International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Financing Urban Mobility: Integrating Land Value Capture Mechanisms for Metro Projects in India

Ayisha Reem

Department of Architecture and Planning, Government Engineering College Thrissur

Abstract

The study, "Financing Urban Mobility: Integrating Land Value Capture Finance Mechanism in Financing Metro Cities of India," investigates how Land Value Capture (LVC) might be used as a sustainable financing method for metro rail projects in Indian cities. The need for creative funding methods has become crucial as India deals with hitherto unseen urbanization issues, such as traffic jams and poor public transportation systems. In order to effectively finance transit-oriented development (TOD), this study examines how LVC can take advantage of rising land values brought about by public investments in metro infrastructure.

The importance of LVC in relation to India's 2017 Metro Rail Policy, which requires its incorporation into metro projects, is examined at the outset of the paper. It highlights the main obstacles that Indian cities face when putting LVC strategies into practice, including regulatory limitations and fragmented land ownership. Successful LVC mechanisms and their socio-economic advantages, such as improved urban mobility and sustainable development, are highlighted in the research through a qualitative analysis of international best practices and case studies from a few Indian metropolitan cities.

The results highlight how crucial it is to coordinate land use and transportation planning in order to optimize the financial returns on investments made in metro areas. In order to promote sustainable urban growth and improve public transportation financing in India's quickly changing metropolises, the paper ends with strategic recommendations for policymakers on how to increase the effectiveness of LVC in urban planning processes.

Keywords: Land Value Capture, Metropolitan Cities, Sustainable Financing

1. INTRODUCTION

The value of land appreciates over time, making it the asset with the longest lifespan. When a major infrastructure project like a metro corridor is being considered, its significance increases even further. Therefore, in any development scenario, making the best use of the available land is essential while meeting the ensuing demand for real estate and supporting infrastructure. India's fast urbanization in recent years has made urban mobility extremely difficult, especially in large cities that are already struggling with pollution and traffic. With their high capacity and efficiency in negotiating the limitations of urban infrastructure, metro rail systems have become a feasible way to improve mass transit. To guarantee their sustainability, these projects' capital-intensive nature calls for creative financing techniques.

By taking advantage of the rise in land values that comes with public investments in transportation

infrastructure, Land Value Capture (LVC) mechanisms offer a viable way to fund metro transit projects. Value Capture Financing (VCF) components must be included in all metro projects, according to India's 2017 Metro Rail Policy, which highlights the necessity of public-private partnerships to support funding. Even with this policy framework, putting LVC strategies into practice in many Indian cities is fraught with difficulties. Difficulties include dispersed land ownership, insufficient legal frameworks, and low public knowledge of LVC's advantages.

The purpose of this research paper is to examine the processes of land value capture as a means of funding metro projects in India, looking at the challenges as well as the opportunities it offers. In order to improve urban mobility and advance sustainable development, this study looks at case studies and best practices from different Indian cities. One of the main factors affecting urban property values is the availability of public transportation. The accessibility of public transportation networks and the proximity to transit stations have been shown in numerous studies to have a major impact on the cost of residential and commercial real estate in urban areas. The advantages that transit accessibility offers such as enhanced mobility, shortened travel times, and easier access to amenities and jobsare what propel this relationship.

2. Need for the Study

a) Rapid Urbanization and Mobility Challenges

India is witnessing unprecedented urban growth, with projections indicating that by 2031, over 600 million people will reside in urban areas. This rapid urbanization has led to significant challenges in urban mobility, including severe traffic congestion, inadequate public transport systems, and increased pollution levels. As cities expand, the demand for efficient and sustainable transportation solutions becomes critical. Metro rail systems are recognized as a viable option to enhance urban mobility; however, their capital-intensive nature necessitates innovative financing mechanisms to ensure their sustainability.

b) Financial Constraints in Urban Infrastructure Development

Many Indian cities face financial constraints when it comes to funding large-scale infrastructure projects like metro rail systems. Traditional funding sources often fall short, leading to delays in project implementation and inadequate service provision. The need for alternative financing strategies is paramount to meet the growing demands of urban populations. Land Value Capture (LVC) mechanisms present a promising solution by allowing cities to capture the increased land values resulting from public investments in metro projects.

c) Policy Framework and Government Initiatives

The Indian government has recognized the importance of LVC in financing urban infrastructure through policies such as the Metro Rail Policy of 2017, which mandates the inclusion of Value Capture Financing components in metro projects. This policy framework aims to promote public-private partnerships (PPP) and leverage land value increases to fund transit-oriented development (TOD). However, despite these initiatives, many cities struggle with the effective implementation of LVC strategies due to regulatory challenges and limited public awareness.

