FINANCING TRANSIT DEVELOPMENT THROUGH LAND VALUE CAPTURE
Assessing Value Capture Mechanisms for MRTS

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Guided by: Prof. H.M. Shivanand Swamy
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INTRODUCTION

- Transport infrastructure projects embrace **direct as well as indirect benefits**. Several studies suggest, presence of **transit facilities** has the potential to **increase the property values** and result in valuable **development opportunities**.

- Public Transportation projects being economically attractive are inherently financially constrained. Idea is to convert some of these **indirect benefits into financial benefits** & make projects more viable.
Research Questions

The objective of this research is to identify & assess LVC mechanisms adopted in different cities around the world in policy & practice; & thus gauge their institutional and financial suitability.

- How to ‘capture’ land value gains & capitalize on TOD?
- Key LVC Practices around the world
- Is the revenue generated substantial, stable, or predictable?
- How feasible is its adoption and implementation in the Indian context? Any prerequisites for LVC techniques to be successful

Need of the Study

- Various cases & literature research proves that transit investments enhances land value, but its ‘capture’ is limited, thus arises the need to assess value capture mechanisms.
- To understand the ‘missing link’ between ULB/Metro agency and Project Developer & Land Premium from Transit.
- To assess institutional & financial suitability of LVC tools & methodology, i.e., the ratio of Revenue & Operating expenses.

Research Objectives

- How to ‘capture’ land value gains & capitalize on TOD?
- Key LVC Practices around the world
- Is the revenue generated substantial, stable, or predictable?
- How feasible is its adoption and implementation in the Indian context? Any prerequisites for LVC techniques to be successful

Non Fare-box Revenue as % of total Operating Revenue

- MTR, Hong Kong: 41%
- JR East, Tokyo: 33%
- SMRT, Singapore: 24%
- DMRC, Delhi: 20%
- TRTC, Taipei: 12%
- Mumbai, India: 0.02%

Source: PwC Analysis, Annual Report on Urban Rail in India

‘.... in no other major area are pricing practices so irrational, so out dated and so conducive to waste as in urban transportation’
- by William Vickery, Nobel Prize in Economics
(1) INTRODUCTION
- Based on the preliminary research and background studies, need for the study has been identified.
- The problem and context are explained. Thus, defining the aim, objectives, research questions, scope & limitations of study.

(2) THEORETICAL STUDY
- Concepts & theories on land value & capture mechanisms. How does value creation & capturing work. Key studies on transit impacts & LVC are studied.
- Current practices for PT funding to understand the relevance of LVC in transport finance framework.
- Assessing LVC tools & techniques used around the world.

(3) CASE STUDIES: LVC TOOLS
- Study LVC practices around the world & assess popularity & applicability of LVC mechanisms over the years.
- Detailed assessment of selected LVC cases through comparative analysis based on demographic, economic & transit characteristics. Also study Risk & Challenges involved in LVC financing.
- LVC practices for PT in Indian cities.

(4) CONCLUSION
- Key enablers for optimizing transits’ value premium for a more pragmatic PT financing systems; including valuable comments & critique from experts and practitioners.
- Put forth suggestions for choosing appropriate LVC mechanism for operational & proposed metro rail projects.
What is Land Value Capture

“The unearned increment resulting from the rise in land values resulting from change in use of land, from public investment or decision, or due to the general growth of the community must be subject to appropriate recapture by public bodies (the community).”

- United Nation, 1976

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<th>Issues</th>
<th>When &amp; where it works?</th>
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<tr>
<td>• Current system is unable to easily release &amp; capture this added value because of the regulations and procedures put in place.</td>
<td>• When people perceive value they are willing to pay for it. The uplift in value is due to improved accessibility, that makes land more productive &amp; valuable.</td>
</tr>
<tr>
<td>• Urban land markets are volatile, &amp; recent transactions may reflect a land asset bubble.</td>
<td>• The majority of the increased value will come from within 1 km radius of the transportation facility.</td>
</tr>
<tr>
<td>• Poor coordination among metro companies and land developers, hampering legislation, i.e. lack of an integrated planning approach.</td>
<td>• Demand for real estate &amp; stable market conditions.</td>
</tr>
<tr>
<td>• Land sales often lack transparency and accountability. They are conducted off budget &amp; there’s little public accountability as to how revenues are used; inviting corruption &amp; poor efficiency.</td>
<td>• A guiding policy &amp; legal framework for implementation. A willing and abled government to reduce externalities due to red-tapism and corruption.</td>
</tr>
<tr>
<td></td>
<td>• The government/implementing agency aligns the interests of multiple stakeholders in different project phases.</td>
</tr>
</tbody>
</table>
### TIF (Tax Increment Financing)
A surtax on properties within an area that will be redeveloped by public investment financed by municipal bonds against the expected increase in property taxes. Mainly used in the United States.

