

Financing Proposal for Urban Mobility Plans in Brazilian cities

Adriano de Carvalho PARANAIBA, José Augusto Abreu Sá FORTES, Eliezé Bulhões de CARVALHO

Abstract— The aim of this paper is to present funding opportunities for investments with private capital participation for urban mobility Infrastructure, through Project Finance. This model searches to bring economic fundamentals of engineering, making it possible for the participation of private sector in the financing of projects of the Urban Mobility Plans of Brazilian cities. The Brazilian experience refers to a strong dependence on public funding, that even demonstrating great strides in financial structures in the past, nowadays is proven to be insufficient to meet the demands of infrastructure investments, among them, those related to urban mobility. It was noticed that there is a very big effort and success in obtaining funds but without the effective concern with economic and financial sustainability of the projects, i.e., after deployment. Unfortunately, both in Brazil and in other countries, it is observed a myopic view of urban mobility, taking into consideration only the financing of infrastructure to meet the mobility of passengers, at the expense of mobility. However, Urban Operations have practical conditions of a systemic view, due to the way that occurs to their deployment planning, being possible to identify goods supply demands in the region, allowing the systemic vision of the mobility that the major cities around the world need.

Index Terms— Funding; Urban Mobility; Brazil; Project Finance.

I. INTRODUCTION

When describing urban mobility, it is common to observe that the mobility concept is associated with accessibility, rather than passenger transportation only. Urban mobility may be defined as the transport of not only people, but also goods, commodities facilities, resulting from the interaction between displacements in cities (Sudário & Hernandez, 2014). In this sense, the Regulatory Mark of Urban Mobility becomes an important urban policy instrument for people and cargo accessibility and mobility in Brazil, by Law 12.587/12 (Oliveira Filho, 2013).

This article seeks to introduce the classification of the infrastructure investments' financing, and therefore in urban mobility. For this purpose, it will be divided into two parts:

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the first part introduces formats of urban mobility financing, its concepts and experiments – in Brazil and other countries as well. The second part introduces the models of private investment raising for infrastructure which can meet the financial demands in order to structure the private resources raising for investment in urban mobility. Consequently, this text aims to identify the currently adopted practices of financial resources funding and list each model's features, as well as the challenges found. Mainly, it is intended to point out the difficulties in raising resources from the current models and their financial and economical sustainability.

II. THE CURRENT FINANCING MODELS: CONCEPTS AND EXPERIMENTS

In the search for the ideal financing to provide investments in urban mobility, it is possible to list the following financing forms: subsidies, loans, assigned taxes and Land Value Captures. Mostly, they are used in several countries and in Brazil as mechanisms to enable private partners' holding, according to Olsen et al (2011) and Olsen & Fearnley's notes (2014).

These alternatives are adopted when the ordinary budget of the public resources are insufficient. Also, it is possible to adopt multiple alternatives, depending on the model defined by the governmental authorities.

Among these forms of financing, subsidies is the only one where the resource flow follows the way opposite to that intended for introduction, i.e. public resources to finance private sector holding, and not the other way around. The purpose of subsidy is basically to cover the difference between the revenue from tariffs charged for passengers and the costs of the system. The use of the subsidy lies on a redistributive argument to ensure lower tariff and increase the public transport use frequency (Drevs et al., 2014). In Brazil, the National Mobility Plan established by Law 12.587/2012, Article 8º, subsection IX, paragraph 5º, indicates that by choosing the adoption of tariff subsidy, the resulting deficit shall be covered by: extra tariff revenues; alternative revenues; budget subsidies; and intra-sector and inter-sector crossed subsidies.

The idea of subsidy aims at ensuring the future cash flows required for financial economic modelling in projects that are considered insufficient by the public agent. This way, the subsidies will be ignored in this work as funding policy, because its logic corresponds to more expenditure of public resources, and it may lead to distortions in important information for users and investors: the price of tariffs. Thus, it is intended to introduce sources of funds for investment in

urban mobility in the following topics.

