

Chapter 77

Emerging Value Capture Innovative Urban Rail Funding and Financing: A Framework

Satya Sai Kumar Jillella
Curtin University, Australia

Anne Matan
Curtin University, Australia

Sitharam T G
Indian Institute of Science, India

Peter Newman
Curtin University, Australia

ABSTRACT

Urban rail transit is emerging around the world as a catalyzing developmental solution to enable 21st century sustainable cities. However, these transit systems are capital intensive and cities worldwide are seeking innovative funding and financing mechanisms. Recently, land based value capture (VC) mechanisms have emerged as a pioneering solution to fund urban rail projects. This chapter introduces the VC concept and provides global best practice. The chapter aims to help enhance the understanding and rationale behind VC approaches through assessing the transit impacted accessibility value proposition and various VC mechanisms to capture the value created. A six-step Strategic Value Capture (SVC) framework is proposed which offers a step-by-step guidance to help define the VC based urban rail transit funding and financing processes from VC planning to VC operations.

INTRODUCTION

Cities across the globe have pressures to build urban rail transit systems as a solution to a range of urban mobility issues driven by rapid urbanization challenges. These urban rail transit systems include metro (or subway systems), mono rail and light rail systems. There is a growing recognition among cities across developed and developing nations that urban rail transit helps maintain a city's economic competitiveness and also helps to enable livable and sustainable communities around station areas. There has been a dramatic turnaround in rail's fortunes globally as well as an increased awareness of rail's value to enable

DOI: 10.4018/978-1-5225-0803-8.ch077

21st century cities to achieve their sustainability goals (Newman et al., 2013). For example, in India currently urban rail (metro) is operational in 9 Indian cities, with another 7 cities currently constructing metros and a further 14 cities with rail transit in the planning stage. A further 16 cities have rail transit under initiation and eight regional rail corridors from Delhi are being planned. However, despite this move towards rail transit, none of the operational urban rail systems in India are financially viable and they are heavily dependent on government subsidies and grants. This is a problem worldwide (Gadgil, 2011) leading to the question *how can urban rail transit systems be funded and financed?*

Traditional funding sources for urban rail transit that include a mixture of federal and state aid grant programs, local taxes and fees, are grossly inadequate to meet the demand for new urban rail infrastructure. In the United States these traditional resources are typically combined to fund projects on a “pay-as-you-go” basis, meaning that projects have often been built in phases or increments as funds become available over a period of years (Chen, 2012). The scenario is not much different in other countries, even in developing economies. Many cities in developing countries depend on scarce grants from Federal or State governments or on loans from donor agencies with limitations leading to funding shortfalls to create any new urban rail transit infrastructure. Urban rail systems are being constrained as a social sector project as it is difficult to increase the fares beyond a point. Turning to the private sector for financing only works with urban rail if the necessary funding is provided to enable private financing to achieve their necessary return. A confluence of all these factors has prompted an urgent need to look for innovative funding and financing mechanisms to build such projects and enable them to be sustained.

In this context, land based value capture (VC) mechanisms, through the monetization of urban land values, are gaining attention as an innovative solution to fund urban rail projects and enable the involvement of private financing. Many studies have established the relationship between urban rail services, accessibility and residential and commercial property values (see below) and this is providing the basis for establishing mechanisms that can capture some of this value as alternative funding. Though it is not new to recognize the value of integrating transport and land use, it is new to integrate these with funding and financing, and is conceptually more challenging (Cervero, 1994; Newman & Kenworthy, 1999; Newman et al., 2013).

This chapter first introduces the concept and rationale of a value capture based rail transit funding and financing approach, introduces various VC mechanisms, and then shares some of the global experiences from cities across North America, Australia, Africa and Asia regions in utilizing VC to fund urban rail. The chapter further elaborates on the various successful VC mechanisms suggested for value capture implementation towards achieving sustainable urban mobility goals, and also identifies future research requirements in this important area. There is limited research available with regards to VC implementation, VC fund governance and VC strategic deliverables, especially for urban rail transit in an emerging cities context but also in many places like Europe and Australia where the mechanism is not used yet. In this chapter, the authors have tried to address these limitations by introducing a six-step *Strategic Value Capture* (SVC) framework. The SVC framework offers step-by-step methodical guidance to help define the VC process from VC planning to VC operationalization within the context of an urban rail transit financing project.

The topic of this chapter is of interest to policy makers, treasuries, city and transport planners, developers, economists, government agencies, mass transit organizations, academics and infrastructure banks.

14 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/emerging-value-capture-innovative-urban-rail-funding-and-financing/165364

Related Content

Review of Climate Change Adaptation and Social Protection Policies of Ghana: The Extent of Reducing Impacts of Climate Change and Heat Stress Vulnerability of Smallholder Farmers

Kwasi Frimpong, Eddie Van Etten, Jacques Oosthuizen and Victor Nufam Fannam (2017). *Natural Resources Management: Concepts, Methodologies, Tools, and Applications* (pp. 159-173).

www.irma-international.org/chapter/review-of-climate-change-adaptation-and-social-protection-policies-of-ghana/165290

Evaluation of Multi-Temporal Sentinel-1 Dual Polarization SAR Data for Crop Type Classification

Thota Sivasankar, Pavan Kumar Sharma, M. N. S. Ramya, Pithani Venkatesh and G. D. Bairagi (2020). *Spatial Information Science for Natural Resource Management* (pp. 44-61).

www.irma-international.org/chapter/evaluation-of-multi-temporal-sentinel-1-dual-polarization-sar-data-for-crop-type-classification/257696

Flipping the Paradigm of Education: Developing a Comprehensive Educational Program Integrating Virtual Immersive Learning Environments

Donna Russell (2017). *Natural Resources Management: Concepts, Methodologies, Tools, and Applications* (pp. 457-498).

www.irma-international.org/chapter/flipping-the-paradigm-of-education/165306

Land Deals and Sustainable Income: The Case of a Rural Community in Ogun State, Nigeria

Felicia O. Olokoyo, Tayo O. George, Uchenna R. Efobi and Ibukun Beecroft (2017). *Natural Resources Management: Concepts, Methodologies, Tools, and Applications* (pp. 1004-1019).

www.irma-international.org/chapter/land-deals-and-sustainable-income/165332

Farming Adaptations to the Impacts of Climate Change and Extreme Events in Pacific Island Countries: Case Study of Bellona Atoll, Solomon Islands

Viliamu Iese, Joseph Maeke, Elisabeth Holland, Morgan Wairua and Sumeet Naidu (2017). *Natural Resources Management: Concepts, Methodologies, Tools, and Applications* (pp. 852-875).

www.irma-international.org/chapter/farming-adaptations-to-the-impacts-of-climate-change-and-extreme-events-in-pacific-island-countries/165324