

# FI-R02

## LAND VALUE CAPTURE BEST PRACTICES



Examples of land value capture tools employed in  
World Bank client countries to help fund transit projects

*Type: Reference Document*



# INTRODUCTION

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## PURPOSE

Pressure from urban agglomeration, coupled with related infrastructure problems and rising cost, forces policymakers running on tight budgets to improve critical transport infrastructure. There are techniques to facilitate these transit facilities with use of various land value capture (LVC) tools, which generate funds from the uplift in property values that results from new transit lines and stations. In LVC deals, governments share in the profits, rather than concede them to developers or landowners. There are many types of LVC instruments, but generally, they are either fee-based, such as land taxes, or development-based, such as joint development. If executed properly, these tools could provide a more sustainable source of financing to prudent governments and better align public and private sector participation. Their ability to boost area density also allows cities to include LVC in transit-oriented development strategies, now a popular practice across urban planning departments.

**Disclaimer:** *The Transit-Orientated Development Implementation Resources & Tools knowledge product is designed to provide a high-level framework for the implementation of TOD and offer direction to cities in addressing barriers at all stages. As the context in low and middle-income cities varies, the application of the knowledge product must be adapted to local needs and priorities, and customized on a case-by-case basis.*

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## STRUCTURE

Cities have been identified from low and middle income countries, where LVC instruments have been used to fund transit development projects. Each city story is briefed under the following subheadings, representing different phases of the transit project completion:

- **Scoping:** explains the underpinnings of the project and feasibility assessments.
- **Planning:** explains the planning process followed in the respective case.
- **Institutions:** explains the institutional roles and responsibilities to use LVC.
- **Financing:** talks about the different financial tools adopted by the city for the funding of the project.
- **Implementation:** explains how the LVC tool was implemented
- **Outcomes and Lessons:** explains the outcomes of the LVC implementation and lessons learned.

## NANCHANG RAILWAY TRANSIT GROUP

### Nanchang, China

#### CONTEXT

Nanchang is a provincial capital in southeastern China and also a major regional center for agriculture, manufacturing and commerce. Considering factors like high GDP and the population growth rate of the city, construction of a rail transit system in Nanchang was first proposed in 2000. The population of the urban core of Nanchang is projected to reach 3.5 million people by 2020. Annual gross domestic product (GDP) growth in 2007–11 was a very robust 16–22%.

Incorporated in 2008, the Nanchang Railway Transit Group (NRTG) in Nanchang, China adopted development-based land value capture (DBLVC), as part of the funding strategy for the Nanchang Metro Line 1 (28.7 kilometers), Line 2 (23.3 kilometers), and Line 3 (18 kilometers), with full support from the Nanchang Municipal Government (NMG). NRTG's DBLVC approach involves direct property development on excess land around transit stations, acquired through the NMG public land leasing scheme during transit construction.

#### SCOPING

In August 2005, Jiangxi Provincial Development & Reform Commission and Nanchang City Government replied to the proposal of building a metro system and the city considered listing the proposal in the budget plan. In November, a plan of 4 metro and 1 light rail was drafted. After continuous deliberation with successive levels of governments in the hierarchy, the construction of Nanchang Metro was formally included in the priority agenda.

#### PLANNING

Public transport accounted for only 13.5% of total daily trips in the city. Moreover, roads in southern Nanchang see heavy congestion, while in other parts, cars are favored due to the availability of wide roads. In southern Nanchang, the Nanchang

municipal government (NMG) plans to decrease the population in the historic core, lower its development densities, lessen traffic congestion and preserve historic buildings. To achieve these goals and resolve the growing congestion, NMG has designed an extensive public transport system with fully integrated bus services and metro railway networks to facilitate smooth travel. NMG plans to build five metro lines; two are under construction. Once complete, the metro railway network will be about 160–170 kilometers long with 128 stations. With a target completion date of 2020, lines 1, 2, and 3—60–70 kilometers in all—will form the basic structure of the metro railway network, connecting major business centers, the financial district, recreational areas, sport facilities, two industrial parks and three universities.



Figure 1: Lines 1-5 of Nanchang Metro

Source: Urban Planning and Design Research Institute of Nanchang 2013.