A. Loans

The loans have a variety of sources: International Banks – such as the World Bank Group (IBRD and IDA) and the Inter-American Development Bank (IDB) and; National Banks – in the case of Brazil, the National Bank for Economic and Social Development (BNDES). The World Bank Group loans, targeted to urban transport has been growing significantly: in the 1999-2009, about \$ 7.5 billion had committed in loans for urban transport projects (Mitric, 2013). The projects are co-financed, i.e. the WBG requires governments' customers a financial contribution. The project must also contain elements that point to the development of a sustainable urban transport in the city, besides having "an agenda of policy reforms relevant to the same context; and an agenda for institutional change relevant to the context in which investments are taking place" (Mitric, 2013, p. 20).

It is also possible that foreign direct investments occur. Brazil was a major recipient of foreign direct investment in the infrastructure area, but well before the 2008 crisis was already losing positions in this area. To Oliveira & Turolla (2013), the causes are possibly associated with political interference in regulatory area, excess of interventionism, and with less focus on efficiency and competitiveness.

There is a guarantee by the National Bank for Economic and Social Development (BNDES), specifically for Project Finance. Internationally, the International Finance Corporation promotes direct loans to private companies in order to attract other resources to developing countries (Villela, 2013, p. 71).

The experiences in loans for urban mobility can be observed in the operations of the World Bank Group (WBG). They were mostly held after 1990s decade, especially the projects from: Wuhan (China) the only one in the world that sought the creation of urban transport systems to reduce dependence on bikes; Morocco, seeking institutional improvement of transport due to a great informality in the activity; Mexico City, with the creation of a project for improving air quality and reducing pollution; Bogotá (Colombia), where the funding promoted integration that led to the creation of the Transmilênio (Mitric, 2013).

In Brazil, the subway of the city of Rio de Janeiro was a project that exceeded the initial budget in two contracts-(\$ m): (i) 373.0/ (ii) 186.0 (original); (i) 426.6/ (ii) 230.0 (final) – and a series of delays justified by national macroeconomic instability of the period, and Lines 4 and 5 of the subway in the city of São Paulo (Mitric, 2013).

In all cases the purpose of the loans was based on an institutional improvement, with the creation of regulatory schedules, pollution reduction and the increase in the quality of life of the users of transport systems. However, to Mitric (2013), the funding models of the WBG still has to find solutions to traffic congestion and revenue generation for operation and expansion.

B. Taxes Assigned to Public Transportation

Taxes assigned are taxes and fees linked to the financing of public transport, for instance: (i) additional fuel taxation in a particular area of congestion (Olsen & Fearnley, 2014); (ii) urban tolls. In addition to these two modalities, the verement transport in France, which is an extra tax on the employees' of the companies located in cities served by the subway system, although Bouf & Hensher (2007) point out a series of externalities caused on the cost of production and urban expansion.

These taxes and fees are commonly used for maintaining the operation of public transport, and as a source of resources for subsidies. In addition to this financial aspect, the economic perspective happens when it interferes in the decision to choose between public transportation and private transport, pushing the private transport user to be burdened by the negative externality of using the automobile. These taxes are based on Second-Best Pricing models, which seek to transfer part of the social cost caused by the use of motorized individual transport.

1) Additional Taxation on Fuel

According to Olsen & Fearnley (2014), the assigned taxes on fuels were proposed in the city of Trondheim, and a variant of the scheme has been implemented in Tromsø, both cities in Norway. The mechanism is an additional taxation in areas of greater congestion over the fuel consumption for private cars. The purpose of this additional taxation is the creation of funds for investments in the maintenance of urban roads.

Even though it does not occur in congestion areas, in Brazil there is the CIDE-Fuels, Contribution on Economic Activities, regulated by Law NO. 10.336/2001 which entered into force in January 2002. The main objective of the new tax would be to finance the transport sector, a way of funding the great national logistic demand, in order to promote economic development with the resources collected. In the form of budget law the tax would be intended to: (i) payment of the subsidies or transport of alcohol fuel, natural gas and their derivatives and petroleum derivatives; (ii) financing of environmental projects related to oil and gas industry; and (iii) financing of transport infrastructure programs (Dantas, 2008).