d) International Best Practices and Learning Opportunities

Globally, cities like Tokyo, London, and Bogotá have successfully implemented LVC strategies to finance their transit systems. These international experiences provide valuable lessons that can be adapted to the Indian context. By analyzing these best practices, Indian cities can develop tailored LVC mechanisms that address local challenges while maximizing financial returns from metro investments.

e) Socio-Economic Benefits of LVC Integration

Integrating LVC mechanisms into metro projects not only provides a financial solution but also promotes sustainable urban development. By capturing land value increases, cities can reinvest funds into local infrastructure improvements, enhancing overall quality of life for residents. Furthermore, effective LVC strategies can stimulate economic growth by encouraging higher density developments around transit corridors, ultimately leading to more vibrant urban environments.

f) Addressing Implementation Barriers

Urbanization has led to increased demand for efficient transportation systems, necessitating significant investments in transit infrastructure. However, traditional funding mechanisms often fall short in meeting these financial needs. LVC offers a solution by capturing the enhanced land values that arise from improved transit access. By aligning land use and transportation planning, cities can leverage LVC to finance the development and maintenance of transit systems, while also addressing issues of social equity and environmental sustainability.

Most Japanese cities, Hong Kong, Singapore, and Copenhagen have demonstrated that urban rail transit can sustain funding and returns by integrating land development plans with the transit network (Cervero, 2010; Cervero and Murakami, 2009; Suzuki et al., 2013). "The use of value capture (VC) mechanisms is gaining momentum across cities worldwide as a solution to transit funding and financing (McIntosh et al., 2014; Suzuki et al., 2013; Newman et al., 2016)." Studies in European, Australian, and US cities reveal that proximity to urban rail frequently increase property values enough to balance all of the rail transit capital costs captured through a portion of their incremental land or property value (Suzuki et al., 2013). In Bogotá, during 1997-2007 period de-valorization through betterment fees contributed to about US$ 1.0 billion, and about US$ 1.1 billion estimated for 2008-2015 (Peterson et al., 2008).

A few Cities in India namely; Mumbai, Hyderabad, Ahmedabad, and Bangalore have also attempted tapping urban land values as an additional source of revenue but could generate only small proportions using tax-based passive revenue instruments (Jillella, 2012).

Unfortunately, there is limited research about implementation aspects of the LVC process to build urban transit in developing countries. Also, various cases and literatures proves that transit investments enhance land value, but its capture is limited, thus arises the need to assess the value capture mechanisms.

Hence, this research now addresses what kind of a mechanisms and interventions are appropriate for mainstreaming the VC delivery process to fund urban transit projects for Indian cities and whether this is relevant to other emerging cities.

3. Research Question

How can land value capture mechanisms be effectively implemented to finance metro transit projects in Indian cities and what challenges do Indian cities face in capturing land value increases resulting from metro rail investments?

4. Aim

To develop strategic recommendations for integrating Land Value Capture into the financing of metro projects, focusing on sustainable urban growth in Indian metro cities.

