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Mobility and accessibility: how to ensure resilient solutions for a sustainable city

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The hurdle for the coming decade: financing

- The observation of the last two decades reveals that **financing mechanisms used to support public transport typically rely solely on a combination of user charges and public budgets** and do not provide sufficient funding for a sustainable transport planning and policy.

- This constraint leads to a **vicious cycle where degradation of the systems causes patronage reduction and subsequently less financial capacity.**

- The classification of financial flows is not straightforward. Indeed, flows can be allocated to more than one category depending on the perspective and moment of analysis. For example, **public transport user fees can be considered a private fund that constitutes a revenue source for a public authority**, which at a later point uses that same money (now a public resource) for transport or non-transport related purposes.

- Another crucial element of a public funding system is the **allocation of funds** from the central (national, federal etc) government to the local administration bodies (state, regional, municipal, etc), as well as the central or local government to the service

Allocation of funds (I)

- **Based on *political patronage***, refers to rewards to localities according to their political support in the past and/or their importance for future elections.

- **According to *historical precedent,*** corresponds to an outdated practice as current reforms guided by value for money and transparency principles make this option impossible to survive;

- **According to *bids* submitted by localities or allocations contingent on some *measure of local performance***. This option has high transaction costs (e.g. central scrutiny and policing, preparation of bids by local authorities) but it is often used has an attraction for local governments to comply with national policies. It has the characteristic of making budget contingent upon quality of local governments which can have positive (e.g. accountability) and negative aspects (e.g. inequities). As a major drawback is the fact that it may well lead to geographical inequity. This option is common in Federations (e.g. Brazil);

Allocation of funds (II)

- **According to how much localities *actually spend*.** It is a common choice although it reflects mal practice in terms of financial management, tends to generate X-inefficiencies with excessive spending and lack of transparency;

- **Allocation by *mathematical formula*,** where the local entity (i.e. government or service provider) is reimbursed either on the basis of some measure of local activity, typically the number of service users, or according to the expected level of local activity (i.e. expected level of local service expenditure), without reference to actual local service use.
  - Several authors praise this option due to its capacity to limit the magnitude of aggregate expenditure, to share that limited expenditure in an optimal fashion, to transmit objectives to delegated entities and to give them appropriate incentives.

Subsidization: an exhausted option

- There are **many reasons to justify *subsidies*** for local public transport infrastructure, fares and service levels, based mainly on economic grounds and what is called the social role of public transport, and the **recipient can be either the user or the provider**. **Different options do have different consequences and require different instruments to manage it as widely discussed in the literature.**

- Special attention must be given to the implementation of funding and financing instruments in a combined and integrated way, adaptation to the specific territorial, institutional and financial local environment is important. **Addressing the variety of financing mechanism implies to know well the added value of each instrument but also how to conceive and design a sound implementation package of policy measures** (Filipe and Macário, 2013).

- As concluded in FISCUS (2001) the inherent limits of gathering user contributions (payments from the direct users related to their amount of use, that is revenue collected from pricing), combined with the political limits of public expenditure from general budget (or even earmarked budgets), reveal that **further sources of financing are needed to maintain the urban mobility system within acceptable quality levels, not ignoring that price (a major funding source) influences the perceived quality of services.**

Financial barriers (I)

- Financial barriers can take various forms, most common of which are **budgetary restrictions** limiting the overall expenditure on a public transport strategy (either transport infrastructure or service).

- These restrictions steam primarily from the **scarcity of public money**. It should also be mentioned that budgetary constraint (i.e. budgetary thresholds) is **also a public management instrument.**

- A highly competitive environment inducing authorities to compete for public money might pose additional barriers to cooperative governance and integration, reason why stable sources are required to enable strategic conduct and good performance.

- This situation often arises within metropolitan areas or conurbations. A **value management approach can conciliate the interest of different participants maintaining a competitive environment**

Financial barriers (II)

- Another barrier that deteriorates this situation is the so-called **"*Capital-Rich, Revenue Poor*" mismatch**, which means that the availability of capital can be sufficient to fund transport and land-use projects (i.e. capital rich), although issues can be raised over how the operation, servicing and maintenance (i.e. revenue poor) of these capital assets will be funded.

- For these reasons, as well as scarcity of public funds, **alternative / innovative forms** of funding and financing are called upon to provide revenue solutions. **Funding pools dedicated to specific transport-related purposes entail advantages**, but they should also show a relative flexibility in being used for other transport mode projects, whenever local conditions and needs demand.