### Betterment Fee or Special Assessment
Property/Land Tax

### Development/Impact Fee

### External Commercial Borrowings (ECB)

### FDI in Public Transport

### VGF / Annuity

### Road-User Charging

### Congestion Charging

### Fuel Tax

### Business Transactions (Sales tax, VAT, Cess, Surcharge)

### Advertisements

### LAND VALUE CAPTURE MECHANISMS

- **LAND VALUE CAPTURE MECHANISMS**

- **TIF (Tax Increment Financing)**
- **Betterment Fee or Special Assessment**
- **Development/Impact Fee**
- **External Commercial Borrowings (ECB)**
- **FDI in Public Transport**
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- **Road-User Charging**
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- **Business Transactions (Sales tax, VAT, Cess, Surcharge)**
- **Advertisements**

### OTHER FUNDING METHODS

- **Joint Development**
- **Air Rights & TDR**
- **Land Sales/Leasing**
- **Land Re-adjustments**
- **Tax/Fee-based LVC**
- **Development-based LVC**

### LVC TOOLS & TECHNIQUES

A well-coordinated development of transit station facilities and adjacent private properties between transit agencies & developers, where the latter usually contribute physically or financially to the construction of the station facilities, as their property value will increase thanks to the transit investment. Used in China, Japan, the United States, and other countries.

**Landowners pool their land and contribute a portion of their land for sale to raise funds and partially defray public infrastructure development costs. Commonly known as Town Planning Schemes in Gujarat, India & parts of Tokyo.**

Governments sell developers land or its development rights, whose values have increased thanks to a public investment or regulatory change, in return for an up-front payment, leasehold charge, or annual land rent payments through lease. Surtaxes imposed by governments on estimated benefits created by public investments, requiring property owners who benefit from public investments to pay for their costs. More prevalent in North America.

**LVC TOOLS & TECHNIQUES**

- **Joint Development**
- **Air Rights & TDR**
- **Land Sales/Leasing**
- **Land Re-adjustments**
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### OTHER FUNDING METHODS
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**Value Capture realization by TIME**

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<tr>
<th>Before Transit investment</th>
<th>Project Announced</th>
<th>After Approvals</th>
<th>Under Construction</th>
<th>Operations</th>
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<td>Land &amp; Property Value Tax</td>
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<td></td>
<td></td>
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<tr>
<td>Tax Increment Financing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Assessment/ Betterment Fee</td>
<td>Development Charges &amp; Impact Fees</td>
<td>Joint Development / TOD</td>
<td>Land Readjustments</td>
<td>TDR/ Air Rights</td>
</tr>
</tbody>
</table>

**Value Capture classified by SPATIAL Aspects**

Most Tax-based LVC schemes are applied throughout the neighborhood whereas development-based are more prevalent & effective in & around the station or along the transit corridor.

Source: Adapted from value creation to value capture: by Irene Slegtenhorst, Delft University of Technology

LVC TOOLS & TECHNIQUES
## LVC Mechanisms in Policy & Practice

| LVC Practices Around the World | - Worldwide Popularity of LVC  
| - LVC Timeline in the last 50 years  
| - Metro Revenue & Operating Expenses |
| Assessment of Key LVC Mechanisms | - Case Study Selection  
| - Detailed Assessment  
| - Comparative Assessment |
| LVC Experience in Indian Cities | - Summarizing LVC Practices in India  
| - Scope for LVC Adoption in India  
| - Risks, Challenges & Failures in LVC |
Out of 141 cities reviewed LVC through MRTS, 38 cities have formally applied LVC tools (since 1965)

Metro Rail Systems that have used LVC mechanisms

- **26%** LVC used
  - LVC in High-Income Cities
    - 13 out of 38
  - Total Number of Metro Rail Cases Assessed
    - 20% High Income Cities
  - LVC in Medium/Low-Income Cities