In 2003, the Constitutional Amendment NO. 42 determined that 25% of the resources of the CIDE-Fuels would be transferred to Brazilian States and the Federal District and 25% of that amount should be transferred to their respective municipalities. In 2004, the percentage of passing on goes up to 29% according to the Constitutional Amendment NO. 44. Therefore, the CIDE-Fuels has assumed an important role as a source of resources for Brazilian municipalities investments in urban mobility.

However, motivated by macro-prudential policies to control inflation, the CIDE-Fuels tax had gradually been reduced to zero from 2008 to 2012. In 2015, the aliquots were re-established and it is expected that the municipalities can count on that budget in the near future.

2) Urban Toll

The use of private cars in areas of congestion cause higher social costs compared to the individual costs of private cars (Elgar & Kennedy, 2005). The shipping cost of an additional

car to its owner (marginal cost) is less than the marginal effective cost that it causes in traffic: the time, the cost of marginal maintenance of other automobile users, pollutants emission and congestion influence. Among these, only the time and the vehicle cost are charged to car users while the other is considered an externality.

Although filled with excellent arguments, the second-best pricing model is refuted by several authors due to the excessive conditions to be reached: (i) the subsidy must be spent in an appropriate manner to ensure its functioning (Elgar & Kennedy, 2005); (ii) The fees need to be very high to influence the decision of agents, caused by low crossed elasticity found between private and public transport; (iii) It may cause other interferences in the economy, especially in prices.

The successful case of urban toll is the congestion charge in London. According to Almeida & Oliveira (2013), the toll in central London, since its deployment in 2003, managed to meet its main objective: the reduction of traffic congestion, with the decrease of 16% of the movement of cars, from 2002 to 2007. Though it was not the primary objective, it is worth pointing out that, like all recipes should be aimed at improving the system, it was observed that revenues exceeded the costs in the biennium 2007/2008, 137 million and 131 million pounds, respectively. Thus, it was possible to invest in improvements for pedestrians, bicycle lanes and other urban facilities (Almeida & Oliveira, 2013).

Unfortunately, the success achieved in London did not occur in other cities where the system was deployed, such as Milan, Singapore, Stockholm, where it faced opposition from public opinion, and difficulty in establishing the taxation. Hong Kong tested the system from 1983 to 1985, but it was not deployed (Joaquim, 2011).

C. Land Value Capture

According to Medda (2011), the central objective of land value capture is to recover the cost of capital investment in transport, capturing the increase in land value arising from investments in transport. These are similar to property taxes, but are actually the values derived from the financial benefit with the local supply of public services, whether improving accessibility, or the construction of a subway line for example (Olsen & Fearnley, 2014).

Medda & Modelewska (2011) point out 3 mechanisms to acquire land value capture: (i) Betterment Tax; (ii) Tax Increment Financing and (iii) Joint Development Mechanism. The Betterment Tax represents the measurement of the accessibility improvement, congestion reduction, charged directly to the owners of benefited areas. The advantage in such mechanism is in the reduction of the funding burden to carry out the improvements. The Tax Increment Financing in its turn is a mechanism based on anticipated use of future tax increases to finance infrastructure improvements by capturing an increase in tax revenues.

Widely used in the United States, TIF (Tax Increment Financing) is traditionally implemented to fund urban renewal projects, affordable housing and public infrastructure. It

aims at promoting efficiency of public investment in infrastructure by creating an incentive to locate where there is infrastructure capacity. TIF projects must not only generate a level of tax revenue at least equal to the cost of the project, but they must also be economically efficient, that is, equitable (Medda & Modelewska, 2011, p.9).

Ultimately, the joint development mechanism (Joint Development Mechanism) is the simplest of the three, since it works with the cooperation and sharing of costs between the public and private body. It is a collaboration that can occur throughout the project: financing, construction, operation or maintenance.

Examples of Land Value Capture are observed in Poland (Gdesz, 2011) since 1920, but specifically Chicago, Washington, London and Hong Kong resources are directed to investment and maintenance.