- An example of this practice is USA´s reformed transport funding and financing system allows for the dedication of portions of federal and state highway user fee revenues to transit

This means that **the dispute to find innovative funding and financing solutions cannot be approached through narrow economic or financial perspectives**. Only through a smart articulation of different aspects that influence mobility and citizen' behaviour innovative solutions can be generated.

The challenge is to move the utility concept from mobility to access

- **Existing public transport finance is based on business models highly dependent on fare generating potential. This is no longer an effective approach** for the post post-WW II.

- Urban mobility systems must be assessed not only in terms of the user individual value but also for the co-location attractions to people from all vectors of urban life, which is the whole Society. These benefits must be brought into planning and service delivery criteria for urban transport so that a socially inclusive urban transport system can be achieved.

- **Public transport solutions cannot be address by looking strictly to its own domain**. Here we will find only cost cutting strategies. This cannot continue, it will lead to a continuous deterioration of the system until safety and security will be threaten. The solution must bring beneficiaries to the discussion and return from that benefit must be given to public transport systems.

- Advocating this approach in a proper way means that awareness of the problem must be given to the citizens from the very start, as well as what type of solutions can be thought

Benefits of accessibility

- As Macário (2012, 2014) concluded, **the focus of accessibility as an economic indicator is property value or the economic potential for development of areas or regions**.

- Several authors report the accessibility benefits generated by the transportation system and can be divided into:
  - Internal benefits of improved accessibility (enhancements in travel time and connectivity) of the users (Martinez, 2010) ;
  - External benefits of the system, which include (Martinez, 2010):
    - Increase of the city competitiveness;
    - Benefits captured by the private sector:
      - Property values increase; Expansion of the catchment's area of skilled workers ;
      - Enlargement of the catchment's area of customers for shops and consumer-oriented services;
    - Benefits captured by the public sector:
      - Increased fiscal income resulting from the rise in property value (although this is partially lost by fiscal evasion); Reduction of social exclusion and related negative effects Increased aggregated productivity.

Estimates of positive impacts

Case/Location	Impact on	Impact	Source
Belfast	House Prices	+2%	(Adair, McGreal et al. 2000)
Bremen	Office rents	+50% in most cases	(Hass-Klau, Crampton et al. 2004)
Croydon Tramlink	Residential property	Some localized positive impacts	(Atisreal, Geofutures et al. 2004)
Freiburg	Office rent	+15-20%	(Hass-Klau, Crampton et al. 2004)
Freiburg	Residential rent	+3%	(Hass-Klau, Crampton et al. 2004)
Greater Manchester	Not stated	+10%	(Hass-Klau, Crampton et al. 2004)
Hannover	Residential rent	+5%	(Hass-Klau, Crampton et al. 2004)
Helsinki Metro	Property values	+7.5-11%	(Hack 2002)
London Crossrail	Residential and commercial property	Positive	(Hillier Parker 2002)
London Docklands LRT	Residential and commercial property	Positive	(Hack 2002)
London JLE	Residential and commercial property	Positive	(Chesterton 2000) (Pharoah 2002)

Case/Location	Impact on	Impact	Source
Atlanta	Office rents	Positive	(Bollinger, Ihlanfeldt et al. 1998) (APTA 2002)
Baltimore LRT	Not stated	Unable to identify	(Hack 2002)
Boston	Residential property	+6,7%	(APTA 2002) (Armstrong Jr 1994)
Buffalo, New York	House prices	+4-11%	(Hess and Almeida 2006)
Chicago MTA	House prices	+20%	(Gruen 1997)
Dallas DART	Commercial rents	+64.8%	(Weinstein and Clower 1999)
Dallas DART	Property values	+25%	(Kay and Haikalis 2000) (Weinstein and Clower 1999)
Linden, New Jersey	Residential property	Positive	(Diaz 1999)
Los Angeles	Property values	Higher values	(Fejarang 1994)
Miami	House prices	+5%	(Gatzlaff and Smith 1993)
New Jersey SEPTA rail	House Prices	+7.5-8%	(Voith 1991)
New Jersey PATCO rail	House Prices	+10%	(Voith 1991)
New York	Not stated	Positive	(Anas and Armstrong 1993)
Pennsylvania SEPTA rail	House Prices	+3.8%	(Voith 1991)

