Division 44
Water, Energy and Transport

Reading List on

Financing Sustainable Urban Transport

December 2012

giz Transport Policy Advisory Services

On behalf of
Federal Ministry
for Economic Cooperation
and Development

Preface

Many cities in the developing world are rapidly growing and the economic patterns of the people living in these cities in changing. With these changes there is a dire need for these cities to stay up to the mark in providing the mobility facilities or in other words meet the needs of mobility for the citizens. The governments at the local, state or the central level are faced with a new issue of funding their respective transport needs.

The main aim of the sustainable transport system is to increase the mobility of the citizens through modes that are environmentally friendly, economically feasible and socially accessible for all echelons of the society. So far with the exiting knowledge on sustainable transport and with available proof we can safely agree that the sustainable modes of transport include public transportation (bus or rail based), non-motorized transport (walking, and cycling).

Further, it is socially just if personal motorized modes are paying for their actual cost exerted on the city. This will avoid the subsidisation of motorized modes by people who don't use/own a personal automobile.

The current document is one of the several efforts of GIZ-Sustainable Urban Transport Project to bring to the policymakers an easy to access list of available material on financing urban transport which can be used in their everyday work. The document aims to list out some influential and informative resources that highlight the importance of financing in cities and how the existing situation could be improved. The material stated in this document does not serve as a panacea for the developing cities but give the policymakers the advantage of being updated with the developments and existing material on the subject. The reading list is structured by the main focus of the documents.

Any comments on the material cited in this document can be directed to the SUTP team via email. We sincerely hope that you will benefit by reading this document.

Santhosh Kodukula and Rohit Sharma

GIZ, SUTP

Contents

1 General Issues on Financing

ADF. 2009. *Who pays what for urban transport? Handbook of good practices.* Agence Francaise de Developpement.

The handbook explores the sources of finance for urban transport, primarily public transport. Discuss the public funding, road pricing, and levies on commuters for using personal mode of transport and suggests financial models for urban transport.

http://www.afd.fr/jahia/webdav/site/afd/shared/ELEMENTS_COMMUNS/pdf/Handbook-good-practices-for-financing-urban-transport-AFD-MEEDDM-2009.pdf

CDIA. 2009. *Sustainable Financing for Urban Transport.* Project Development by the Cities Development Initiative for Asia.

It presents the financial challenges of urban transport in Asia. It explains how important is to bridge the infrastructure investment and finance gap. And presents in which cities CDIA are working in Asia.

http://cdia.asia/wp-content/uploads/2009/11/Key-note-Michael-Lindfield.pdf

CRONWELL, P. and BRUGGEMANN, G. 2004 *Key Factors in Financing Urban Transport Modernisation – Some Lessons from Central Europe*. European Bank for Reconstruction and Development.

This paper draws on the experience of the European Bank for Reconstruction and Development ("EBRD") in financing urban transport modernisation in Central Europe. The paper argues that funds for investment are available provided the right conditions are created. The paper examines what is required for an organisation to be considered "creditworthy", and how to create a creditworthy entity. Once an organisation is creditworthy, financing options open up. The paper present examples of EBRD financing in Belgrade, Bucharest and Sofia, and draws some lessons from the region. Finally, the authors look forward to the likely characteristics of the next generation of urban transport projects in Central Europe.

http://trid.trb.org/view.aspx?id=900177

GUESS, G. M. 2008. *Managing And Financing Urban Public Transport Systems*. Budapest: Local Government and Public Service Reform Initiative, Open Society-Institute Budapest.

This volume provides with methods, tools and systems applicable to cities for the remedy of urban public transit problems at the management and operational levels. The focus is on delivery of public transit services to passengers across metropolitan areas.

http://lgi.osi.hu/publications/2008/384/UT_A_416_WEB.pdf

KRZYSZTOF, S. 2008. *Urban Transport – Funding and Financing solutions of the European Investment Bank (EIB).* In: International Association of Public Transport Conference on Strategies for Public Transport in Cities, 17/18 April 2007, Leipzig.

It presents how EIB can help in financing urban transport projects. Showing a case study of Gdansk urban transport project.

http://www.sputnicproject.eu/meetings/3wgmeeting/Market%20Organisation/presentations/Funding%20and%20Financing%20solutions-Szyszko-EIB.pdf

SAKAMOTO, K. and BELKA S. (2010): *Financing Sustainable Urban Transport*. Module 1f. Sustainable Transport: A Sourcebook for Policy-makers in Developing Cities. German International Cooperation (GIZ).

Urban transport has historically not received the attention, careful planning and financial support it deserves in order to function in a sustainable manner. As a step to address this issue, this new GTZ Sourcebook module provides detailed information on available options for financing urban transport. It presents different financing instruments and ways in which they can be best used, and how to optimally combine them. This module is dedicated to policy makers, financial sector specialists and urban planners/practitioners working on key challenges related to financing urban transport systems. The sourcebook provides options to close the gap between the ever growing demand for efficient, equitable and environmentally friendly urban transport systems on one hand, and the dwindling financial resources available to state and local authorities on the other.

http://www.sutp.org/index.php/en-dn-th1

Transportation Research Board (TRB) 2011. *Equity of Evolving Transportation Finance Mechanisms.* Special Report 303. Washington, D.C.

This study on assessing the equity of evolving transportation finance mechanisms was initiated by the Transportation Research Board (TRB) Executive Committee in 2008. The Executive Committee recognized that equity issues associated with surface transportation are complex and that practical experience with emerging finance mechanisms is limited. The purpose of this report is to provide guidance about equity issues to public officials responsible for deciding how to fund transportation programs and projects. The report is directed to policy makers at all levels of government who are considering new finance mechanisms, as well as to their advisors.

http://onlinepubs.trb.org/onlinepubs/sr/sr303.pdf

TIS. Date unknown. *FISCUS - Cost Evaluation and Financing Schemes for Urban Transport Systems.* Transportes, Inovação e Sistemas S.A.

