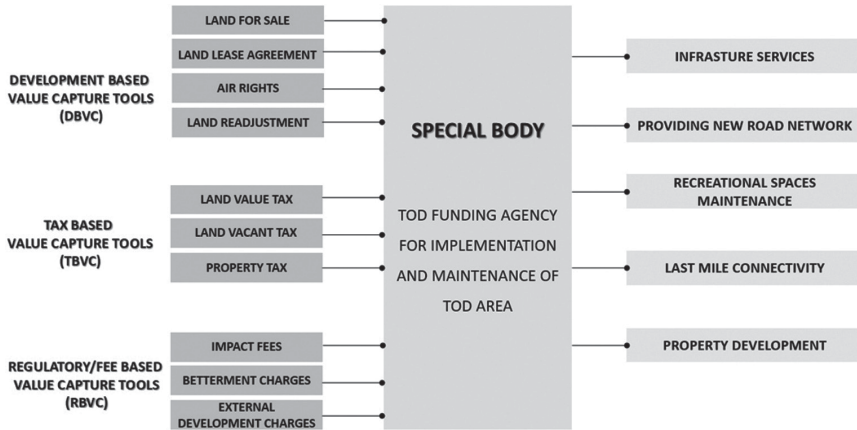


Figure 14.9 Revenue Generation from Land Monetization (Ghevera, Bhavana, and Narela). Source: Author.

14.10.2 Recommendations and Policy Implications

(i) APPROPRIATE DBVC TOOLS FOR DEVELOPMENT IN TOD AREAS OF DELHI’S LAND POOLING ZONES

Development-Based Land Value Capture Tools

The sale of land, land lease agreements, and land readjustment are the purest development-based land value capture tools. In other words, land monetization is the purest form for value capture in the TOD context.

Figure 14.9 analyzes all three selected sites with their value capture being generated by only land monetization; if we take an average of all three sites, 74.3% of the revenue is being generated by land monetization only. Therefore, it is appropriate to say that land monetization is the purest form of doing land value capture in the TOD context in Delhi land pooling zones.

14.10.2.1 Tax-Based Land Value Capture Tools

Property taxes, land vacant taxes, and land value taxes are the most significant tax-based land value capture tools. Land vacancy taxes should be segregated from property taxes as land vacant tax is not compulsory to pay it if there is no construction on a land parcel (as per Delhi property tax). Thus, there should be a segregation of both the taxes so that it can contribute in addition to value capture as vacancy tax is creating a negative impact in the development of an area. Taking an example in Bihar, where vacant land in urban parts of the state would now

come under the aegis of the state, lands located in municipal areas on the main principal road, main road and local roads would be Rs5, Rs4 and Rs3 per square feet respectively. Similarly, lands available in Nagar Parishad areas and located either on the main principal road, main road and local roads would be charged Rs4, Rs3, and Rs2 per square foot, respectively. In a similar way lands available in Nagar Panchayat areas and located either on the main principal road, main road and local roads would be charged Rs3, Rs2 and Rs1 per square foot respectively.

14.10.2.2 *Fee-Based Land Value Capture Tools*

Sale of impact/development fees, betterment charges, and external development charges are the purest fee-based forms of capturing land value. Seeing the past trend in Delhi, the fee or tax-based is not as reliable as the people are not willing to pay any taxes because of the higher fee charged by Municipal Corporation or by the authority. So, there is a need to minimize the fee if we need to capture the land value as minimizing the fee-based levy people might be willing to pay a levy which is imposed on them. Hence, there is a need for analyzing how much EDC a person gives and how much a betterment charge a person should give as per the range of TOD influence area.

In the current scenario, the betterment levy is executed as same for different F.A.R. at different radius but on practical implementation, it cannot be the same. For example, the betterment levy imposed on commercial or residential land use around the 100 meters of influence zone of TOD area cannot be same as the around the 800 meters as the distance varies the land value also varies so, there cannot be the same levy for the same radius (Table 14.13). There should a FAR range that decides the percentage of levy imposed on particular land use based on the distance of land from the metro station.

1. **NEW ADMINISTRATIVE FRAMEWORK**—Simplified and direct Institutional framework (who collects and division of LVC tools must be subdivided)

Figure 14.10 shows the new administrative framework to capture value from different land-based value capture tools is of no use unless it is transferred or imposed for development in the TOD context. It can only be

Table 14.13 Distribution of Betterment Levy Based on Floor Area Ratio

<i>Band</i>	<i>Range of far</i>	<i>Betterment Levy</i>
1	5–4	50%
2	4–3	40%
3	3–2	35%
4	2–1	25%

Source: Author.



Figure 14.10 New Administrative Framework for TOD areas in Delhi.

Source: Author.

workable if there is a simplified institutional framework that directly collects some amount to capture value. It can be mandated by various revenue-collecting agencies so that the amount can be used in the development of TOD influence zones.

2. **STATUTORY LAW**—Delhi Land Pooling policy should be included in the DDA Act, 1957 to be legally backup as Land Acquisition Act, 1984.
3. **PHASING**—Phasing should be mandated and given by DDA to developers to avoid the spotted development in land pooling zones of Delhi.
4. **DECLARATION OF EDC CHARGES OR REVENUE SOURCES IN POLICY**—There should be a declaration of fees or charges for each tool where revenue is being generated.
5. **INCREASE THE F.A.R IN DELHI LAND POOLING POLICY**—Capacity building of agencies like Delhi Jal Board and other agencies for improving infrastructure and making viable for developers as well.
6. **DEVELOPMENT-BASED VALUE CAPTURE TOOLS**—The purest form to capture DBVC is by land monetization with property development, land trust and sale of air rights.