Case/Location	Impact on	Impact	Source
Manchester Metrolink	House Prices	Unable to identify	(Forrest, Glen et al. 1996; Dabinett 1998)
		+10%	(Hass-Klau 2006b)
Montpellier	Property values	Positive	(Hass-Klau, Crampton et al. 2004)
Nantes LRT	Commercial property	Higher values	(Hass-Klau, Crampton et al. 2004)
Nantes LRT	Not stated	Small increase	(Hass-Klau, Crampton et al. 2004)
Nantes LRT	Number of commercial premises	+13%	(Hack 2002)
Nantes LRT	Number of offices	+25%	(Hack 2002)
Nantes LRT	Number of residential dwellings	+25%	(Hack 2002)
Newcastle upon Tyne	House prices	+20%	(Hass-Klau, Crampton et al. 2004)
Orléans	Apartment rents	None-initially negative due to noise	(Hass-Klau, Crampton et al. 2004)
Paris	House Prices	+3.3%-5.2%	(Hass-Klau 2006b)
Paris	Offices Prices	+57%	(Hass-Klau 2006b)
Rouen	Rent and houses	+10% most cases	(Hass-Klau, Crampton et al. 2004)
Saarbrücken	Not stated	None	(Hass-Klau, Crampton et al. 2004)
Sheffield Supertram	Property values	Unable to identify	(Henneberry 1998) (Dabinett 1998)
Strasbourg	Office rent	+10-15%	(Hass-Klau, Crampton et al. 2004)
Strasbourg	Residential rent	+7%	(Hass-Klau, Crampton et al. 2004)
Tel Aviv	House Prices	Positive	(Gat 1996)
Turin	House Prices	Positive	(Corto, Bravi et al. 1993)
Tyne and Wear Metro	Property values	+2%	(Pickett and Perrett 1984)
Vienna S-Bahn	Housing units	+18.7%	(Hack 2002)

Compiled by Martinez (2010)

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Paradigm shift requires reframing financing of urban access

- **Social inclusion –** investments and operations have to be assessed in the context of their contribution to social inclusion. This is the ultimate objective of transport, that forces to refocus from mobility to access

- **Innovative financing –** User fees and general taxation are not enough, new sources of financing must be developed
  - Creation of an integrated base to sustainably support urban transport
  - Multiples sources must de used for an effective solution
  - In other urban infrastructure users pay for actual use but also for capacity

- **Governance and organization –** The traditional silo-oriented organization is unable to address the challenge of socially inclusive access. The urban mobility system must be addressed in an integrated way

No single policy measure is sufficient

- **No single measure is effective**

- The **precondition for a sustainable mobility policy is a settlement structure**, together with a configuration of the mobility system that allows keeping private motorized mobility within accepted thresholds.

- The policy package is a **combination of policy measures** with the common aim to address one or more policy objectives. This set is created with the purpose to improve the effectiveness and the efficiency of the individual measures.

- Thus, policy packages are not individual measures that coexist in time and space. There is a **consistent process of design and implementation of policy packages** targeting the most effective incentives that will lead to change of behaviou