This booklet resumes FISCUS handbook which aims to provide practical guidelines on the evaluation of the real costs of urban mobility and on the most appropriate ways to finance it, tackling a set of issues with increasing importance in the political agenda of urban transport.

http://www.tis.pt/proj/fiscus/FISCUS%20Final%20Report%20-%20booklet.PDF

VISSER, C. 2010. *Finance and Economics*. Global Transport Knowledge Partnership.

The article mentions that relying solely on government budgets for financing road maintenance nearly always leads to roads being under-funded. It answers the questions like from were revenue can be generated for roads and which roads should be financed by road funds, and discuss issues related to road finance.

http://www.gtkp.com/assets/uploads/20100427-012848-8405-financial%20crisis.pdf

WACHS, M. 2003. *Improving Efficiency and Equity in Transportation Finance.* Center on Urban and Metropolitan Policy, Transportation Reform Series, The Brookings Institution, Washington D.C.

A complex partnership between many governmental bodies, continually influenced by numerous private, corporate, and civic interests, finances our nation's transportation system. But the nature of the partnership is changing. Originally offset by a variety of user fees, such as tolls and fuel taxes, the burden of financing transportation programs is gradually being shifted to local governments and voter-approved initiatives. This shift to local transportation taxes raises interesting issues for public policy. This brief dissects the arcane and complicated system of transportation funding by describing the relationships that define the federal, state and local roles. It summarizes the most pressing problems facing the transportation network, and argues that expanded reliance on user fees remains the most promising way to promote equity and efficiency in transportation finance.

http://www.brookings.edu/~/media/research/files/reports/2003/4/transportation%20wachs/wachs transportation

WAGENVOORT, R., NICOLA, C., KAPPELER, A. 2010. *Infrastructure Finance in Europe: Composition, Evolution and Crisis Impact.* In: European Investment Bank EIB Papers 2010: Public and Private Financing of Infrastructure. Evolution and economics of private infrastructure finance. Vol. 15(1). pp. 16-39.

This article is the first attempt to compile comprehensive data on infrastructure finance in Europe. We decompose infrastructure finance by institutional sector (i.e. public versus private) into its main components, which consist of traditional public procurement, project finance and finance by the corporate sector, and analyse how the roles of the public and private sectors in financing infrastructure have evolved over time, especially during the recent economic and financial crisis.

http://www.eib.org/attachments/efs/eibpapers/eibpapers_2010_v15_n01_en.pdf

European Investment Bank (EIB). 2010. *Public and Private Financing of Infrastructure.* Evolution and Economics of Private Infrastructure Finance. EIB Papers. Vol. 15 (1).

The 2010 EIB Conference in Economics and Finance – held at EIB headquarters in Luxembourg on November 11 – brought together academics, policy makers and companies to discuss trends and policy issues in infrastructure-financing. It highlighted the relevant facts and figures and the basic economics of infrastructure finance. Moreover, it focused on infrastructure assets and markets, including the impact of the crisis, and it identified the key factors shaping infrastructure finance going forward as well as the public-policy issues involved.

http://www.eib.org/attachments/efs/eibpapers/eibpapers_2010_v15_n01_en.pdf

European Investment Bank (EIB). 2010. *Public and Private Financing of Infrastructure.* Policy Challenges in Mobilizing Finance. EIB Papers. Vol. 15 (2).

http://www.eib.org/attachments/efs/eibpapers/eibpapers_2010_v15_n02_en.pdf

2 Financing Instruments at Local and National Level

BIRD, R. M. and SLACK, E. 2005. *Land And Property Taxation In 25 Countries: A Comparative Review.* Research Report, CESifo.

Every country has some form of tax on land and property. Such taxes have historically been local in most countries (although there are a few exceptions, such as Latvia and Chile, where they are mainly central taxes) and are often important sources of local revenue. One reason is that property is immovable – it is unable to shift location in response to the tax. Another reason is the connection between many of the services typically funded at the local level and the benefit to property values.

http://www.ifo.de/pls/guestci/download/CESifo%20DICE%20Report%202005/CESifo%20DICE%20Report%203/2005/dicereport305-rr1.pdf

BITSCH, F., BUCHNER, A. KASERER, C. 2010. *Risk. Return and Cash flow Characteristics of Infrastructure Fund Investments*. In: European Investment Bank (EIB). 2010. Public and Private Financing of Infrastructure. Evolution and Economics of Private Infrastructure Finance. EIB Papers. Vol. 15 (1). pp. 106-136.

We analyze the risk, return and cash flow characteristics of infrastructure investments by using a unique dataset of deals done by private equity-like investment funds. We show that infrastructure deals have a performance that is higher than that of non-infrastructure deals, despite lower default frequencies. However, we do not find that infrastructure deals offer more stable cash flows.

http://www.eib.org/attachments/efs/eibpapers/eibpapers_2010_v15_n01_en.pdf

DAVIS, L. W. and KILIAN, L. 2009. *Estimating the Effect of a Gasoline Tax on Carbon Emissions.* Discussion Paper, Centre for Economic Policy Research.