Table 1: Examples of Land Value Capture Deployment

City	Mechanism	Projects
Chicago	Tax Increment Financing	- Washington Randolph Station received US\$ 13.5 million in funds from taxes for improvement; - Dearborn Metro-Lake Subway/ Wells received US\$1.2 million in funds from taxes for improvement.
Hong Kong	Betterment Tax	In 1982, subway system of the city, in its 91km, was already being profitable, in part due to the increase of the land value along the subway line.
Washington	Joint Development Mechanism	Offer properties for residential, commercial use and development and commercial activity around and above the stations. In addition, sale and lease of land as well as air rights. The joint development projects had raised more than US\$ 60,000 in 1999. In 2003, there was an estimative of US\$ 150 million.

Source: By author, from Medda & Modelewska (2011) and Medda (2011)

As regards the application of this mechanism in the Brazilian national territory, a study was developed by De Cesare et al. (2003) which proposes the implementation of Land Value Capture in the city of Porto Alegre, showing its application feasible. However, this study does not address the allocation of resources to gain values promoted by the transport, it only refers to the replacement of the current model of taxation – Urban Land and Property Tax (IPTU).

D. Urban Consortium Operations

Another urban financing tool, which can be contextualized to the financing of investments in urban mobility, is the Urban

Consortium Operation.

Its main goal is to "re-qualify a city or area to implement and/or expand urban infrastructure through interventions in areas of the city where there's real estate interest with a demand above the limits set by the urban legislation" (CDURP, 2014, p. 28). The Statute of the City (Law NO. 10.257/2001) in section X, defines the urban consortium operations as:

‘the set of interventions and coordinated measures by the City Government, with the participation of owners, residents, permanent users and private investors, with the objective to achieve urban structural transformations in an area, social improvements and environmental recovery. (Law NO. 10,257/2001, article 32, paragraph 1).’

In this method, when defining the urban zoning, the public sector establishes the relationship between buildable area and land area in the Master Plan. This quotient is called basic utilization coefficient (CAB). On the coefficient of utilization it is offered the possibility to build above the CAB, constituting an additional constructive potential, against economical consideration, which is the Costly Grant for Building Rights.

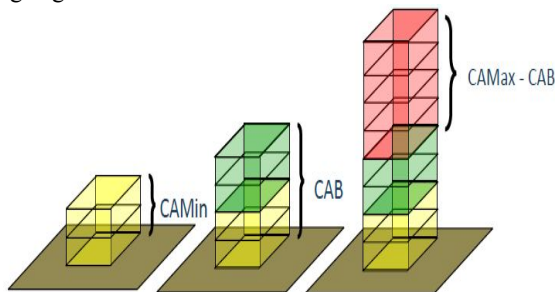


Fig 1: Representation of Use Coefficients
Source: Maciel (2011)

The Urban Consortium Operation uses the Costly Grant For Building Rights as an additional constructive potential which is converted into estate securities; the Certificates of Building Potential Additional (Cepacs), used as a counterpart to the Granting of Additional Urban Law (Pessoa & Bógus, 2008; Cruz, 2013). These Cepacs are sold at auctions or public biddings monitored by the Securities Exchange Commission (CVM). It is in this sense that the Joint Urban Operation extrapolates the concept of soil created, since the issue of Cepacs in financial market adds a financial leverage for the construction of urban infrastructure that is intended to be deployed in the specified region. In accordance with Neto (2013), after auction or public bidding disposed, these bonds can be traded in the secondary market.

The low liquidity of these securities on the secondary market demonstrated that in these securities' offerings, their purchase has been done exclusively by incorporating and real estate companies which want to work in that area. This fact shows an entrepreneurial use in the national experience rather than speculative.