LVC TOOLS

- Joint Development 40%
- Property Tax 11%
- Special Assessment 7%
- Impact Fees 6%
- Others 8%

DEVELOPMENT-Based vs TAX-Based LVCTOOLS

- Joint Development
- Property Tax
- Development Rights
- Special Assessment
- Impact Fees
- Land & Property Tax
- Settlement Fees

LVC PRACTICES AROUND THE WORLD
LVC PRACTICES AROUND THE WORLD

Image Source: World map from Wikipedia

- **9/16** USA
- **6/52** Europe +Russia
- **5/18** Latin America
- **2/2** Africa
- **1/5** India
- **13/46** South-East ASIA
- **1/2** Australia
Metro Revenue : Operating Expenses

LVC Popularity Region-wise

LVC Tools & Practices in the Last 50 Years

LVC PRACTICES AROUND THE WORLD
<table>
<thead>
<tr>
<th>City</th>
<th>Country</th>
<th>Pre-dominant LVC Tools Used</th>
<th>Operational Since</th>
<th>Population (million)</th>
<th>Ridership/day</th>
<th>GDP Growth Rate % (2008-25)</th>
</tr>
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<tbody>
<tr>
<td>Hong Kong</td>
<td>China</td>
<td>Development Rights, Joint Development (Rail+Property)</td>
<td>1970</td>
<td>7.05</td>
<td>3.96 million</td>
<td>58%</td>
</tr>
<tr>
<td>Tokyo</td>
<td>Japan</td>
<td>Land Readjustments, Development Rights, Urban Redevelopment Scheme</td>
<td>1941</td>
<td>36.93</td>
<td>8.5 million</td>
<td>34%</td>
</tr>
<tr>
<td>New York</td>
<td>USA</td>
<td>Transferable Development Rights (TDR)</td>
<td>1904</td>
<td>20.10</td>
<td>4.53 million</td>
<td>36%</td>
</tr>
<tr>
<td>Washington</td>
<td>USA</td>
<td>Joint Development</td>
<td>1976</td>
<td>4.63</td>
<td>0.59 million</td>
<td>34%</td>
</tr>
<tr>
<td>London</td>
<td>UK</td>
<td>Urban Redevelopment, Land Value Tax</td>
<td>1863</td>
<td>8.92</td>
<td>3.21 million</td>
<td>45%</td>
</tr>
<tr>
<td>Nanchang</td>
<td>China</td>
<td>Development Rights &amp; Land Leasing</td>
<td>U/C</td>
<td>2.33</td>
<td>-NA-</td>
<td>13% (2011-15)</td>
</tr>
<tr>
<td>Sao Paulo</td>
<td>Brazil</td>
<td>Air Rights, CEPAC &amp; OODC</td>
<td>U/C</td>
<td>13.65</td>
<td>-NA-</td>
<td>102%</td>
</tr>
<tr>
<td>Delhi</td>
<td>India</td>
<td>Development Rights &amp; TOD</td>
<td>2002</td>
<td>21.93</td>
<td>1.66 million</td>
<td>189%</td>
</tr>
</tbody>
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LVC IN POLICY & PRACTICE : Case Studies
## COMPARISON: Urban Context, Transit Characteristics & LVC

### Metropolitan Area (km²)
- **Hong Kong**: 1,104
- **Tokyo**: 13,752
- **New York**: 11,642
- **Washington**: 3,424
- **London**: 1,623
- **Nanchang**: 617
- **Sao Paulo**: 7,947
- **Delhi**: 1,943

### Population Density (1000/km²)
- **Hong Kong**: 6.4
- **Tokyo**: 2.7
- **New York**: 1.7
- **Washington**: 1.4
- **London**: 5.5
- **Nanchang**: 3.8
- **Sao Paulo**: 2.5
- **Delhi**: 11.3

### Transit Ownership
- **Hong Kong**: MTR Corporation (80% Govt. & 20% Pvt Shares)
- **Tokyo**: Multiple Railway Agencies (Govt. & Pvt.)
- **New York**: MTA (fully State Owned)
- **Washington**: WMATA (fully State Owned)
- **London**: Transport for London (local Govt. body)
- **Nanchang**: Nanchang Municipal Govt. (NMG): local body
- **Sao Paulo**: Multiple Transit Agency under STM: PPP Model
- **Delhi**: DMRC: State-owned