Several policymakers and economists have proposed the adoption of a carbon tax in the United States. It is widely recognized that such a tax in practice must take the form of a tax on the consumption of energy products such as gasoline. Although a large existing literature examines the sensitivity of gasoline consumption to changes in price, these estimates may not be appropriate for evaluating the effectiveness of such a tax. First, most of these studies fail to address the endogeneity of gasoline prices. Second, the responsiveness of gasoline consumption to a change in tax may differ from the responsiveness of consumption to an average change in price. We address these challenges using a variety of methods including traditional single-equation regression models, estimated by least squares or instrumental variables methods, and structural vector autoregressions. We compare the results from these approaches, highlighting the advantages and disadvantages of each. Our preferred approach exploits the historical variation in U.S. federal and state gasoline taxes. Our most credible estimates imply that a 10 cent per gallon increase in the gasoline tax would reduce carbon emissions from vehicles in the United States by about 1.5%.

http://www.nber.org/papers/w14685.pdf?new_window=1

European Conference of Ministers of Transport (ECMT). 2003. *Reforming Transport Taxes and Charges*. European Conference of Ministers of Transport (ECMT).

This report builds on a previous work published by the ECMT under the title Efficient transport taxes & charges in 2000. The earlier quantitative analysis of taxation on road haulage and its impact on the competitiveness of hauliers vis a vis their counterparts in other Member countries is updated and completed with a broader analysis of the factors that determine the competitiveness of hauliers along the entire logistics chain. The publication also reports the results of a joint study with the Directorate for Transport and Energy of the European Commission comparing the transport charges and taxes in place in the year 2000 with an optional pricing benchmark. This analysis was designed to answer the question what price and tax changes are likely to result for motorists, hauliers, rail users and other transport services from reforming transport charges to maximise efficiency?

http://internationaltransportforum.org/pub/pdf/03ReformTax.pdf

ENOCH, M., POTER, S. and ISON, S. 2005. *A Strategic approach to financing public transport through property values.* Public Money and Management, 25(3), pp.147-154.

Discuss that traditional sources of finance are becoming inadequate to meet the needs of public transport. This has led to the emergence of a number of local earmarked tax and charging mechanisms, in particular road user charges and tolls. This article examines one group of such mechanisms: charges to property owners and developers, and draws on worldwide examples of the practical use of a number of such schemes. There are a number of practical difficulties with capturing value from property owners and developers, and these are detailed with a commentary on best practice.

http://oro.open.ac.uk/2920/1/Enoch_Ison_30N04_Handover.pdf

FIEDLER, J. and ARTIM, E. 2005. *Foreign Sources of Finance.* In: REGIONAL ENVIRONMENTAL CENTER, ed. Targeting the Environmental Investment Challenge in South Eastern Europe. Szentrende: The Regional Environmental Center for Central and Eastern Europe, pp.195-218.

Securing funds for implementing environmental infrastructure projects is a very complicated process. Often, a project proponent is unable to provide investment capital for the project and external assistance is needed. Additionally, the process of EU integration is identifying more infrastructure necessary to comply with the requirements of EU directives. Investment project proponents can choose from a wide range of financial products, including grants, loans, credit guarantees, equity finance, bonds and different schemes for involving private sector capital such as public-private partnership. Project proponents in SEE countries are primarily seeking financing for large-scale infrastructure through grant support, loans and credit guarantees. The preparation of project application for financing is a lengthy and costly process. It is very important to note that financial assistance can be obtained from foreign sources not only for capital investment but also for project preparation, such as technical assistance for feasibility studies.

http://web.rec.org/documents/peip/docs/peip_invest_challenge_book_chap6.pdf

GREEN, A. 2006. *Life in the Fast Lane: Transportation Finance and the Local Optopn Sales Tax*. In: State and Local Government Review Spring 2006. Vol. 38 (2). pp. 92-103.

Local option sales taxes for transportation have become an important source of transportation funding in the State of California. In some California counties, local option sales tax revenue is responsible for almost a third of the transportation funding available for programs and projects. This research focuses on why the state legislature devolved power and authority to the local level, specifically the county level, by allowing counties to place local option sales taxes before the voters.

http://slg.sagepub.com/content/38/2/92.extract

HELM, D. 2010. *Infrastructure and Infrastructure Finance. The role of the government and the private sector in the current world.* In: European Investment Bank (EIB). 2010. Public and Private Financing of Infrastructure. Policy Challenges in Mobilizing Finance. EIB Papers. Vol. 15 (2). pp. 8-27.

Europe faces major investment in infrastructure in the coming decade in the context of the credit crisis and the broader economic crisis that followed. The article considers what the core market failures in infrastructure are, focussing on the gap between marginal and average costs, the system nature of infrastructures, and the time inconsistency problem. The difficulty for government in providing credible commitments to investors in respect of the fixed and sunk costs is the classic problem in contract and institutional design.

http://www.eib.org/attachments/efs/eibpapers/eibpapers_2010_v15_n02_en.pdf

JICK, S. 2007. *PT Funding and Financing.* In: CPN Congress on Urban Transportation, 2/4 August 2007, Beijing.

The presentation discusses the advantages of international association on public transport. It highlights why there should be fund public transport over other means of transport and outlines the public transport financing operations.

http://chinaplanningnetwork.org/english/ppt/huichang_4/Sung%20Jick%20Eum.pdf

JOHNSON, J. P. 2008. *Uses Of Fees Or Alternatives To Fund Transit.* Legal Research Digest 28, Transit Cooperative Research Program, Federal Transit Administration. Washington D.C.: Transportation Research Board.