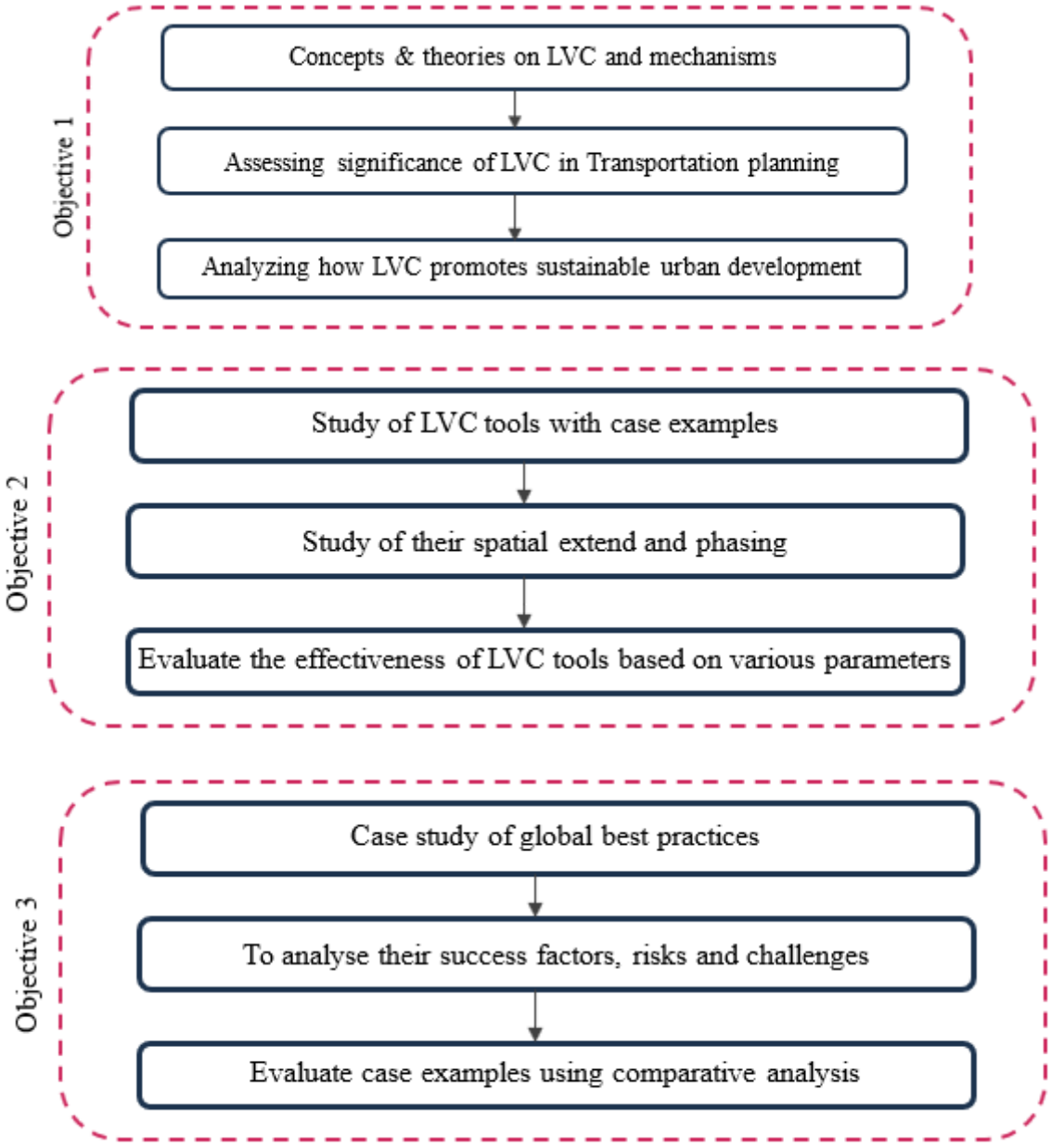
5. Objectives

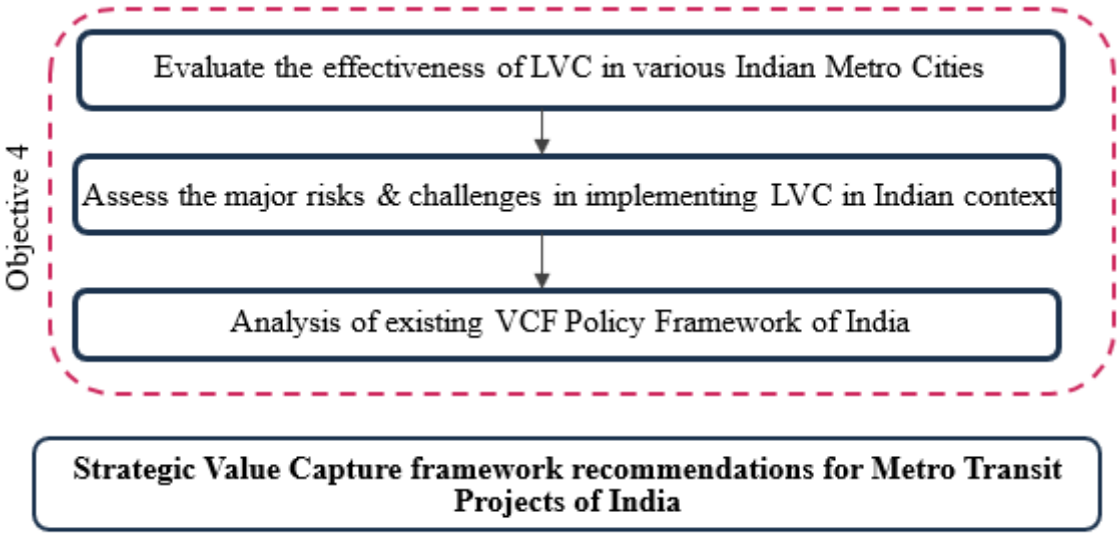
To examine the concept of Land Value Capture (LVC), evaluate its significance in transportation planning,