### PT Share (%)
- **Hong Kong**: 88%
- **Tokyo**: 51%
- **New York**: 23%
- **Washington**: 37%
- **London**: 23% (current network)
- **Nanchang**: 14% (project specific)
- **Sao Paulo**: 37% (proposed)
- **Delhi**: 42%

### Network Length
- **Hong Kong**: 218 km
- **Tokyo**: 304 km
- **New York**: 223 km
- **Washington**: 170 km
- **London**: 402 km
- **Nanchang**: 168 km (under-construction)
- **Sao Paulo**: 205 km (under-expansion)
- **Delhi**: 190 km

### Pvt. Car registered (per 1000 population)
- **Hong Kong**: 82
- **Tokyo**: 308
- **New York**: 230
- **Washington**: 680
- **London**: 317
- **Nanchang**: 57
- **Sao Paulo**: 410
- **Delhi**: 143

### Land Holding System
- **Hong Kong**: State Leasehold
- **Tokyo**: Market Freehold
- **New York**: Market Freehold
- **Washington**: Market Freehold
- **London**: Market Leasehold
- **Nanchang**: State Leasehold
- **Sao Paulo**: Market Leasehold
- **Delhi**: Market Leasehold

### LVC Contribution (Revenue Share)
- **Hong Kong**: 66%
- **Tokyo**: 59% (project specific)
- **New York**: -NA-
- **Washington**: 17% (project specific)
- **London**: -NA-
- **Nanchang**: 70% (project specific)
- **Sao Paulo**: -NA-
- **Delhi**: 30%

### LVC Instruments Used
- **Hong Kong**: Rail+Property Development Rights
- **Tokyo**: Land Readjustment Land lease
- **New York**: TDR, TIF Special Assessment
- **Washington**: Joint Development
- **London**: Property Tax Land Redevelopment
- **Nanchang**: Property Development TDR
- **Sao Paulo**: Air Rights CEPAC & OODC TOD
- **Delhi**: TDR Property Development

### LVC Success (Ranking)
- **Hong Kong**: Very High
- **Tokyo**: High
- **New York**: Low
- **Washington**: Moderate
- **London**: Low
- **Nanchang**: -NA-
- **Sao Paulo**: Low
- **Delhi**: Moderate

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**LVC IN POLICY & PRACTICE : Case Studies**
<table>
<thead>
<tr>
<th>CITY</th>
<th>STATUS</th>
<th>NETWORK LENGTH</th>
<th>FUNDING ARRANGEMENT</th>
<th>TOTAL COST (INR)</th>
<th>LVC ATTEMPT</th>
<th>LVC TOOL</th>
</tr>
</thead>
<tbody>
<tr>
<td>GURGAON</td>
<td>Operational</td>
<td>6 Km</td>
<td>100% Private</td>
<td>1250 Cr</td>
<td>N</td>
<td>-NA-</td>
</tr>
<tr>
<td>BENGALURU</td>
<td>Operational</td>
<td>42.3 km (Phase-1)</td>
<td>SPV: BMRCL is a JV with <strong>Equity</strong>: Government of India &amp; Government of Karnataka</td>
<td>10100 Cr</td>
<td>Y</td>
<td>TOD &amp; Air Rights/TDR</td>
</tr>
<tr>
<td>MUMBAI</td>
<td>Operational</td>
<td>12 Km (Phase-1)</td>
<td>PPP (Reliance &amp; MMRDA): Mumbai Metro One Private Limited (Line-1)</td>
<td>3000 Cr</td>
<td>Y</td>
<td>TOD &amp; Sale of FAR</td>
</tr>
<tr>
<td>KOLKATA</td>
<td>Operational</td>
<td>28.4 Km</td>
<td>Indian Railways &amp; part State Government</td>
<td>-NA-</td>
<td>N</td>
<td>-NA-</td>
</tr>
<tr>
<td>AHMEDABAD</td>
<td>Under Construction</td>
<td>44 Km</td>
<td>SPV: MEGA is a JV with <strong>Equity</strong>: Government of India &amp; Government of Gujarat</td>
<td>14000 Cr</td>
<td>Y</td>
<td>Sale of FSI; Property Development</td>
</tr>
<tr>
<td>HYDERABAD</td>
<td>Under Construction</td>
<td>72 Km</td>
<td>PPP (L&amp;T and Telangana Govt.): SPV: Hyderabad Metro Rail Ltd.</td>
<td>20800 Cr</td>
<td>Y</td>
<td>Joint Development &amp; Development Rights</td>
</tr>
<tr>
<td>JAIPUR</td>
<td>Under Construction</td>
<td>29 Km</td>
<td>SPV: JMRC is a JV with <strong>Equity</strong>: Government of India &amp; Government of Rajasthan</td>
<td>1250 Cr</td>
<td>N</td>
<td>-NA-</td>
</tr>
<tr>
<td>NAVI MUMBAI</td>
<td>Under Construction</td>
<td>23.4 Km (Line-1)</td>
<td>CIDCO</td>
<td>4068 Cr</td>
<td>N</td>
<td>-NA-</td>
</tr>
<tr>
<td>KOCHI</td>
<td>Under Construction</td>
<td>25.6 Km</td>
<td>SPV: MEGA is a JV with <strong>Equity</strong>: Government of India &amp; Government of Kerela</td>
<td>5181 Cr</td>
<td>Y</td>
<td>TOD (proposed)</td>
</tr>
<tr>
<td>CHENNAI</td>
<td>Under Construction</td>
<td>45.1 Km</td>
<td>SPV: CMRL is a JV <strong>Equity</strong>: Government of India &amp; Government of Tamil Nadu</td>
<td>14600 Cr</td>
<td>N</td>
<td>-proposed-</td>
</tr>
</tbody>
</table>