Historically, the first enterprise that used the Urban

Consortium Operation was the revitalization of the Port of London Region, known as Docklands: "It's a pioneer project, declaredly liberal orientated, driven by Margaret Thatcher Government during the 1980's and 1990's" (Maleronka, 2010, p. 48). An autonomous executive agency to the Public Government, the London Docklands Development Corporation (LDDC), was created to conduct the project without hierarchical relationship with local authorities. The results declared in the Annual Report of 1998 from LDDC demonstrate how successful the project (LDDC, 1998) was:

- £1,86 billions of public investment;
- £7,7 billions of private investment;
- 431 ha of lands sold;
- 144 km of new and recovered roads;
- Building of Docklands Light Railway;
- 25 million square meters of commercial and industrial floor plans;
- 24.046 new dwellings; 2700 offices;
- Contributions for five new health centers and other six reforms;
- Investment in 11 primary schools, two high school schools, three technical schools, 16 universities and new vocational training centers;
- 94 awards in architecture, conservation and landscape; 85,000 jobs.

A project similar to the London Joint Urban Operation is the Zoned'Aménagement Concerté (ZAC), deployed after 1967 (Maciel, 2011). The main factor difference between the ZACs and Docklands is that the French Government is responsible for providing the areas, the projects and the funding resources, adding up only 3% of the paid-up capital from a private source. Although it differs from the London model regarding the origin of the investments, the occupation mechanisms are very similar, once the project and Docklands management were charged by private initiative, aiming the revitalization and a better ordered occupation of urban areas (Maleronka, 2010).

Leveraging investments in big events, Barcelo and Lisbon used the Joint Urban Operation to promote urban regeneration. With the 1992 Olympic Games' demand, Barcelona created the Project Areas of Nueva Centralidad (ANC), and the EXPO'98 in Lisbon required the construction of the EXPO Park, whose efforts were turned into urban requalification and environmental projects after the event by the public company responsible for it.

In Brazil, the Urban Consortium Operations started as a form of real estate development in the city of São Paulo with Anhangabahu-Centro Operations (1991), Água Branca (1995), Faria Lima (1995), Água Espraiada (2001) and Rio Verde-Jacu-Pêssego (2004) according to Pessoa and Bógus (2008), pointing a divergence on the proposal to revitalize enterprises in São Paulo, as the operations occurred in privileged areas, featuring a "gentrification" of the Urban Consortium Operations areas of São Paulo, i.e. the exchange of middle-class homes by a urban verticalisation. This evidence does not depict an inconsistency of the model, but the attitude of public managers involved, or even motivated by rent-seeking.

Maravilha Port in Rio de Janeiro is a successful Project on Urban Consortium Operation and on CEPAS issuance in the national territory, which aimed at the revitalization of an area of 5 million square meters.

Regarding the investments in urban mobility, the Maravilha Port features the following investment proposal: (i) Light Rail Vehicle (VLT) will connect downtown and Port Region in 28 kilometers and 32 stops; (ii) Via Expressa replacing the Elevado da Perimetral; (iii) Via Binário do Porto, road tunnels alternative to Via Expressa; (vi) 17 kilometers of bike lanes within the Maravilha Port; (v) Cable Car in Providência, stretching for 721 meters long.

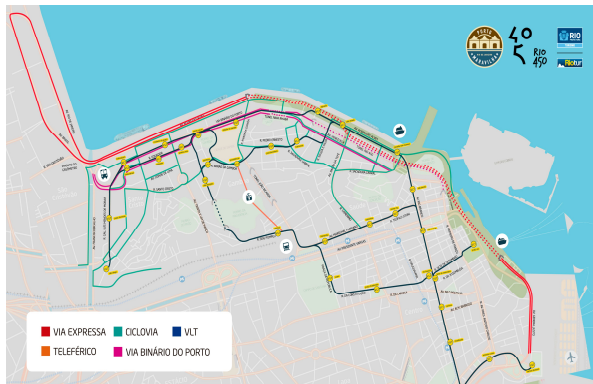


Fig 2: Map of Urban Mobility in Maravilha Port

Source: CDURP (2015)

In June 13, 2011, 6,436,722 Cepacs were offered, snapping up a value of R\$ 3.5 billion. The Economic Feasibility Study of the project priced the minimum value of R\$ 400 for each Cepac, and the auction was won by R\$ 545 in single bid of Caixa Econômica Federal. However, in a second auction held in October 2012, out of the 100 thousand titles offered, over 26 thousand Cepacs were traded, involving a total investment of R\$ 29,998 million. It is possible to point out that this is a mechanism of high financial leverage, although it does not provide long-term sustainable mechanisms to maintain the financing of the projects presented during the emission of Cepacs.