#### INSTITUTIONS

NMG delegated the responsibility for city-level land use planning and investments in local infrastructure and services to the established Nanchang Railway Transit Group Co. Ltd. (NRTG), which plans to build and operate the metro system. To better

leverage the private sector's expertise, NRTG set up a special property management division with key staff recruited from the private sector to manage all real estate assets owned by the company. It also acts as a key liaison between government agencies to coordinate their planning and review of metro railway investments and projects.

### FINANCING

NRTG's estimated investment in direct development schemes is \$1.4 billion (USD). However, the expected revenues from the overall development scheme for the 2012–2015 period include:

- Sale of development rights: \$574 million
- Sale of 500,000 square meters of commercial property: \$1.5 billion
- Average annual rental income: \$65.6 million
- 2012–2015 annual rental income: \$198 million
- Projected 2015 net profit: \$1.1 billion dollars (20.5% of the construction costs for line 1 and 2)

Overall, the projected financial benefits of NRTG's future real estate investments (including land development, station rental, property sales and property lease) along the Nanchang Line 1 and Line 2 rail corridors will be \$2.2 billion for the 2012–2016 period and \$3.6 billion for the 2012–2020 period. NRTG's DBLVC (Development-Based Land Value Capture) program is a model for other Chinese cities considering transit value capture financing.

### IMPLEMENTATION

Upon acquisition or lease of excess land by the NRTG from the Nanchang Municipal Government (NMG), the government, in return, increases the allowable floor space within 500 meters of stations to make DBLVC ventures profitable. It employs transit-oriented development principles on transit adjacent land to generate real estate revenues for transit construction and operation. NRTG develops above ground and underground development at select rail stations. As a business policy, it first develops high-density mixed-use development around station areas that are close to the city center. Similar developments are then replicated on a smaller scale at station areas located

in the suburbs, to improve the overall financial viability of direct property development ventures. NRTG is developing 23 mixed-use developments above stations, five of which are being directly financed and developed, while the other 18 developments are being co-financed and developed with private developers. In addition, NRTG is building five underground developments, three of which will be directly finance and developed, while two will be co-financed and developed with private developers.

### OUTCOMES AND LESSONS

The following are the inferences drawn out from the case study:

- Economy-induced population growth rate offers better job opportunities for city dwellers and promotes healthy migration. This could be capitalized on by offering good real estate opportunities for the people along a mass rapid corridor within the city.
- Marketing and business development is a key attribute for the success of TOD via any LVC tool, as they help investors and developers understand the benefits of such an intervention.
- Ample backing from ULB or a city-governing institution for LVC helps to expedite the transaction.
- Empowering the ULB to make all the decisions pertaining to transit development is important. This could be phased, by inducting a pool of experts and devolving funds and power.
- The lack of urban redevelopment schemes is a critical constraint for implementing TOD and LVC in mass transit investment at city- and region-wide levels.
- LVC tools must be able to capture the long-term increase in value brought by mass transit and meet the need for recurrent financial support for operation, maintenance and renewal.
- Mechanisms shall be applicable to mass transit agencies to share recurrent revenues fairly with developers. This can be achieved through development-rights arrangements or other financial instruments that capture long-term increases in land value, such as property taxes, impact fees and betterment taxes.

## DELHI METRO RAIL CORPORATION

### New Delhi, India

#### CONTEXT

The Delhi Metropolitan Area consists of the National Capital Territory of Delhi (NCTD) and the first ring of towns around the capital, including Ghaziabad, Loni, Noida, Faridabad, Gurgaon, and Bahadurgarh. Home to more than 22 million inhabitants within 1,483 square kilometers, it is projected to increase to 33 million inhabitants by 2025. The NCTD's per capita income is 2.4 times higher than the national average, so its population ratio below the poverty line is also around half the national figure. Greater economic opportunities are adding more immigrants to the city and, as such, augmentation of transit infrastructure remains a primary focus.