Source: Compiled from various web sources & respective DPRs
LVC is a powerful financing & planning apparatus, but the RISKS & CHALLENGES involved in such huge transit investment should be carefully addressed prior to financial closure of a project.

HYDERABAD METRO
Political Instability  PPP Model
Real Estate Market Risks
- Bifurcation of the state into two has given birth to many problems relating to development opportunities & real estate markets, causing indefinite delays and leading to longer gestation period.
- The entire project has been handed over to a private consortium; Government supervision and monitoring would only be post facto & not at management level. If Real Estate leg of the project does not turn out as envisaged at the time of bidding, the project company can be bankrupted & Govt. will have to take over the project.

ATLANTA METRO
TOD in Fringe Areas
Real Estate Market Risks
Long Gestation Period
- MARTA stations failed to appreciate significantly in value (& ridership) and dense development failed to occur.
- High-density expensive TOD projects (producing an associated “transit premium”) are unlikely to occur where low-cost suburban or rural development is dominating the market with low rents and low property prices.

CASES IN LATIN AMERICA
Tax-based LVC Tool  Plusvalias
(Implementation Issues)
Sao Paulo CEEPACs/Additional FSI
- The 1997 law, cities are required to capture 30-50% of increased value though a levy- Participacion en Plusvalias.
- Only 1% achieved; Landowners failed to perceive the appreciated value due to poor returns & unwilling to sell land.
- Sao Paulo CEEPACs revenues have not always captured the increments of land value attributable to metro construction.

CASES IN UNITED KINGDOM
Tax-based LVC Tool Betterment Levy (Implementation Issues)
Regulatory Framework
- UK has made multiple attempts to implement a betterment levy through Community Land Act. The provisions were complex, avoidable, unpopular & raised little revenue. The Act was never fully implemented & was repealed in 1980.
- Higher Tax Rate & Administrative challenges in implementation of act were the key reasons for its failure.
(III) INFERENCES

Key Enabling Factors for Successful LVC Strategies

Choosing the Appropriate LVC Mechanism

Scope for LVC Adoption in Indian Cities
## Key Enabling Factors for Success of LVC Strategies

### INCLUSIVE VALUE CREATION
Development-based LVC is creating & sharing incremental value among the governments, transit agencies, developers, businesses & residents; enabling property development.

**HONG KONG**

### MACRO FUNDAMENTALS
Demographic and economic fundamentals are paramount when applying development-based LVC: creating high demand for land and property prices increase.

**HONG KONG, NYC, MUMBAI**

### FLEXIBLE ZONING
Zoning codes and site design parameters around stations should be flexible enough to meet changing market demands and diverse local needs.