and analyze how it contributes to promoting sustainable urban growth

- To examine various Land Value Capture (LVC) tools with case examples, analyze their spatial extent and phasing and evaluate their effectiveness based on key parameters
- To qualitatively review global best practices on land value capture and evaluate them based on various parameters
- To evaluate the effectiveness of existing Land Value Capture (LVC) mechanisms and identify the barriers and challenges faced in different metropolitan cities in India through a systematic comparative analysis.
- To develop strategic recommendations on the present policy framework, based on the findings to integrate Land Value Capture finance mechanism in Public Transport Planning of Indian Metro Cities.

6. Methodology





7. Scope

- This research explores the potential of Land Value Capture (LVC) as a sustainable financing mechanism for metro projects in Indian cities, addressing funding challenges in the context of rapid urbanization and fiscal constraints.
- The study examines global best practices in LVC implementation, evaluates their adaptability to the Indian context, and analyses existing LVC tools used in Indian metro systems.
- The study identifies policy, institutional, and socio-economic barriers to LVC adoption, proposing strategies to overcome these challenges while ensuring equity and inclusivity.
- It also focuses on how LVC can promote sustainable urban development through integrated land-use and transit planning.

8. Limitations

- Data Availability and Quality: The research face challenges related to the availability and reliability of data on land values, transit accessibility, and the socioeconomic impacts of transit projects. Inconsistent data collection methods across different cities can hinder comprehensive analysis.
- Variability in Local Contexts: Indian metropolitan cities exhibit diverse socio-economic conditions, governance structures, and urban forms. This variability may complicate the generalization of findings from one city to another, limiting the applicability of recommendations across different contexts.
- Complexity of LVC Mechanisms: The intricacies involved in implementing LVC mechanisms, such as legal, financial, and administrative challenges, may not be fully captured in the study, potentially oversimplifying the realities of LVC integration.
- Economic Fluctuations: Economic conditions can change rapidly, influencing land values and investment in transit projects. Such fluctuations may affect the research findings and their implications for LVC strategies.

9. Literature Review

9.1 Land Value Capture Finance Mechanism and its Tools

"Land value capture is a policy approach that enables communities to recover and reinvest land value increases that result from public investment and other government actions. Also known as "value sharing,"

it is rooted in the notion that public action should generate public benefit." (Lincoln Institute of Land Policy) Land value increases stem from factors like population growth, economic development, public infrastructure investments, and landowner improvements. The government may capture value gains from general growth for public benefit, while service providers can utilize increments from public investments to fund infrastructure. Private landowners retain benefits from their property enhancements, while intrinsic land value reflects the base value traded between buyers and sellers.

Broadly, VCF instruments for a TOD can be categorized into two- development based instruments and finance-based instruments. Some of the major instruments within these two categories are briefly described under.

Development-based instruments:

Land/ development-based instruments capture land value increments by selling or leasing land, development rights, and air rights. Under such schemes, governments, transit agencies, developers, and landowners jointly increase land values by exploring development opportunities of transit station areas and sharing increments in land values. Characteristics of development-based value capture are:

- It does not create significant fiscal distortion or public opposition since there is no additional taxes or fees involved
- It can generate both direct revenues from incremental land value and sustainable long-term revenues from higher transit ridership and retail shops, leisure facilities, parking, and residential buildings in the precinct of station areas
- It establishes a clear link between creating value and capturing value
- It has a much better chance of working well administratively in places with an inadequate property tax system as in most cities in developing countries
- Land sale or lease
- Joint development
- FAR (FSI) sale
- Air rights sale
- Land readjustment/pooling
- Urban redevelopment schemes
- Transfer of development rights

Finance based instruments:

Finance based instruments capture value increments by levying additional fee or tax on the beneficiaries of the TOD. This fee or tax is mostly levied on direct beneficiaries and the amount of taxation often varies with the type of beneficiary- resident, business, owner, tenant etc. An important characteristic of finance-based value capture is that it can be a sustainable financial source because their collection does not deplete like finite development-based resources.