III. MECHANISMS TO ATTRACT INVESTMENTS IN INFRASTRUCTURE

This topic is intended to introduce methods of financial funding for infrastructure that can be adapted to the search of funds for urban mobility projects. Two alternatives can be highlighted: (i) Infrastructure Debentures; (ii) FIDCs.

These two financial leverage mechanisms - Infrastructure Debentures and FIDCs - are also benefited by Law NO. 12.421/11, and can be a new strand of funding for urban mobility projects, facilitating the diversity of sponsors, generating financial strength on Urban Mobility projects and swiftness on the funding of these resources.

It is important to mention the Real Estate Receivables Certificates (CRIs), which were created with Law NO. 9.514, 1997, the same way a debenture serves the market as a specific source of financing for the housing market following the same logic of credit for financial leverage from the future receivables.

Oliveira Filho (2013) and Wajnberg (2014) point out that with the publication of Law NO. 12.431, in June 24, 2011, new investment incentives in private fixed-income securities appeared, reducing the Income Tax for investments in simple debentures and shares of investment funds to zero, as well as "the creation and improvement of Infrastructure Funds (FIP-IE) and flexibility in the legislation governing debentures and financial treasury (Wajnberg, 2014, p. 6).

to Passos & Mendes-da-Silva (2014) the motivation starts from a need to unburden the BNDES, seeking private-sector resources to finance the development of Brazil's infrastructure. For this purpose, the provisional measure NO. 517/2010 was converted into Law NO. 12.431/2011, which makes the granting of income tax incentives for investors in article 2, with a strong focus on infrastructure under the name of Debentures Encouraged or Infrastructure.

Art. 2. In the case of debentures issued by Special Purpose Company (SPC), constituted to implement investment projects in the infrastructure area, or intensive economic production in research, development and innovation, considered as priorities by Federal Executive Branch regulations, the income earned by individuals or legal entities resident or domiciled in the country are subject to income tax, exclusively at source, at the following tax rates:

I-0% (zero percent), when received by an individual; and

II-15% (fifteen per cent), when earned by legal person taxed based on the actual profits, presumed or arbitrated, legal person exempt or opting for the Special Regime Tax and Collection of Contributions due by Micro and Small Businesses (*Simples Nacional*). (Law NO. 12.431, JUNE, 24, 2011).

Therefore, this fiscal incentive collaborates as compensation to the investment risk because, to individual and foreign investors for each \$ 100 million invested in debentures encouraged there is additional R\$ 8.6 million gain from the IR exemption (there is no incidence of IR). Even though the incentive is not too large for the Legal Entity, as compared to Individual and Foreign Investors, for each R\$ 100 million invested in debentures encouraged, there is an additional gain of R\$ 2.8 million from the exemption of IR (15% of IR reduction).

Nevertheless, it is required to meet the following conditions so that the Encouraged Debentures can benefit from tax incentives, according to Wajnberg (2014):

- Object of public offer with large or restricted distribution efforts;
- Issued by projects or holdings of controllers of projects in logistics and transport, urban mobility, energy, telecommunications, broadcasting, sanitation and irrigation;
- Remuneration based on fixed interest rate linked to the price index or reference rate;

- Weighted average period exceeding four years;
- Prohibition to repurchase of title on the part of the issuer in the first two years;
- Prohibition of early settlement of title through ransom or prepayment.
- The main participants of a debenture issuance are (Passos & Mendes-da-Silva, 2014, p.7):
- The issuing company;
- The financial institution, which acts as coordinator in the process of structuring, coordination and distribution of securities;
- The trustee representing the interests of the debenture holders by the issuer;
- The depository institution called Bank Representative in which funding resources are transferred;
- The rating agency and institutions which pay custody services.