**TOKYO, DELHI**

### INTER-GOVERNMENTAL COLLABORATION
Multiple govt. entities to work together on transit-related projects. Recommended: a single local govt. body (includes transit agencies): to coordinate all LVC & TOD related aspects.

**HONG KONG**

### PUBLIC LAND OWNERSHIP IS PREFERRED BUT NOT NECESSARY
Municipalities & transit agencies can acquire land through incentive-based techniques such as “land readjustment” or “urban redevelopment.

**TOKYO, GUJARAT, NYC**

### VISIONARY MASTER PLANS
Needs to provide long-term vision of development. Policymakers must emphasize transit infrastructure as the spine of spatial development in their visionary plans.

**SINGAPORE, TOKYO**

### MULTIPLE FUNDING SOURCES
Given the capital intensive nature of transit systems & negative externalities; governments should close their financial gaps by mobilizing diverse funding sources.

**LONDON, NYC, HK**

### CLEAR, FAIR, AND TRANSPARENT RULES
For sharing costs, benefits, and risks among stakeholders to ensure commitment of public & private agencies & maximize benefits in and around stations.

**HONG KONG**
### Choosing Appropriate LVC Mechanism

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<thead>
<tr>
<th>LVC TOOL TYPE</th>
<th>LAND HOLDINGS / TO BE ACQUIRED</th>
<th>CONTEXT</th>
<th>PHASE</th>
<th>TRANSIT OWNERSHIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tax/Fee-based v/s Development-based</td>
<td>State Leasehold OR Market Freehold</td>
<td>Existing OR Greenfield/ New Development</td>
<td>Operational OR Proposed/ Under-Construction</td>
<td>State Owned v/s Private/ PPP</td>
</tr>
</tbody>
</table>

#### DEVELOPMENT-BASED LVC TOOLS
- Advantages over Tax-based tools
- Example: Joint Development, Air Rights, Land Lease/sale, Land Readjustments

**State Owned:**
- Easier to acquire land: Land Sales & Development Rights

**Market Freehold:**
- Use incentive based LVC schemes: Land Readjustments & Urban Redevelopment

**Existing:**
- Land Readjustments, TDR & Additional FSI
- Impact Fee & Property Tax

**Operational:**
- Air Rights & TDR
- Impact Fees & Property Tax

**Proposed or U/C:**
- Joint Development, Land Lease/Sale, TIF

**Greenfield:**
- Joint Development, Land lease/Sale

**State/Centre Owned:**
- Tax based tools
- Joint Development & Land lease/sale

**Private/PPP:**
- Check & monitor: Good Governance
- Avoid Over-reliance on market forces or single Pvt. player
Houses along new metro routes in Mumbai will now be costlier

The government has decided to charge 100% of the Ready Reckoner Rate as premium for additional floor space index (FSI) for properties along the proposed two new metro lines (II and VII).

Transit-oriented realty gets the nod from DDA

NEW DELHI: One of its most ambitious plans for vertical growth, transit-oriented development was approved by Delhi Development Authority on Monday. The policy incentivises people living around Delhi Metro corridors for building shared parking, mixed-use, high-rise development pockets. Laisms of Delhi’s residents are expected to benefit as property rates along the Metro, already going at a premium, are set to go up.

A TOD zone, which encloses up to 1 km on both sides of the Metro line, will have exclusively designed buildings, including basic amenities such as a park, open space, public space, and parking lots. The zones will be developed on public land.

The revenue thus raised will be handed over to the Metro Development Authority (MMRDA) for operating these lines. The fare structure will also be increased.

The state urban development department, which issued the GR, has proposed five different ways to raise money.

Higher floor space index (FSI) along the Metro corridor means developers will get more area to build on. If they pay the MMRDA for it.

The funds will help completion of the projects that can make your commute easier. Higher FSI will also mean more buildings and more apartments, which may bring down realty rates to some extent.

However, it will also mean more burden on the area’s infrastructure, such as roads, electricity supply and medical facilities.