- Capital gain tax
- Betterment levy and special assessment
- Tax increment financing
- Impact fee

9.2 Value Capture Finance Instruments- Selection and Phasing

BEFORE TRANSIT INVESTMENT	PROJECT ANNOUNCED	AFTER APPROVALS	UNDER CONSTRUCTION	UNDER CONSTRUCTION
Land and Property Value Tax				
Tax Increment Financing				
Betterment Fee				
Capital Gains Tax				
			Impact Fee	
			Development Charges	
		Premium FSI		
		Joint Development		
			Land Sale/Lease	
		Land Pooling/Readjustment		
		Urban Redevelopment Scheme		
				TDR
				Air Rights

Figure 1: Selection & Phasing of VCF Instruments

Figure 2: Spatial Extend of VCF Instruments

9.3 Overview of Urbanization

The world is urbanizing at a pace never seen before, and India is right at the heart of this transformation. As cities expand and populations surge, the country is expected to see nearly half of its people living in urban areas by 2051. With around 850 million people spread across thousands of towns and cities—including dozens of megacities—urban life will become the norm for many.

But this shift brings enormous challenges. Rapid urban growth often means that new residents struggle to access housing, basic services, and secure land. And with land availability shrinking to just 0.19 hectares per person, the pressure to manage space efficiently will only intensify. Navigating legal complexities, financial constraints, and social inequalities adds even more layers to the urban puzzle.

Overlapping laws and outdated policies can create artificial land shortages, further driving up costs and limiting access. If cities are to grow sustainably and remain inclusive, India must rethink how land is used,

governed, and shared. This means clearer land policies, better planning, and reforms that prioritize equity and long-term resilience. Making space for everyone in the city is not just about managing land—it's about shaping the future of urban life.

9.4 Transportation and Land Value

Transportation infrastructure plays a crucial role in value creation by enhancing connectivity, accessibility, and economic activity. It serves as a catalyst for development, fostering growth in various sectors and contributing to the overall well-being of communities.

Economic Development:

Job Creation**:** Improved transportation infrastructure can attract businesses and industries, leading to job creation and economic growth.

Trade and Commerce**:** Efficient transportation networks facilitate trade and commerce, both within and between regions.

Tourism**:** Accessible transportation infrastructure can boost tourism, generating revenue and supporting local businesses.

Accessibility and Quality of Life:

Enhanced Connectivity: Improved transportation infrastructure connects people to jobs, education, healthcare, and other essential services.

Reduced Travel Times: Shorter travel times can improve quality of life and productivity.

Increased Accessibility: Accessible transportation options can benefit people with disabilities and those in remote areas.

Urban Development:

Transit-Oriented Development (TOD): Well-planned transportation infrastructure can encourage TOD, creating vibrant, walkable neighborhoods.

Land Value Appreciation: Improved accessibility can lead to increased land values, generating revenue for local governments.

Urban Regeneration: Transportation infrastructure can revitalize declining urban areas by attracting investment and development.

Environmental Sustainability:

Reduced Emissions: Efficient transportation systems can help reduce greenhouse gas emissions and improve air quality.

Sustainable Land Use: Well-planned transportation infrastructure can promote sustainable land use patterns and reduce urban sprawl.

9.5 Metro Projects and Land Value

Integrating Land Value Capture (LVC) into metro projects is crucial for enhancing the financial sustainability of urban transit in India. While metros address urban congestion and pollution, their capital-intensive nature often burdens local governments. LVC helps recover part of the land value appreciation from metro infrastructure, supporting both project financing and maintenance. The Indian Metro Rail Policy (2017) mandates LVC integration and emphasizes Public-Private Partnerships (PPPs) to mobilize resources efficiently.

LVC also promotes Transit-Oriented Development (TOD), fostering high-density, mixed-use zones around stations, which boost property values, local businesses, and urban liveability. Studies show that

real estate values rise significantly along metro corridors with well-implemented LVC, creating a feedback loop benefiting both municipalities and landowners. Thus, leveraging LVC enables cities to unlock the economic benefits of enhanced accessibility while promoting equitable and sustainable urban growth.

9.6 Key Policy Frameworks around VCF in India

National Urban Transport Policy 2014(NUTP)

The National Urban Transport Policy (NUTP) 2014 marks a major shift in how Indian cities approach urban mobility. It recognizes that growing congestion, pollution, and safety issues stem from our increasing dependence on private vehicles and the neglect of sustainable transport options. To tackle this, NUTP pushes for a people-first approach—prioritizing walking, cycling, and public transport over cars. It encourages cities to set up high-capacity public transport systems via Special Purpose Vehicles (SPVs) and ensures that both direct and indirect beneficiaries share the costs. The policy also promotes smarter planning by integrating land use with transport, improving access for all, especially the underserved. By supporting multi-modal transit systems, equitable road space, and better coordination through Unified Metropolitan Transport Authorities (UMTAs), NUTP lays out a practical roadmap for greener, more inclusive, and efficient urban travel in a rapidly urbanizing India.