This report addresses the use of impact fees and other developer exactions for transit in the United States; the various circumstances that have contributed to the development, or lack thereof, of transit impact fees in this country; and the various strategies used by states, municipalities, and transit systems to develop impact fees or other development exactions to fund transit related to growth. The report is presented in two parts - the first, a discussion of the use of impact fees and other development exactions for transit and the various policies and structural and legal considerations; and the second, a series of case studies detailing impact fees and other exactions either enacted or considered in various jurisdictions.

http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_lrd_28.pdf

KULKARNI, S. D. 2000. *Funding Of Public Passenger Transport in Developing Countries - A Case of India.* In: THREDBO 6 International Conference Series on Competition and Ownership of Land Passenger Transport.

The paper brings out the present scenario of financial performance and funding arrangements in the Railways and the Roadways carrying passengers in a country like India, representing developing nations of the world.

http://www.thredbo-conference-series.org/downloads/thredbo6_papers/Thredbo6-theme2-Kulkarni.pdf

LIMA, M. J. C. and FARIA, S. 2000. *The Transport-Ticket System In Brazil For Urban Public Transport.* In: THREDBO 6 International Conference Series on Competition and Ownership of Land Passenger Transport.

The paper discusses the transport ticket system in Brazil which was started in 1987. The article analyses the effects of this transport-ticket system functioning for the small and medium size firms.

http://www.thredbo-conference-series.org/downloads/thredbo6_papers/Thredbo6-theme3-Lima-Faria.pdf

RUNGE, D. and BECKER, H.-J. 2007. *Financing Urban Mobility: Results of a survey carried out among members of the Metropolis network.* Institut für Land- und Seeverkehr, Technical University of Berlin.

This document was prepared for the “Urban Mobility Management” annual meeting of the Metropolis network, where the results of a survey carried out among its members were presented.

http://www.verkehrsplanung.tu-berlin.de/fileadmin/fg93/IVP-Schriften/IVP_18.pdf (preface in German, rest in English)

SMITH, J. J., GIHRING, T. A. and LITMAN, T. 2012. *Financing Transit Systems Through Value Capture: An Annotated Bibliography.* Victoria Transport Policy Institute.

This paper summarizes the findings of nearly 100 studies concerning the impacts of transit service on nearby property values, and the feasibility of capturing this additional value to finance transit improvements. The results indicate that proximity to transit often increases property values enough to offset some or all of transit system capital costs.

http://www.vtpi.org/smith.pdf

The World Bank. 2002. *Urban Transport Pricing and Finance.* In: THE WORLD BANK, ed. Cities on the Move: A World Bank Urban Transport Strategy Review. Washington D.C.: The World Bank, pp.135-152.

It explains different options available for pricing of urban transport. In the interests of both urban transport integration and sustainability, developing countries should move toward prices reflecting full social costs for all modes; to a targeted approach to subsidization reflecting strategic objectives; and to an integration of transport funding.

http://siteresources.worldbank.org/INTURBANTRANSPORT/Resources/chapter10.pdf

The World Bank. 2010. *Road Financing and Road Funds.*

The article discusses issues related to developing a road financial plan and how the road funds can be efficiently managed.

http://www.worldbank.org/transport/roads/rd_fnds.htm

3 Financing Instruments at International Level (Climate Finance)

BINSTED, A., BONGARDT, D., DALKMAN, H. and SAKAMOTO, K. 2010. *Accessing Climate Finance for Sustainable Transport: A Practical Overview*. Technical Document 5, Sustainable Urban Transport, German International Cooperation (GIZ).

There is a growing body of financial resources that aim to support climate friendly actions. These financial resources are widely referred to as sources of 'climate financing'. This guide has been produces to help policy makers in developing country governments to become aware of the sources of climate finance that are available to support land transport climate change mitigation activities, and to detail how these can be accessed.

http://www.transport2012.org/bridging/ressources/files/1/956,TD05_FinGuid.pdf

Climate Investment Funds. 2009. *Clean Technology Fund Investment Plan For Vietnam.* In: Inter-sessional Meeting of the CTF Trust Fund Committee, 1/2 December 2009, Washington D.C.

The report discusses about the Clean Technology Fund Investment Plan for Vietnam to support the goals of reducing national energy consumption. And it is one objective is to expand public transport to a 50% share of passenger-kilometres travelled by 2020.

http://www.climateinvestmentfunds.org/cif/sites/climateinvestmentfunds.org/files/vietnam_investment_plan_kd_120809_0.pdf

ESTACHE, A. *2010. Infrastructure Finance in Developing Countries: An Overview. In:* European Investment Bank (EIB). 2010. Public and Private Financing of Infrastructure. Policy Challenges in Mobilizing Finance. EIB Papers. Vol. 15 (2). pp. 60-88.

This study analyzes the main approaches to infrastructure financing in developing c ountries and their evolution. It places the discussion in the context of the importance of infrastructure investment and maintenance needs to achieve growth and broader so-cial objectives. It summarizes the evidence on the efficiency, equity and fiscal conse-quences of the main public and private financing options commonly used to achieve these goals in these countries.

http://www.eib.org/attachments/efs/eibpapers/eibpapers_2010_v15_n02_en.pdf

FAY, M., IMI, A. PERRISSIN-FABERT, B. *2010. Financing greener and climate-resilient infrastructure in developing countries – challenges and opportunities. In:* European Investment Bank (EIB). 2010. Public and Private Financing of Infrastructure. Policy Challenges in Mobilizing Finance. EIB Papers. Vol. 15 (2). pp. 34-59.

Developing countries are faced with a substantial and persistent infrastructure deficit. Climate change complicates this challenge, affecting the way we design and manage infrastructure (defined here as transport, power, water and sanitation) and increasing costs. But all is not negative: Climate change affects both the economic and financial analysis of infrastructure projects in a way that could help achieve longpursued but elusive goals, such as better maintenance and greener, more efficient design. Further, climate finance could bring additional financing, although that will require increasing the scale of available resources and addressing the fact that climate finance tends to provide ex post financing, ill-suited to a sector characterized by a need for substantial ex ante funding.

http://www.eib.org/attachments/efs/eibpapers/eibpapers_2010_v15_n02_en.pdf

GEF. Date unknown. *Investing in Sustainable Urban Transport: The GEF Experience.* Global Environment Facility.