#### SCOPING

The Mass Rapid Transport System (MRTS), forms a roughly 250-kilometer network of underground, elevated and surface lines across the territory by 2021. It is expected that after the full network is developed, about 60% of the urbanized area of Delhi will be no more than a 15-minute walk from an MRTS station. Such investments are also expected to generate greater opportunities for economic growth and employment by calling for selective redevelopment and densification of the existing built-up areas, given local conditions and informal settlement patterns such as land pockets of slum and Jhuggi Jhoppadi (a cluster of slum colonies).

#### PLANNING

The Master Plan of Delhi recommends a comprehensive redevelopment scheme of the catchment areas of MRTS stations be created, with multiple land use categories and floor area ratios. The Delhi Development Authority (DDA) with the help of Unified Traffic and Transportation Infrastructure Planning and Engineering Centre (UTTIPPEC), proposes to greatly raise FARs in Delhi under MPD-2021. A 500-meter wide transit-oriented development (TOD)/multi-use zone would be overlaid on both sides of the metro corridor to encourage

a mix of commercial and employment- generating activities along with residential developments. Higher FARs would be permitted subject to certain setback and height restrictions. One redevelopment package will be included in the influence zone if more than 70 percent of the site area falls inside the 500-meter buffer. Property developments around the MRTS stations, up to a maximum area of 3.0 hectares, will be allowed in all use (mixed land use) zones, with some exceptions. This flexible land use coordination could lead to a mix of residential and commercial uses, as well as densely built areas, but whether this actually triggers redevelopment along the corridor is yet to be ascertained.

#### INSTITUTIONS

DMRC has decision-making power in railway business practices, while the exercise of land development rights remains with government authorities. The Ministry of Urban Development often intervenes in DMRC's station plans with property development projects. DMRC has to get statutory clearance from multiple government stakeholders at NCTD level. For architectural and conceptual plans, clearance is derived from the Delhi Urban Arts Commission; land use changes—DDA; building plans— municipal authorities; no objection certificates—the Land and Development Office and DDA; archaeological surveys—the Archaeological Survey of India; fire-fighting clearance—Delhi Fire Service; and environmental clearance—the Ministry of Environment.

#### FINANCING

The current and proposed Delhi MRTS network combined is about 293 kilometers long and has three project phases (table 7.3). The national government's direct participation in project funding in the three phases was required to secure concessional Japanese yen loans (30 years, including a 10-year grace period, with an interest rate of about 1.8 percent) from the Japan International Cooperation Agency (JICA).

## IMPLEMENTATION

The land parcels belonging to the various bureaus, agencies, and municipalities are transferred to DMRC at intergovernmental transfer rates decided by the Ministry of Urban Development for a 99-year lease. The Delhi government is essentially in charge of acquiring private lands for public projects and then transferring them to DMRC. In some locations, DDA also provides the land for free to DMRC. The cost of land acquisition is treated as a premium to be recovered, as an interest-free subordinate debt over a 25-year period in the fund allocation schemes.

Sales of development rights are undertaken in two steps. After the land transfers are obtained from multiple government agencies, DMRC usually invites shortlisted bidders to make concession agreements with successful tenders for the development rights. Most residential development projects on depot and standalone plots with 90-year leases generate substantial upfront payments, whereas commercial properties within station buildings with short (6–12-year) leases and on large plots outside stations with medium-term (20-year) leases produce more recurrent revenue streams.

## OUTCOMES AND LESSONS

The following are the inferences taken from the case study:

- Good purchasing power and consumer-driven economy is an indicator for applicability of TOD.
- The parameters or LVC tools shall be determined not based on fixed standards, but on local site conditions, network wide node characteristics and market-based demands.
- The slow and convoluted process of land transfer through multiple organizations held up project prospects for DMRC and private developers, the main barrier to delivering property development projects on MRTS station sites.