National TOD Policy 2017

The National Transit Oriented Development (TOD) Policy 2017 promotes sustainable, people-friendly cities by linking land use planning with public transport systems like metro, BRT, and monorail. It aims to create compact, walkable, and mixed-use neighborhoods around transit hubs to reduce reliance on private vehicles and make daily commutes easier and greener. The policy focuses on making cities more livable, affordable, and inclusive by encouraging dense development, affordable housing near transit, and better access to public transport for everyone. It also pushes states and cities to embed TOD principles in their planning, helping curb urban sprawl, cut pollution, and improve quality of life through better coordination and smart urban design.

National VCF Policy Framework (2017)

The National Value Capture Financing (VCF) Policy Framework 2017, introduced by the Ministry of Housing and Urban Affairs, offers a smart way for cities to fund their growing infrastructure needs. It helps state and local governments tap into the rise in land value that often follows public investments—like metro lines or new roads—by using tools such as betterment levies, land value taxes, and development charges. The idea is simple: when public projects boost land prices, a portion of that gain should be reinvested into the community. The policy also includes instruments like fees for land use changes, tax increment financing, and transfer of development rights, all aimed at making urban development more financially sustainable. By encouraging early integration of VCF in project planning and fostering partnerships between government and private players, the framework supports better urban governance and ensures that the benefits of growth are shared more fairly across society.

9.7 Opportunities for LVC In India

- Growing Urbanization: India's rapid urbanization presents significant opportunities for VCF as land values increase in urban areas.
- Transit-Oriented Development: TOD can create a favorable environment for VCF by generating additional revenue through increased land values and development activity.
- Innovative Financing Mechanisms: India can explore innovative VCF mechanisms, such as transit-

oriented development districts (TODDs) and community land trusts, to maximize revenue generation.

- Public-Private Partnerships: Partnerships between the government and private sector can facilitate the implementation of VCF and leverage their respective strengths.

10. Case Study Analysis

10.1 Global Best Practices of LVC

Table 1: Case Study Assessment

	Country	LVC Tool Used	Ridership /day	GDP Growth Rate (2008-2023)
Hong Kong	China	Development Rights, Joint Development (Rail+ Property)	3.96 m	58%
Tokyo	Japan	Land Readjustments, Development Rights, Urban Redevelopment Scheme	8.5 m	34%
New York	USA	Transferable Development Rights (TDR), TIF, Special Assessment District	4.53 m	36%
Sao Paulo	Brazil	Air Rights, CEPAC &OODC	-	12%
Washington	USA	Special Assessment, Joint Development	0.59 m	34%

Table 2: Case Study Assessment

	Hong Kong	Tokyo	New York	Sao Paulo	Washington
Metropolitan Area(sq.km)	1104	13,752	11,642	7,947	3,424
Population Density (1000/sq.km)	6.4	2.7	1.7	2.5	1.4
PT Share (%)	88%	51%	23%	37%	37%
Network Length	218 km	304 km	223 km	205 km	170 km
LVC Contribution	66%	59%	13%	13%	17%
LVC Success	Very High	High	Low	Low	Moderate

10.2 Indian Scenario

As Indian cities grow, metro rail has become vital for improving urban mobility. While mainly funded by governments, there's increasing interest in alternative financing like Land Value Capture (LVC). Although tools like betterment levies and development charges exist, outdated land records, limited planning, and weak local capacities have hindered their success. With few urban local bodies having updated master plans or financial autonomy, LVC remains underused. However, cities like Bengaluru are exploring

innovative models, marking a shift toward land-based, sustainable financing. Unlocking LVC's full potential will require stronger laws, better planning, and active stakeholder participation.

Case Studies on Land Value Capture (LVC) in Indian Metro Projects

Indian cities are increasingly exploring Land Value Capture (LVC) strategies to fund metro rail infrastructure and promote sustainable urban growth. Across projects like Bengaluru's Namma Metro, Jaipur Metro, Mumbai Metro, Ahmedabad Metro, Hyderabad Metro, and Kochi Metro, mechanisms such as betterment levies, development impact fees, additional FAR, and Transfer of Development Rights (TDR) are being proposed or implemented to tap into rising land values around metro corridors.