This publication details efforts in the field toward realizing sustainable urban transport all over the world. Investing in sustainable transport reduces carbon dioxide emissions and helps mitigate the potential impacts of climate change. But making these investments also pays off at the local level: we work with stakeholders to expand clean public transportation choices that also have the added benefits of lowering air pollution and reducing traffic congestion.

http://www.thegef.org/gef/node/1541

LEATHER, J. 2009. *Rethinking Transport and Climate Change*. Asian Development Bank, Sustainable Development Working Paper Series.

The paper makes suggestions for the rethinking of the relationships between transport and climate change, and co-benefits of transport and climate change mitigation. The report does advocate, proposing a break with past policies in the further development of the transport sector that is policies for low-carbon transport. Building on the experiences of both developed and developing countries on what constitutes good transport, the report bases its analysis on the “avoid-shift-improve” approach. Innovative financing of low-carbon and energy efficient transport and an institutional framework been presented.

http://www.adb.org/sites/default/files/pub/2009/ADB-WP10-Rethinking-Transport-Climate-Change.pdf

SAKAMOTO, K., DALKMAN, H. and PALMER, D. 2010. *A Paradigm Shift Towards Sustainable Low-Carbon Transport*. Institute for Transportation and Development Policy.

There is a clear need for all transport–relevant financial flows to be reoriented towards sustainable transport, to achieve the required paradigm shift. In moving forward, a holistic strategy is suggested. Such strategy should consider the analysis of the impacts of financing decisions taken by relevant stakeholders on sustainability; shifting existing resources towards a sustainable direction; increasing funding for those areas where resources are lacking; and paying for the full costs of transport including environmental depreciation.

http://www.itdp.org/documents/A_Paradigm_Shift_toward_Sustainable_Transport.pdf

UNFCCC. 2008. *Investment and financial flows to address climate change: An update.* United Nations Framework Convention on Climate Change, Technical Paper.

This technical paper provides an update to the paper on investment and financial flows to address climate change which was published by the secretariat in 2007. The technical paper presents different options, tools and mechanisms to enhance financing for mitigation, adaptation and technology cooperation for an effective response to climate change. Further, the assessment of options, tools and mechanisms is enriched by information submitted by Parties and other observer organizations as part of the work of the Working Group on Long-term Cooperative Action under the Convention (AWG-LCA). It also presents relevant new information available on the investment and financial flows needed.

http://unfccc.int/documentation/documents/advanced_search/items/3594.php?rec=j&priref=600004974#beg

4 Integrating Financing Options

GWILLIAM, K. 2005. *Bus Franchising in Developing Countries: Some Recent World Bank Experience*. In: 8th International Conference on Ownership and Regulation of Land Passenger Transport, June 2003, Rio.

The aim of this paper is to identify the main types of problem in implementing franchising systems in developing and transitional economies and to describe some recent experience in trying to handle them.

http://siteresources.worldbank.org/INTURBANTRANSPORT/Resources/bus_franch_gwilliam.pdf

The World Bank. 2006. *China: Building Institutions for Sustainable Urban Transport.* The World Bank Group, Transport Sector Unit, Infrastructure Department East Asia and Pacific Region, Working Paper No.4.

The paper is based on the urban transport problems facing by the large cities of China.

This report summarizes the diagnostic analyses of these problems with a focus on the associated institutional issues, and recommends policy directions and short- to medium-term institutional development actions for sustainable urban transport. The problems are like; the nested hierarchical system of public finance in China makes it difficult for lower-level local governments to plan multi-year operating and capital expenditures. A sustainable infrastructure finance mechanism should start with the strengthening of the self-financing discipline of the public entities that supply infrastructure services.

http://www.worldbank.org/transport/transportresults/regions/eap/china-bldg-inst.pdf

ZHAO, Z., DAS, K. V. and BECKER, C. 2010. *Funding Surface Transportation in Minnesota: Past, Present and Prospects.* Research Report, Center for Transportation Studies, University of Minnesota.

The state of Minnesota is estimated to have billions in unmet transportation needs to keep up with inflation and the increase in transportation demands. This report reviews the funding of public surface transportation systems in Minnesota. Report looks at how transportation projects have been funded, identify current and future policy issues likely to affect transportation funding, and go over some of the funding options suggested by other researchers. The aim of the report is to encourage better understanding and management of issues related to transportation funding in Minnesota.

http://www.cts.umn.edu/Publications/ResearchReports/pdfdownload.pl?id=1300

5 Finance Innovation

FEARNLEY, N. Date unknown. *Inventive Pricing Of Urban Public Transport.* Institute of Transport Economics Oslo.

When urban public transport subsidies are less than optimal, or being cut, operators become more dependent on passenger receipts to finance their operations. The question then is: how can urban public transport increase ticket revenues and at the same time maintain service levels, passenger numbers and market shares?

http://www.aetransport.org/lc_files/files/LPT-H-03%20Fearnley.pdf

KPMG. 2010. *Linking Cities to Finance: Overcoming Bottlenecks to Financing Strategic Urban Infrastructure Investments.* Background Paper. In: Cities Development Initiative for Asia Regional Conference on Linking Cities to Finance: Overcoming Bottlenecks to Financing Strategic Urban Infrastructure Investments, 27/28 September 2010, Shanghai.