SCOPE FOR LVC ADOPTION IN INDIA
## Scope for LVC Adoption for MRTS in India

<table>
<thead>
<tr>
<th>CITY</th>
<th>STATUS/PHASE</th>
<th>INSTITUTIONAL &amp; FINANCIAL ARRANGEMENT</th>
<th>Development CONTEXT</th>
<th>Comparable CASE</th>
<th>PROPOSED LVC TOOL</th>
</tr>
</thead>
<tbody>
<tr>
<td>GURGAON</td>
<td>Operational</td>
<td>100% Private</td>
<td>Market Freehold</td>
<td>Existing+ Greenfield</td>
<td>Sao Paulo, Additional FAR; Land Lease</td>
</tr>
<tr>
<td>KOLKATA</td>
<td>Operational</td>
<td>Indian Railways &amp; part State Government</td>
<td>mostly State-owned</td>
<td>Existing</td>
<td>Hong Kong, Tokyo; Joint Development/Land Readjustments</td>
</tr>
<tr>
<td>JAIPUR</td>
<td>Under Construction</td>
<td>SPV: JMRC is a JV with Equity: Government of India &amp; Government of Rajasthan</td>
<td>mostly State-owned</td>
<td>Mostly Greenfield</td>
<td>Nanchang, Land Sale/Lease, Property Development</td>
</tr>
<tr>
<td>NAVI MUMBAI</td>
<td>Under Construction</td>
<td>CIDCO</td>
<td>Market Freehold</td>
<td>Mostly Greenfield</td>
<td>Sao Paulo, Air Rights &amp; Land Lease/Sale</td>
</tr>
<tr>
<td>KOCHI</td>
<td>Under Construction</td>
<td>SPV: MEGA is a JV with Equity: Government of India &amp; Government of Kerela</td>
<td>-NA-</td>
<td>Existing+ Greenfield</td>
<td>Hong Kong, Tokyo; Joint Development/Land Readjustments</td>
</tr>
<tr>
<td>CHENNAI</td>
<td>Under Construction</td>
<td>SPV: CMRL is a JV Equity: Government of India &amp; Government of Tamil Nadu</td>
<td>-NA-</td>
<td>Existing+ Greenfield</td>
<td>Hong Kong, Tokyo; Joint Development/Land Readjustments</td>
</tr>
</tbody>
</table>

**SCOPE FOR LVC ADOPTION IN INDIA**
CBRE CREDENTIALS & EXPERIENCE IN TRANSIT DEVELOPMENT

**Delhi Metro Rail Corporation (DMRC)**
Transaction Advisory and Business Plan Formulation for commercial zoned land parcels in NCR

**Chennai Metro Rail Ltd. (CMRL)**
Benchmarking & Valuation study for properties falling on metro rail alignment

**Delhi Mumbai Industrial Corridor Development Corporation (DMICDC)**
Detailed Development Plan for the “Delhi – Mumbai Industrial Corridor” (DMIC) for multiple transit oriented components

**Andhra Pradesh State Road Transport Corporation (APSRTC)**
Technical, economical, financial viability for construction of infrastructure of APSRTC

MARKET SCENARIO & WAY FORWARD
SAMPLE LVC STRATEGIES FOR FINANCING TRANSIT DEVELOPMENT
High percentage of the key station areas are Owned by State/ Metro Authority

Land Readjustments & Redevelopment increases accessibility and aids TOD

SAMPLE LVC STRATEGIES: Land Readjustment/ Redevelopment Schemes

Inclusive Urban Redevelopment Scheme, Japan

BEFORE DEVELOPMENT

AFTER DEVELOPMENT

Institutional

house

house

Mall

Condo.

Very High Ridership

High Ridership

Very-Low Ridership

Office/Hotel

Single-use maximum FAR: 2.0

Mixed-use maximum FAR: 6.0

Zoning change

Developer floor area rights

Public facilities

New owner X

New G

New owner G

Government subsidy

Source: Adapted from Ministry of Land, Infrastructure, Transport, and Tourism 2013

Source: Adapted from Ministry of Land, Infrastructure, Transport, and Tourism 2013
Land Value Capture

Government grants MTR Corporation a “running line lease” at a nominal charge for use of the land to develop railway infrastructure, such as stations, tracks and depots (with extra land premium).

New rail construction projects are categorized into:
- **Natural Extension** (ownership approach: MTR Corporation is responsible for design, finance, construction, operation & maintenance)
- **Non-natural Extension** (ownership or concession approach: the government or KCRC is responsible for funding, while MTR pays service concession fees to operate)

**MTR Net Income Share**

- Railway Operations: 34%
- Property Developments: 15%
- Station Commercial Business: 38%
- Rental & management Business: 13%

Source: Adapted from Cervero and Murakami 2009.