Bengaluru has introduced a 5% Metro Cess and additional FAR within 150m of metro stations, aiming to raise ₹1,300 crore. However, implementation has been slow due to outdated regulations, poor inter-agency coordination, and limited fee collection systems. Jaipur Metro follows a unique model using a Green Cess through the Rajasthan Transport Infrastructure Development Fund, and is expanding its LVC tools. Mumbai Metro, developed under PPP, faces financial strain due to low fare revenue but has significant LVC potential with a 14% rise in nearby property values. Similarly, Ahmedabad Metro has seen land prices rise by over 73%, prompting exploration of LVC tools under the National VCF Policy 2017.

Hyderabad Metro actively pursues LVC via HMDA and benefits from steep property appreciation within 1 km of metro stations. Yet, regulatory and coordination challenges persist. Kochi Metro, launched in 2017, proposes betterment levies, TDR, and development impact fees, but public resistance and outdated zoning laws hinder progress.

Across cities, common challenges include outdated legal frameworks, fragmented stakeholder engagement, and low public awareness. To unlock the full potential of LVC, reforms must prioritize legal clarity, inter-agency coordination, community outreach, and integration with Transit-Oriented Development (TOD). Revenue from LVC should also support affordable housing, ensuring equitable and financially sustainable urban development.

11. Analysis and Inferences

Key Enabling Factors for Success of LVC Strategies

- Inclusive Value Sharing: Ensure all stakeholders—government, developers, communities—benefit equitably (e.g., Hong Kong).
- Strong Demand Drivers: Demographic and economic growth fuel land value rise (e.g., NYC, Mumbai).
- Flexible Zoning: Adapt zoning near transit stations to local market needs (e.g., Tokyo, Delhi).
- Coordinated Governance: A unified agency should manage all LVC and TOD activities (e.g., Hong Kong).
- Land Acquisition Tools: Use land readjustment and redevelopment when public ownership isn't possible (e.g., Tokyo, Gujarat).
- Visionary Planning: Embed transit in long-term urban development plans (e.g., Singapore, Tokyo).
- Diverse Funding Sources: Combine public and private funds to bridge financial gaps (e.g., London, NYC).
- Transparent Frameworks: Set clear rules for sharing costs, benefits, and risks (e.g., Hong Kong).

Risks and Challenges

- Regulatory Barriers: Rigid DCRs limit flexibility for LVC.
- Political Instability: Policy shifts disrupt continuity (e.g., Hyderabad).

- Market Volatility: Fluctuating land values affect revenue predictability.
- Stakeholder Misalignment: Poor coordination hampers integrated planning.
- Public Resistance: Low awareness and perceived benefits lead to pushback.
- Long Timelines: TOD projects delay value realization.
- Corruption & Opacity: Lack of transparency reduces trust and participation.
- Administrative Complexity: LVC tools require strong local capacity and systems.

12. Recommendations

To effectively implement Land Value Capture (LVC) mechanisms in Indian metro projects, the following strategies are recommended:

Policy and Regulatory Framework

- Revise state and local laws to enable diverse LVC tools such as betterment levies, land value taxes, and development impact fees.
- Streamline approval processes with clear guidelines and timelines to minimize delays in LVC project implementation.

Capacity Building

- Develop training programs for urban planners and local government officials on LVC concepts and application, using workshops, online modules, and case studies.
- Establish knowledge-sharing platforms among cities to exchange experiences, challenges, and best practices.

Stakeholder Engagement

- Ensure early and inclusive community participation to address equity concerns and potential displacement.
- Form stakeholder committees including government, developers, transit agencies, and community representatives to support collaborative planning.

Financial Mechanisms

- Diversify funding sources beyond traditional taxation by leveraging public-private partnerships (PPP) to balance risk and investment.
- Create transparent, dedicated LVC funds to reinvest in transit infrastructure and related development.

Monitoring and Evaluation

- Implement robust systems to monitor LVC performance, including revenue generation, community impact, and project outcomes.
- Incorporate stakeholder feedback mechanisms to enable iterative improvements in LVC strategies.

Integration with Urban Planning

- Align LVC with Transit-Oriented Development (TOD) principles to optimize land use and enhance accessibility.
- Identify influence zones around transit corridors where land values are expected to rise, enabling targeted LVC application.

Equity and Inclusion

- Design LVC mechanisms to ensure equitable distribution of benefits, particularly for vulnerable and low-income communities.
- Allocate a portion of LVC revenues to support affordable housing in areas at risk of gentrification.

Strengthen PPP and TOD Synergies

- Promote robust PPP models that fairly distribute the benefits of rising land values.
- Encourage TOD-led planning alongside LVC strategies to boost land value and generate additional financing for metro projects.