The public sector has traditionally funded infrastructure projects from its own revenue sources, such as municipal taxes, transfers from higher levels of government, user charges, lease of land, etc. Asian Development Bank (ADB) has estimated that USD8 trillion will be required for Asia's infrastructure investment needs between 2010 and 2020, of which 68 percent will be for new capacity and 32 percent for maintaining and replacing existing infrastructure.

http://cdia.asia/wp-content/uploads/Linking-Cities-to-Finance-background-paper.pdf

OECD. 2010. *Taxation, Innovation and the Environment.* Green Growth Strategy, Organisation for Economic Co-Operation and Development.

OECD governments are increasingly using environmentally related taxes because they are typically one of the most effective policy tools available. Exploring the relationship between environmentally related taxation and innovation is critical to understanding the full impacts of this policy instrument as well as one potential facet of "green growth." By putting a price on pollution, do environmentally related taxes spur innovation? What types of innovation result? Does the design of the tax play a critical role? What is the effect of this innovation?

In analyzing these questions, this report draws on case studies that cover Japan, Korea, Spain, Sweden, Switzerland, the United Kingdom, Israel and others. It covers a wide set of environmental issues and technologies, as well as the economic and policy contexts. The research methods range from econometric analysis to interviews with business owners and executives. The report also explores the use of environmentally related taxes in OECD countries and outlines considerations for policymakers when implementing these taxes.

http://www.oecd-ilibrary.org/environment/taxation-innovation-and-the-environment_9789264087637-en

PERNIA, M., ACHARYA, S. R. and MORICH, S. *2009. Long-Run Policy Effects of Financing Transport Investments though Earmarking in East Asia.* Proceedings of the Eastern Asia Society for Transportation Studies, Vol. 7.

Unstable external funding sources for large-scale transport infrastructure prompts many East Asian countries to strengthen capacity in self-financing transport investments. This paper aims to evaluate if earmarking of road-related tax revenues for transport investments answers the need of developing countries to fund needed infrastructure to sustain economic growth. Funding issues relevant to the need for a long-term funding instrument, and the current structure of road-related taxes are presented to build empirical contexts of the potential of linking tax revenues and transport investment needs. Some lessons from long run transport funds in Japan and the US are also presented to articulate the idea of earmarking.

https://www.jstage.jst.go.jp/article/eastpro/2009/0/2009_0_45/_pdf

TAC. 2002. *Innovations In Financing Urban Transportation.* Briefing, Urban Transportation Council, Transport Association of Canada.

Develops decision making principle # 13 in TAC'S Urban Vision which calls for "better ways to pay for future urban transportation systems". It reviews the need for new transportation financing methods, specifies the goal and criteria of such methods, describes elements in a new financing model, and suggests future action.

http://www.chs.ubc.ca/archives/files/Innovations%20in%20Financing%20Urban%20Transportation.pdf

WETZEL, D. *2010. Innovative Ways of Financing Public Transport. London.*

The income from fares is usually insufficient to pay for both the capital cost and running expenses of a modern mass transit system. Paper discusses the innovative ways to generate finance for public transport, like locational benefit levy and discus them in brief.

http://sustento.org.nz/wp-content/uploads/2007/11/transport-urban-sprawl-and-justice.pdf

6 Public-Private Partnerships (PPPs)

ENGEL, E., FISCHER, R. and GALETOVIC, A. *2010. The Economist of Infrastructure Finance: Public-Private Partnerships versus Public Provision*. In: European Investment Bank (EIB). 2010. Public and Private Financing of Infrastructure. Evolution and Economics of Private Infrastructure Finance. EIB Papers. Vol. 15 (1). pp. 40-69.

We examine the economics of infrastructure finance, focusing on public provision and Public-Private Partnerships (PPPs). We show that project finance is appropriate for PPP projects, because there are few economies of scope and because assets are project specific. Furthermore, we suggest that the higher cost of finance of PPPs is not an argument in favour of public provision, since it appears to reflect the combination of deficient contract design and the cost-cutting incentives embedded in PPPs.

http://www.eib.org/attachments/efs/eibpapers/eibpapers_2010_v15_n01_en.pdf

GWILLIAM, K. M. 2000. *Private Participation in Public Transport in the FSU.* Discussion Paper, TWU Series, Transport Division, The World Bank.

This paper describes and analyses the growth of private sector participation in public transport supply in the countries in the Former Soviet Union in which the World Bank has had recent sector involvement. This includes Russia, Ukraine, Latvia, Kazakhstan, Uzbekistan, Kyrgyz S.R. and Turkmenistan.

http://siteresources.worldbank.org/INTURBANTRANSPORT/Resources/twu_40.pdf

LINDAU, L. A., DOS SANTOS, L. A., STRAMBI, O. And COLOMBINI, W. 2010? *Developing Bus Rapid Transit Systems In Brazil Through Public Private Partnerships.* In: THREDBO 10 International Conference Series on Competition and Ownership of Land Passenger Transport.

This paper explores new dimensions for the participation of the private sector in the provision of the transit infrastructure based on public private partnership (PPP) schemes conceived for bus rapid transit (BRT) projects in São Paulo and Porto Alegre. The BRT project consists of a diametric route crossing the city centre and linking trunk and feeding interchange terminals being planned to accommodate areas dedicated to retail and service activities. It is expected that these areas shall generate enough revenues to remunerate private investors, under a PPP scheme, for the construction of the terminals and most of the infrastructure required to upgrade some sections of the existing busways to BRT standards.

http://ses.library.usyd.edu.au/bitstream/2123/6042/1/thredbo10-plenary-Linda-Senna-Strambi-Martins.pdf

NASH, C. A., MATTHEWS, B., GRANERO, P. and MARLER, N. 2001. *Design of New Financing Schemes for Urban Public Transport – the role of private finance.* In*: THREDBO7, 2001, Molde.