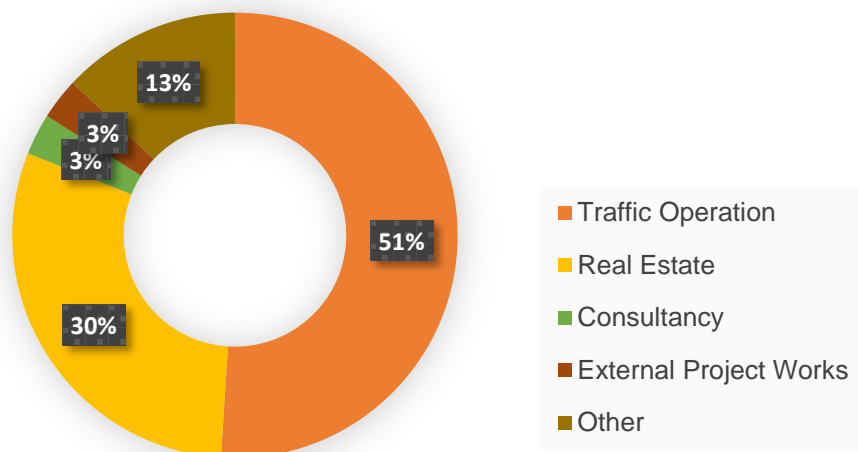


Figure 2: DMRC's net income till 2013



## HYDERABAD METRO RAIL LIMITED

### Hyderabad, India

#### CONTEXT

Hyderabad, the capital of Telangana, has long been the international corporate hub for service and knowledge-based industries. More than 7.5 million people live within the 7,257 square kilometers of the Hyderabad Metropolitan Development Area (HMDA), which includes the Greater Hyderabad Municipal Corporation (GHMC). Hyderabad's metropolitan population is projected to grow to more than 11.6 million by 2025.

#### SCOPING

Moreover, the majority of the rise in population is anticipated to occur in the surrounding municipalities of GHMC. Hence, there is a need to think long-term about public infrastructure investments and land use regulations, reflecting population growth patterns and the emerging industrial clusters across the whole metropolitan area.

#### PLANNING

Hyderabad's master plans have been updated to address emerging population growth patterns and business location shifts for the long-term. Once the metro development plan was complete, the master plan of the GHMC was amended by the state government to introduce a 300-meter wide "multi-use zone (mixed land use)" on both sides of the metro corridor. This amendment would promote commercial and office uses, which can also benefit from transit services.

#### INSTITUTIONS

HMDA has the spatial control in the planning and regulation of the region. The state government intended to provide a rail system for 71.16 kilometers on elevated structures in Hyderabad via design-build-finance-operate-transfer invited proposals from bidders. Larsen & Toubro Limited (L&T) won the bid, as it asked for the lowest viability gap funding (VGF) (Rs 1,458 crores/\$230 million) and signed the concession agreement with the state government for the project over 35 years, of which 5 years are for construction. Hyderabad Metro Rail Limited (HMR) was enacted as a special purpose vehicle. In this framework, HMR

is an intermediary, ensuring that L&T gets the right-of-way for the metro construction, coordinating with the GHMC, traffic and police departments and utility agencies for multiple clearances. Two important obligations of the concessionaire are to achieve integration with the surrounding landscape, by engaging architects and town planners to design the metro system to accommodate interchange facilities with other transport modes and new corridors.

#### FINANCING

The government meets 40% of the project costs—half from the national government and half from the state government. The balance of 60 percent has to be provided by L&T Metro Rail. A consortium of 10 banks led by the State Bank of India provided financing. The debt to equity ratio set out for this rail project was 2:1. L&T Metro Rail foresees around 50% of corporate revenue coming from fares, about 45% from real estate development, and 5% from adverts and parking fees. The total project costs are \$3.07 billion, which include \$0.41 billion for real estate development along the metro rail corridors.

#### IMPLEMENTATION

L&T Metro Rail is entitled to use the stations' parking and circulation spaces offered by government for real estate development on the 25 sites, accounting for 23 hectares and a maximum floor area of 557,000 square meters. L&T Metro Rail is expected to provide public amenities, specifically where a 300-meter wide band from the metro corridor is envisaged for TOD at higher densities.

#### OUTCOMES AND LESSONS

The following are the inferences drawn from the case study:

- The PPP project is a perfect example for transaction and implementation of future Metro rail projects for cities aspiring to augment their transport infrastructure.
- Giving private sector the opportunity to engage with TOD projects will bring the much required expertise and efficiency in execution of the project.