Data-Driven Planning

- Build comprehensive data systems to monitor land value changes and assess the socio-economic impacts of metro projects, supporting evidence-based decision-making.

In conclusion, while India's policy framework, including the National Value Capture Financing Policy, provides a foundation for LVC adoption, success depends on addressing regulatory, institutional, and financial challenges through coordinated efforts by public and private stakeholders.

13. Conclusion

Integrating Land Value Capture (LVC) into metro rail planning in India presents a powerful opportunity to ease urban mobility challenges while boosting infrastructure funding. With rapid urbanization, rising congestion, and environmental stress, LVC offers a sustainable way to support the financial health of metro systems. The National Value Capture Financing (VCF) Policy Framework 2017 mandates the inclusion of LVC in all metro projects, allowing state and local governments to tap into the land value appreciation triggered by transit investments.

Cities like Bengaluru and Ahmedabad show how LVC, when combined with Transit-Oriented Development (TOD), can promote smarter land use and fuel economic growth. But for LVC to truly succeed, it needs more than just policy—it requires strong legal backing, active stakeholder involvement, fair benefit-sharing, and solid systems to track outcomes. Affordable housing must also be a priority to prevent displacement near high-value transit zones.

Ultimately, LVC isn't just about raising funds—it's about building inclusive, accessible, and liveable cities. With thoughtful implementation, India can turn rising land values around transit into lasting public benefit.

References

1. Newman P., Kenworthy J., Sustainability and Cities: Overcoming Automobile Dependence, Island Press, Washington, DC, USA, 1999, 1st ed., 116–118.
2. Newman P., Glazebrook G., Kenworthy J., "Peak Car Use and the Rise of Global Rail: Why this is happening and what it means for large and small cities", JTTs, 2013, 3, 272–287.
3. Cervero R., Duncan, "Rail's Added Value", Urban Land, 2002, 6, 77–84.
4. Cervero R., "Rail Transit and Joint Development: Land Market Impacts in Washington, DC and Atlanta", Journal of the American Planning Association, 1994, 60, 83–94.
5. Smith J.J., Gihring T.A., "Financing Transit Systems through Value Capture: An Annotated Bibliography", American Journal of Economics and Sociology, 2006, 65, 751–786.
6. William B.H., "Value Capture as a Policy Tool in Transportation Economics: An Exploration in Public Finance in the Tradition of Henry George", American Journal of Economics and Sociology, 2001, 60, 195–228.
7. Medda F.R., "Land Value Capture Finance for Transport Accessibility: A Review", Journal of Transport Geography, 2012, 25, 154–161.
8. Smolka M.O., Implementing Value Capture in Latin America: Policies and Tools for Urban Develop

ment, A Policy Focus Report, Lincoln Institute of Land Policy, Cambridge, MA, USA, 2013.
9. Wolf-Powers L., "Community Benefits Agreements in a Value Capture Context", in Value Capture and Land Policies, Ingram G.K., Hong Y. (Eds.), Lincoln Institute of Land Policy, Cambridge, MA, USA, 2012, 217–232.
10. Gross J., "CBAs: Definitions, Values, and Legal Enforceability", International Journal of Affordable Housing & Community Development Law, 2008, 17, 36–58.
11. Walker J., "Land Value Capture and Infrastructure Delivery through SLICs", in T&CP Tomorrow Series Paper 13, TCPA, London, UK, 2012.
12. Smolka M.O., "A New Look at Value Capture in Latin America", Journal of Land Lines, 2012, 243, 10–15.
13. Jillella S.S.K., "Unlocking Land Values in Financing Urban Infrastructure", in CiSTUP News Letter, Volume 3, Indian Institute of Science, Bangalore, India, 2012, 14–15.
14. Smolka M.O., Iracheta A., Mobilizing Land Value Increments to Provide Serviced Land for the Poor, Lincoln Institute of Land Policy, Cambridge, MA, USA, 1999.
15. Scheurer J., Newman P., Kenworthy J., Gallagher T., Can Rail Pay? Light Rail Transit and Urban Redevelopment with Value Capture Funding and Joint Development Mechanisms, Institute for Science and Technology Policy, Murdoch University, Perth, Australia, 2000.
16. OECD, Citizens as Partners: OECD Handbook on Information, Consultation and Public Participation in Policymaking, Organization for Economic Cooperation and Development (OECD), Paris, France, 2001. Available online: http://internationalbudget.org/wp-content/uploads/Citizens-as-Partners-OECD-Handbook.pdf (accessed on 8 September 2014).