The paper is aimed at private financing of urban transport. A brief review on alternatives of outright privatisation and of public private partnership (PPP) is been discussed along with the four case studies on PPP in England.

http://www.thredbo-conference-series.org/downloads/thredbo7_papers/thredbo7-workshopD-Nash-Matthews-Granero-Marler.pdf

PWC. 2008. *Urban transportation financing: A strong case for public-private partnership.* PricewaterhouseCoopers India, Transportation Industry.

Urban transportation projects generate multiple benefits ranging from pure private good to public good. There is a strong case for public-private-partnership in capturing value of urban transportation projects that accrues to all categories of beneficiaries. Public institutions need to develop innovative instruments that capture value from indirect and proximity beneficiaries so that urban transportation projects do not excessively rely on real-estate development for financing. The specific type of instrument would vary depending upon the demand for commercial real estate, existing density, availability of complementary instruments, and administrative efficiency of ULBs. The revenues generated from such instruments should be ring-fenced into a separate urban transport fund. Finally, formation of Unified Metropolitan Transport Authorities would help in realigning the institutional structure to address urban transport related issues in an integrated manner.

http://www.pwc.com/en_IN/in/assets/pdfs/urban-transportation-financing.pdf

SHAW, A. Date unkown. *Public Private Partnerships in the Transport Sector*. Draft think piece on Infrastructure.

PPPs are nothing new to either the transport sector or to the procurement of services by government. Construction activities have for years been undertaken using a competitive tender to select and identify contractors and to transfer risk in respect of pricing to deliver to a pre-determined specification. The more recent PPP approach often combines services and infrastructure together to create a public service or product package that is delivered over a fixed period of time.

http://premier.nwpg.gov.za/statistics/Shared%20Documents/Development%20Bank%20of%20South%20Africa%20%28DBSA%29/Documents/Public%20Private%20Partnerships%20in%20the%20Transport%20Sector.doc

WARD, M. 2010. *Engaging private sector capital at scale in financing low carbon infrastructure in developing countries.* GtripleC, Report for the Private Sector Investment Project.

The Private Sector Investment project is a policy project developed by GtripleC and made possible through funding by the United Nations Foundation and the Asian Development Bank. The report discusses the connection of climate policy and the urban transport financing stories. It provides a short guide to business -as- usual finance and investment.

http://www.gtriplec.co.nz/assets/Uploads/papers/psi_final_of_main_report_full_version_31_may.pdf

7 Transport Infrastructure Projects

ARTURO, A. and ORTEGÓN-SANCHEZ, A. *2007. The Finances of Bogotá's Transportation System.*

In this paper we study Bogotá's transportation system finances from 1994-2005. The transportation system is the city's road network, including the exclusive lanes for buses. We exclude all vehicle capital and operating costs. We look at the revenues that accrue to the system, comparing them to expenditures and determining deficits that are covered by transfers from the city's general tax base. We then project revenue and expenditure scenarios.

http://trid.trb.org/view.aspx?id=802571

BERECHMAN, J. and CHEN, L. 2010. *Incorporating Risk of Cost Overruns into Transportation Capital Projects Decision-Making.* Journal of Transport Economics and Policy. Accepted version.

Study suggests that cost overruns have been shown to occur in a significant number of transportation investment projects. The main objectives of this paper are to propose methods for estimating the risk of cost overruns and suggest ways to incorporate it into project decision-making. A key conclusion is that the approach proposed here can provide realistic risk estimates, thereby reducing subjective biases in project cost benefit analysis.

http://masetto.ingentaselect.co.uk/fstemp/0e2a5a16ece5dbdf575985a14311523d.pdf

***Crisil Infrastructure Advisory*. 2009. *Urban Transport – Financing Urban Transport Projects by unlocking indirect sources of revenues.* In: Second Annual Conference on Intra-City Transportation Systems, 27 July 2009.**

This document presents the investment required in public transport system and the private investment in public transport in India. Shows the concerns related to urban transport funding and the benefits of investing in urban transport. It recommends improving financial viability by exploiting non-fare based revenue sources.

http://www.crisil.com/pdf/infra-advisory/7-urban-transport-infra-financing-ut-projects.pdf

FLYVBJERG, B. SKAMRISHOLM, M. K. and BUHL, S. L. 2003. *How common and how large are cost overruns in transport infrastructure projects?* Transport Reviews, Vol.23(1), pp.71-88.

Despite the hundreds of billions of dollars being spent on infrastructure development -- from roads, rail and airports to energy extraction and power networks to the Internet -- surprisingly little reliable knowledge exists about the performance of these investments in terms of actual costs, benefits and risks. This paper presents results from the first statistically significant study of cost performance in transport infrastructure projects. The sample used is the largest of its kind, covering 258 projects in 20 nations worth approximately US$90 billion (constant 1995 prices). The paper shows with overwhelming statistical significance that in terms of costs transport infrastructure projects do not perform as promised.

http://flyvbjerg.plan.aau.dk/COSTFREQ4.pdf

GLAISTER, S., ALLPORT, R., BROWN, R. and TRAVERS, T. 2010. *Success and Failure in Urban Transport Infrastructure Projects.* KPMG International, Infrastructure Spotlight Report.