**Rail + Property**

R+P development is a core part of MTR Corporation’s business model, capturing real estate income to finance the capital and running costs of new railway lines as well as higher rail transit patronage from the high-quality catchment areas created and managed by the company.

a. Usual government land leasing program

   - Development right (full market price)
   - Developers

b. Rail Plus Property (R+P) program

   - Development right ("before-rail" market price)
   - Co-development ("after-rail" market price)
   - MTR Corporation
   - Developers

   “Profit sharing”
   - Profits in agreed proportions
   - Assets in-kind
   - Up-front payments

**Case Study: HONGKONG**
Under the Urban Redevelopment Law, to capture the potential accessibility benefits conferred by the metro station, the local government first converts zoning codes from single use to mixed use with higher FAR.

National government pays for 1/3 cost of site survey, land assembly, and open space foundation using national general fund, & 1/2 of public infrastructure costs using(former) Roadway Special Fund.

Land readjustment has been the most important in preventing urban sprawl and forming transit-supportive uses.

Multiple Railway Agencies:
1. Japan Railway Construction, Transport, and Technology Agency (National Govt.)
2. Tokyo Metro (National & Municipal Govt.)
3. Seven Japan Railway Companies (Semi-Private & Private)
4. Public transport bureaus (Municipal Govt.)
Land Value Capture

Most railway agencies reserve a portion of their fare revenues to finance extensions. Funds for such projects come principally from users.

The Special Urban Railway Reserve Fund, based on the Urban Rail Promotion Special Measure Act of 1986, also aid their current services and support future improvement projects.

Six main LVC types as listed in the table (vary by location and stakeholder):

- Most popular: Internalize accessibility and agglomeration benefits from private railway investment. Typically, private railway agencies collectively carry out land readjustment projects around stations by receiving the land reserved for new town development and internalizing the capital gains from real estate business.

Tokyu Corporation Net Income Share 2003-

12%

Transportation 15%

Real Estate 5%

Business Services 5%

Residential Services 5%

Commercial Services 34%

Source: ©Japan Railway Construction, Transport and Technology Agency

Source: Updated from Japan Society of Civil Engineering 1991

LVC IN POLICY & PRACTICE

Case Study: TOKYO
Types of Urban Operations (UO) in Brazil

**CEPAC, Certificates of Additional Construction Potential**

(Certificados de Potencial Adicional de Construção)

- Tradable bonds for new land development rights (additional building height, FAR, upzoning)
- Compensates City for the cost of public infrastructure needed for new development
- Number of CEPACs determined by the City but capped by law and regulated
- Revenues to be used in pre-defined area (Urban Operation)
- City issues a CEPAC Prospectus with boundaries and targeted projects
- Tried in a handful of municipalities in Brazil:
  - São Paulo: many active and planned Urban Operations
  - Rio de Janeiro: Porto Maravilha, auctioning of CEPACs
  - Belo Horizonte: at least 2 urban operations planned
Use of CEPAC revenues in São Paulo

- CEPAC sales since 2004 have generated >US$1 Billion

CEPAC investments in the Água Espraiada Urban Operation
- >US$300 million
  - Affordable Housing
  - Transport
  - Drainage Works
  - Green Areas
  - Administrative Costs and Other Expenses

CEPAC investments in the Faria Lima Urban Operation
- >US$700 million
  - Affordable Housing
  - Urban Improvement
  - Transport
  - Administrative Costs and Other Expenses

CEPAC – advantages and disadvantages

- Improves revenue generating capacity of cities without taxation
- Tradable certificate can capture market price
- Purchasers decide timing of development according to market conditions
- Chicken or Egg Problem: government must investment to generate interest in CEPACs
- Boundary problem: difficult to fund strategic investments beyond UO boundary or crossing jurisdictions
- Complex: analysis of infrastructure capacity/needs and considerable financial expertise is required
- Secondary market for trading certificates takes time to develop
- Economic cycle: viable in cities/areas with booming property markets
Plots affected under TOD 200m Zone (Phase I)

- Converting narrow & irregular plots into single plots.

Model built form as per TOD regulations & guidelines.

Similarly, converting irregular plots into single large plots under TOD 400m zone (Phase II).

Model built form as per TOD regulations & guidelines.

Sample LVC Application for SAP
Thank you