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APPENDIX: DEFINITIONS

1. **Property Tax:** “Property tax is the annual amount paid by a land owner to the local government or the municipal corporation of his area. The property includes all tangible real estate property: house, office building and the property he has rented to others. In India, the Municipal Corporation of a particular area assesses and imposes the property tax annually or semi-annually. The tax amount is based on the area, construction, property size, building, etc. The collected amount is mainly used for public services like repairing roads, construction schools, buildings, sanitation. Central government properties and vacant properties are generally exempt.” The formula for property tax is **Property tax or House Tax = Annual value * Rate of tax.**

Annual Value = Unit area value per sq. mtr * unit area of property * age factor * use factor * structure factor * occupancy factor
2. **Vacant Land Tax:** This is also a variant of property tax, which charges owners who have not carried out development on their land. This tool particularly gains importance given to the fact that land is scarce and must be monetized to reap benefits. For example, the Greater Hyderabad Municipal Corporation charges 0.5% of the registration value of the land if the land is not utilized for agriculture or is left un-built. The Tamil Nadu State of India has the legal backing for levying the vacant land as with the Land Ceiling Act of 1976. Vacant land is levied under the Gujarat Provisional Municipal Corporation Act 1949 section 455. It is levied on non-agriculture plots which have infrastructure facilities but no buildings.
3. **Tax-Increment Financing:** “Tax Increment Financing or TIF is one of the most popular value capture tools in many developed countries, especially the United States. In TIF, the incremental revenues from future increases in property tax or a surcharge on the existing property tax rate are ring-fenced for a defined period of time to finance some new investment in the area.” TIF makes use of a predicted future increase in tax revenue in order to finance improvements that will, in turn, reap the predicted benefits.
4. **Stamp Duty Fees:** Stamp duty is a tax imposed on the sale of property/property ownership by the state government. It is payable under Section 3 of the Indian Stamp Act, 1899. The duration of the stamp duty at the time of registration shall be based on the value of the house/property. It also varies

based on the state or area where the property is located, and whether it is a new or old house. Stamp duty is an additional cost incurred when purchasing immovable property.

5. **Development/ Impact Fees:** **Impact** fees are charges that are imposed upon new development as a state of development approval to pay for a proportionate share of the cost in the city's infrastructure wherever it is necessary for new growth and development. Impact fees are one-time payments used to construct system improvements. Impact fees are collected to provide public services to a new development, fund capital improvements required to serve the growth, and benefit new development by maintaining current levels of service. This is a widely used land-based value capture tool that is used in Indian States like Andhra Pradesh, Gujarat, Maharashtra, and Tamil Nadu and they been collecting it upfront while granting development permission. Impact fees are widely used in the United States to fund infrastructure.
6. **Change of land use:** Land use change is a process which transforms the natural landscape by direct human-induced land use such as settlements, commercial and economic uses and forestry activities.
7. **Lease of land and development:** A land lease, also called a ground lease, is a lease agreement that permits the tenant to use a piece of land owned by the landlord in exchange for rent. Land leases work very similarly to the way traditional property leases operate, and tenants can enter into both residential and commercial agreements. Most land leases are vacant, allowing the tenant to construct a temporary—or in some arrangements, permanent—structure at his own cost. However, some land leases do already have structures, partial structures, or other objects on them for the tenant's use.
8. **Property transaction fees:** Property transaction fees is the total transaction costs that includes the costs of buying a property plus the costs of selling of a property or land.
9. **Sale of naming rights:** Naming rights are a financial transaction and form of advertising whereby a corporation or other entity purchases the right to name a facility or event, typically for a defined period of time. The distinctive characteristic for naming rights is that the buyer gets a marketing property to promote products and services, promote customer retention and/or increase market share.
10. **External Development Charges (EDC):** The EDC is the fee that builders have to pay to the civic authority for development of basic facilities in and around housing projects. These include supply of water, electricity, sewerage system, waste management system, landscaping, roads, etc.
11. **Land pooling:** This concept originated in Germany with a supporting legal structure was enacted in 1902. Since it has been used extensively across East Asia, land pooling was adopted in Japan, the People's Republic of China, and Taipei, China. Land pooling is a form of land procurement where all the land parcels in an area are pooled for the infrastructure development and share land in proportion to original ownership returned as reconstituted parcels. In India, states such as Gujarat and Haryana are using land assembly

mechanism where the owner agrees to exchange their land for infrastructure development. Gujarat is using this tool for the development of infrastructure in Ahmedabad and recently, Andhra Pradesh has also used LPS to get land for its new Capital Amravati.

12. **Air rights:** Rights to the airspace above a building or lot, regarded as the real property of the one who owns the building or lot.
13. **Fee for regularizing unauthorized development:** The charges incurred from an unauthorized colony or development comprising of a contiguous area, where no permission has been obtained for approval of layout plan or building plans and has been identified for regularization of such colony in pursuance to the notification number S.O. 683(E) dated the 24th March, 2008 and includes colonies as identified by the Delhi Development Authority under these regulations as specified in Annexure II (1797 colonies).
14. **Betterment charges:** A betterment levy is a onetime upfront charge on the land value gain caused by public infrastructure investment. And is considered equitable as the payer is charged for the benefits received. The levy can be charged as revenue for improvement schemes or as project-based tax. In Hong Kong, China, the betterment taxes are based on market value whereas in Mumbai the MMRDA collects it on a project basis. Another form of being through it is town planning schemes. Under this, the Development Authority is empowered to collect betterment charges at the time of building permit for laying trunk water lines, development of major roads, etc. but sometimes, they do not have the estimates of investment. Thus, they collected charges after the development of infrastructure as it gives total expenditure amount. Great Britain has imposed a betterment levy equal to 40% of the land value gain attribute to public investment.