From the fundraising interest for investments in infrastructure projects, the issuer sends the Debentures Encouraged, offering increased profitability to investors of these titles for two reasons: the first, already mentioned in this paper, refers to the encouragement reduction of the IR incidence; the second reason is in Instruction NO. 476 of CVM governing the provision of these debentures that require prior registration in CVM, making way to offer this title more quickly and with less financial cost.

An offer of R\$ 100 million held under the ICVM 400 has fixed costs of R\$ 606,900, while by INSTRUCTION 476 of CVM the same offer would have fixed costs of R\$ 204,000. It's worth pointing out that the costs do not include the commissions charged by the Bank Coordinator offers, which are present in emissions carried out by ICVM 400 and the ICVM 476 and are usually a relevant portion of the total cost of a debentures public offering. (Wajnberg, 2014, p. 351)

However, even with the investment cost minimization, converging into compensatory risk attractiveness, there are challenges to this type of fundraising: (i) the approval process is not uniform between the ministries, incurring increased costs on projects that rely on various ministries; (ii) infrastructure projects demonstrate low attractiveness, especially when it comes to greenfield project. Uncertainties in the country's institutional security have caused this feeling in investors; (iii) difficulty in negotiating the bonds before due date. (Passos and Maria-da-Silva, 2014); (iv) lack of liquidity in the secondary market.

A. Credit Rights Investment Funds (FIDCs)

The credit rights investment funds (FIDCs) appeared in Brazil by Resolution NO. 2.907/2001 of BACEN, which authorizes the formation and operation of Credit Rights Investment Funds and of investment funds in quotes of credit rights investment funds. These funds were regulated by Instruction 356/2001 of CVM, and subsequently amended by the Instruction 393/2003 of CVM.

Currently it is highly used by Brazilian subnational governments in energy and water supply sectors.

The fund investors would be private agents. In that scenario, the consumers with good track of consumption and compliance are chosen and also the ones whose water and sewage bills over the next 10-15 years constitute the payment flow to be bought by FIDC. (Pimentel & Vellutini, 2005, p.18)

"These funds are based on securitization of credits arising from loans, financing (including real estate) and operations of leasing, among others." (Silva, 2006, p. 45) According to Luxo (2010), these funds may be strategic in financial management meeting the following demands:

- Source of resources to meet the needs of capital;
- Leverage of new resources;
- New alternative to the changing profile of indebtedness;
- Possibility of increased operational efficiency.

A successful example was the fundraising by Companhia Energética de Sao Paulo (Cesp) which raised R\$ 315 million, with guarantees based on future revenues.

IV. ANALYSIS AND PROPOSITION OF FINANCING MODEL

By observing the models, it is possible that the proposal for a new Model of Private Investments in the area of urban mobility can take advantage of the benefits generated by Urban Consortium Operations, due to the ability of financing leverage associated with Land Value Captures.

Table 2: Comparative Index

Model	Advantages	Disadvantages
Loans	Existence of internal and external development banks with resources for urban mobility	-Passive generation to the contractor; -The budget of the project is underestimated, generating over expenditures.
Taxation on Fuel (CIDE-Fuels)	Distribution of resources to all federated entities.	The various changes and even the reduction to zero provoked institutional insecurity. The municipalities do not know when and until when they can rely on the resource.
Urban Toll	-Generation of over budget revenues, possible ability to finance investments and costs of urban mobility; -Shows ability in reducing congestions;	-Public opposition has been making deployment difficult in various cities around the world; -Not yet applied in Brazil.

Land Value Captures	-Does not represent public expenditure increase – Government and citizen: just the funding of the valuation of properties from improving urban mobility; -Generation of revenues for different phases of the project: financing, implementation, operation and expansion.	-Not yet applied in Brazil.
Urban Consortium Operations	-Financial leverage for financing, without the need for property speculation; -Revitalization and reordering of specific areas;	-The rent seeking can cause gentrification; -Even with high ability to fundraise large volumes of resources in financial operation of Cepacs, there is no focus on generating revenues in the economic exploitation of the VHF.

account the specificities of a particular asset, where the cash flow of the project comes as guarantee, such as assets and future income (Villela, 2013).