## AIR RIGHT SALES

### Sao Paulo, Brazil

#### CONTEXT

São Paulo, Brazil's vibrant financial center, is among the world's most populous cities, with numerous cultural institutions and a rich architectural tradition. The city's gross domestic product increased 10 times and the population quintupled to up to about 12.1 million people. But since the 1990s, São Paulo's economy has become heavily deindustrialized.

#### SCOPING

The high pace of income and population growth linked to unstable political and financial conditions, as well as inadequate implementation of a spatial development vision and strategy in past years, have led to urban expansion.

While the city-region boundaries persistently drive outwards, the central area presents a high concentration of job openings, educational activities, public services, businesses and entertainment activities. These have generated excessive commuting patterns between the city center and surrounding municipalities, where the majority of people live.

#### PLANNING

Several laws and master plans guide São Paulo's urban development and transit investment across federal, state and municipal governments. An urban operation (Operacion Urbanisica/UO), defined by the City Statute as a tool to promote the restructuring of large areas of the city through land-based incentives, is offered to public-private partnerships (PPP), including local public authorities, developers, landowners and other stakeholders as independent investors. UOs are implemented through instruments called Operações Urbanas Consorciadas (Consortia Urban Operations). The urban infrastructure investments in UOs will be financed by the incremental value created by public investment, land use and zoning change.

#### INSTITUTIONS

State and municipal governments have formed multiple departments and agencies for regional and local transport systems. The state Secretariat of Metropolitan Transport (STM) has three operating companies: São Paulo Company of the Metropolitan (METRO), São Paulo Metropolitan Trains Company (CPTM) and Metropolitan Urban Transportation Company (EMTU). Within the STM, the tasks for public transport and traffic management are split between SPTrans (São Paulo Transporte S.A.) and CET (Traffic Engineering Company). As a primary transit agency, SPTrans coordinates all municipal bus services, which are operated by eight private companies within the city of São Paulo. Important transit projects are being undertaken by two units: STM and the Municipal Secretariat of Urban Development. The latter works mostly on urban planning and design around new transit corridors and terminuses, controls land regulations and oversees the municipal urban development company (São Paulo Urbanismo).

#### FINANCING

The funding for most transit projects in the city of São Paulo and surrounding municipalities relies heavily on local government resources, especially São Paulo state government's general budget for metro, commuter rail and intercity bus transit investments. To raise the capital funds required in the coming decades, Integrated Urban Transport Plan 2025 examined financing scenarios for transit investments, based on conventional tax resources and innovative financing schemes, including value capture. According to the funding arrangement models analyzed in the master plan, substantial development benefits could be captured by air rights sales in urban intervention areas, accompanied by PPP initiatives and congestion charges.

#### IMPLEMENTATION

In São Paulo, the city planning department sets the "base" FAR for the city at 1.0–2.0, though specific FARs within this range depend on location and land use. If landowners want to build beyond "as of right" development up to the maximum allowable



FAR (1.0–4.0 depending on location and land use), they have to buy additional FARs. The as of right base FAR in certain areas is lower than the pre-existing basic FAR. The revenues generated from the sales of OODC (Outorga Onerosa do Direito de Construir) are deposited in the Urban Development Fund, which finances public urban investments, including slum upgrading within the city boundary.

CEPACs, Certificate of Additional Construction Potential, are a market-based instrument to finance public urban investments through air rights transactions within designated UOs. Through CEPACs, municipalities can raise infrastructure investment funds by selling the bearer additional building rights, such as a higher FAR and possible land use changes that should induce private investments in the transformations wanted by urban development policy.

## OUTCOMES AND LESSONS

The following inferences are drawn from the case study:

- High market demand, government capacities to create and manage auction markets, political will and regulatory capacity to ensure enforcement for additional required development rights were key attributes for success of this model in São Paulo.
- The greatest advantage of tradable air right sales is that local governments in developing countries, with limited developable lands, can produce substantial upfront cash flows for capital intensive urban infrastructure projects, without increasing their public debt.
- A transparent project finance scheme has to be developed, with clear rules and mechanisms to share profits and risks among multiple agencies, local government, transit agencies, landholders, residents, developers and investor. Coordination mechanisms must also exist between stakeholders in planning, financing and implementing transit and urban development.

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Beirut, Lebanon