The study presents the analyses of the factors affecting the success of a range of international urban transport infrastructure projects, with a view to explaining why some are more (or less) successful than others. The report has 19 case studies and success of the project is analysed on their financial success along with their policy and durability success.

http://www.kpmg.com/RO/en/IssuesAndInsights/ArticlesPublications/Press-releases/Documents/Success-and-failure-in-urban-transportation-infrastructure-projects.pdf

8 Other Issues

CARRUTHERS, R., DICK, M. and SAURKAR, A. 2005. *Affordability of Public Transport in Developing Countries.* The World Bank Group, Transport Papers, Washington D.C.

To address the need for easily available and comprehensive comparative information on affordability of public transport fares, the paper presents an Affordability Index that is easy to measure and can be used as a first indication of the affordability of fares in a particular city. The Index is computed for a person on an average income and for someone in the bottom quintile (lower income group) of the income distribution.

http://siteresources.worldbank.org/INTTRANSPORT/214578-1099319223335/20460038/TP-3_affordability_final.pdf

CERVERO, R. 2000. *Informal Transport in the Developing World.* Nairobi: United Nations Centre for Human Settlements (UN-Habitat).

A report is a study to review the market, organizational and regulatory characteristics of the informal transport sector throughout the world with an eye towards identifying promising and remedial strategies. It provides a global portrait of informal transport services by commencing with an overview of the sector, and defines its major traits and addressing core policy issues that surround it. The challenges posed in rationalizing and upgrading informal transport services in Southeast Asia's three largest metropolises - Bangkok, Manila and Jakarta. The evolution of this sector in three other settings: Kingston (Jamaica), Rio de Janeiro and, Sao Paulo (Brazil) and several African countries, including Nigeria, Kenya and South Africa. The concluding Part of the report advances a normative framework for rationalizing and enhancing informal transport services worldwide. It concludes with a summary of core lessons and findings, a near-term action agenda and ideas for future follow-up research.

http://www.unhabitat.org/pmss/listItemDetails.aspx?publicationID=1534

ESTACHE, A. and GOMEZ-LOBO, A. 2004. *The Limits of Competition in Urban Bus Services in Developing Countries.* World Bank Policy Research Working Paper 3207, February 2004.

During the past three decades urban public transport policy worldwide has gone through several phases. From public ownership and monopoly provision, the eighties and nineties were characterized by a strong liberalization of the sector. This experience showed the limits of liberalization of the sector in terms of safety, prices and accountability. The paper discusses the market failures that left this claim and the regulatory options available in this emerging new role of government, illustrating how they are being used in practice in some countries.

http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2004/04/20/000009486_20040420121449/Rendered/PDF/wps3207bus.pdf

KRYWKOWSKA, G. 2004. *Next Stop: Sustainable Transport - A Survey of Public Transport in Six Cities of Central and Eastern Europe*. Szentrende: The Regional Environmental Center for Central and Eastern Europe.

Next Stop: Sustainable Transport was prepared by the Regional Environmental Center for Central and Eastern Europe (REC) within the framework of the project on Promotion of Public Transport in Central and Eastern Europe. The project was financed by the Royal Ministry of Environment of Norway. The main aim of the project is to develop regional cooperation between public transport stakeholders in the EU's new member states and candidate countries in Central and Eastern Europe. Such cooperation enables sustainable public transport to be promoted in the region and addresses public transport problems in the framework of sectoral integration. It also builds the capacity of public transport companies and municipalities, and establishes dialogue between them, donors and financial institutions.

http://archive.rec.org/REC/Programs/environmental_policy/PublicTransport/documents/NextStop.pdf

PUNTE, S. 2010. *Urban Mobility: much more than cleaner and greener, A Framework for achieving sustainable urban mobility.* Clean Air-Initiative. In: Conference on Sustainable City Finance, 7 January 2010, New York City.

It presents how sustainable planning framework can provide guidance in translating thinking on sustainable urban transport into practical implementation in our cities. Presentation explores the reasons for unsustainable transport and how low income group people are affected by it. Integration of modes is a key issue for our cities, which is explained by some case studies. It lists out the financing instruments for sustainable transport.

http://ne.edgecastcdn.net/000210/ebs/100107sustainable/pdfs/punte.pdf

The World Bank and PADECO CO. LTD. 2000. *Study on Urban Transport Development.* Final report August 2000.

This study aims to consolidate the information and lessons learned from experiences both in Japan and in developing countries. The study discusses the financial resources, both public and private and how effectively they should be allocated, for urban transport projects.

http://siteresources.worldbank.org/INTURBANTRANSPORT/Resources/ut_development_padeco.pdf

GIZ – Sustainable Urban Transport Project (SUTP)

Based on more than 25 years of practical experiences, GIZ hosts the "Sustainable Transport: A Sourcebook for Policy-Makers in Developing Cities" (www.sutp.org) with a wealth of information and knowledge on appropriate solutions, inter alia on tackling climate change in the transport sector. Through training and advisory services, decision makers in the transport sector are better informed about transport options, mode choices, mobility management and transport related emissions and their impact on our climate. This may lead to improved urban transport systems, less traffic and better alternatives to individual motorized transport modes.

This flagship publication compiles most of the international literature on the relevant subject and provides access to numerous other resources. It is complemented by training courses targeted to policymakers, planners or engineers in cities, regional entities and federal governments.

Editors:
Mr. Santhosh Kodukula, Mr. David Becker,
Mr. Jonathan Gomez Vilchez,
Ms. Daniela Jarosz

giz Transport Policy Advisory Services

Authors:
Mr. Rohit Sharma, Mr. David Becker,
Mr. Santhosh Kodukula

Cover photo:
Public transport tickets Compiled by GIZ, 2010

For more information on our work, please visit:
www.sutp.org
www.sutp.org/suteca
www.giz.de/fuelprices
www.transport2012.org
www.gtz.de/transport