This way, the sponsor of the project will have the same interests of Government Authorities, working in favor of the public interest – in the performance of the private partner, considering that if the service does not generate any profit, there will be risk of non-receipt of financing parcels (Ribeiro, 2011).

Furthermore, the Project Finance works as a funding modality to fundraising based on the project's ability to meet debt servicing, depreciation and interest, and to remunerate the capital exclusively through the expected cash flow of the project. In addition, the projects must be economically feasible and attractive to creditors, whereas segregation and risk allocation.

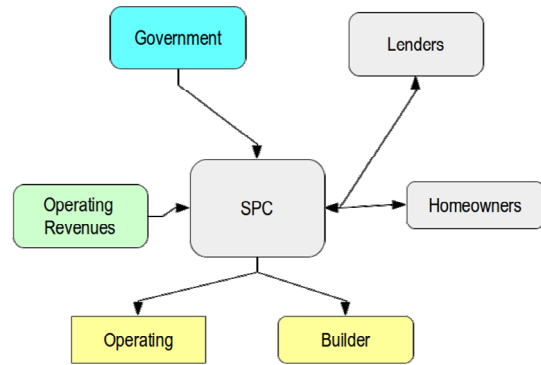


Fig 3: Structuring the *Project Finance*

The mechanisms for property fundraising, such as Debentures and FIDICs infrastructure, can contribute as an enabler for the establishment of the securities to be issued, but the model needs to contemplate, and make clear to investors, how the economic exploitation of urban mobility will be, in other words, how the generation of revenues will be. These mechanisms lack liquidity in the secondary market. In order to clear up this idea a new chapter will be added to this paper, even though specific actions have been mentioned, such as urban tolls.

In order to build a Funding Model that is supposed to offer a virtuous cycle of investment in urban mobility, the synergy between the fundraising should be considered – passive generation, and emergence of assets – cash flow generation. This is the only way of increasing private investment attractiveness for urban mobility.

It is known that each municipality will be responsible for its project infrastructure financing in urban mobility, and that each of these projects will present particularities of specific demands for each type of infrastructure to meet the planned urban mobility – whether in improvements to sidewalks, bike lanes, exclusive tracks, etc. – the proposal of a single financial framework would incur to serious risks of not meeting these demands due to the vicissitudes of each project. In order to meet this set of peculiarities, the financial structure that includes this specificity is the Project Finance structure.

In accordance with Finnerty (1999), the feature that makes the Project Finance stand out from other models of financing is the fact that it is an asset-based financial engineering. In other words, the funding model is constructed taking into

Within the scope of Project Finance, the Special Purpose Company (SPC) assuming the role of Concessionaire seeks the financing investment search both in the financial markets by issuing securities, both with the participation of shareholders in the venture capital wholeness, as occur in Project Finance projects already applied in other sectors – water, energy, oil. The novelty is in the insertion of the homeowners and local enterprises to participate as a shareholder of the SPC. This measure has some objectives: increase of capital contribution in business; participation of local society, represented by an association of homeowners or neighborhood and minimize gentrification.

Securities issuance guarantee financial leverage needed to start the project, and as soon as the works are implemented, the revenues generation collaborate with the generation of cash flow. The valuation of immovable property arising from the intervention can motivate homeowners to contribute with part of this appreciation as a prescription for the own enterprise as a reinvestment of improvements-Betterment Tax and Tax Increment Financing. It is also possible establish a partnership between homeowners, promoting Joint Development Mechanism.

V. FINAL CONSIDERATIONS

This article was conducted in order to identify how the

authorities responsible for the provision of urban mobility conduct fundraising for investments. It was noticed that there is a very big effort and success in obtaining funds but without the effective concern with economic and financial sustainability of the projects, the same way it happens after deployment.

Unfortunately, both in Brazil and in other countries, it is observed a myopic view of urban mobility, taking into account only the financing of infrastructure to meet the mobility of passengers, at the expense of mobility. However, Urban Operations have practical conditions of a systemic view, due to the way that their deployment planning occurs, being possible to identify goods supply demands in the region, allowing the systemic vision of the mobility that the major cities around the world need.

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