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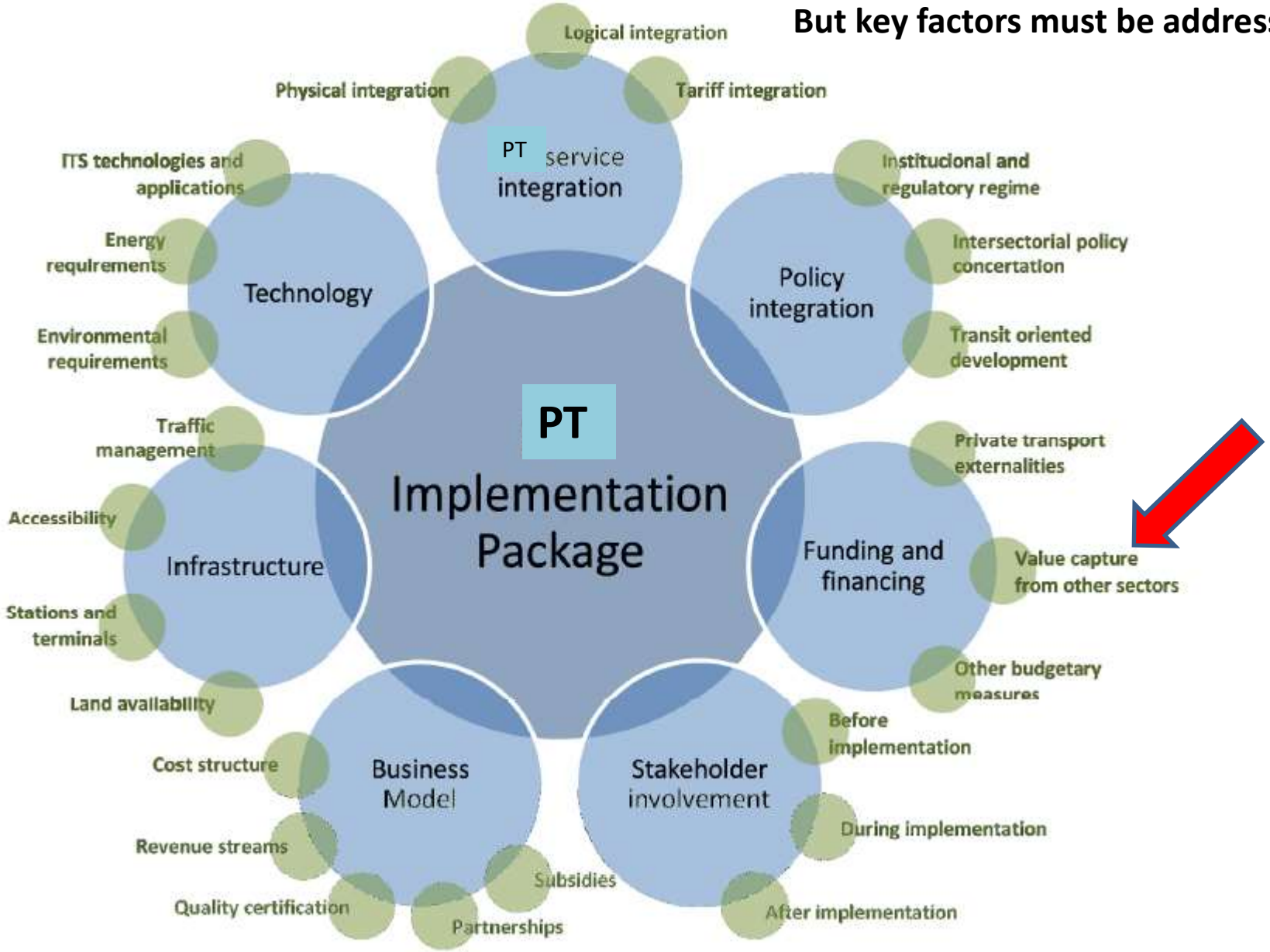
LVC is possible and offers good potential for financing UMS.
But key factors must be addressed



Source: Macário, 2011

Land use strategic planning is a key factor

- **Strategic planning enables an early negotiation with potential investors, and creates the environment to develop trusting relationship without which open negotiation procedures would not be possible.**
- The articulation between the long -term vision (strategic) with the tactical (master plans) measures creates a stream of consistency in the decision process. Tokyo provides an example of coordination with modal programs, namely road and rail infrastructures.
- **Value created by project differs from one local to the other, even within the same city**, it thus indispensable to assess the potential of development of land parcel so that a correct assessment can be done before and after development. For example, the same project impacts differently in poor areas and in rich areas, transport usage and reliance differs.
- It is also indispensable to have a **clear link between value capture and value creation**, which loses effect when the area is too big as properties at the periphery will not experience same value and will be asked to pay identical costs and taxes;

Vision and long term planning is the starting point

- **Long term planning enables transparent information for investors and a sense of stability of decisions**. In addition, it facilitates the identification of quality-places where transport investment should be done, reconfirming the importance of considering a mobility/accessibility Strategic Plan within the Urban Strategic Development plan and respective project.
- In fact, cases shows that the socio-economic alignment must place urban mobility at an **identical level of importance than sanitation or communications,** which means the mandatory inclusion in real estate development projects.
- **Vision and long term planning, provide a high degree of irreversibility which represents contained risk at the eyes of an investor**. This is likely the reason why rail is more attractive for this type of approach than bus, which is a very mobile asset and so with high degree of potential to reverse the strategy.
- **The LVC approach when practiced with buses must provide guarantee of non-reversibility for the investor to perceive a contained risk**

Integration of Land Use and Transport Decision

- **Most spatial planning is carried out by municipalities, and this facilitates the integration. In fact, the integration of land use and traffic planning is seen by locals as one of the most positive aspect of the Stockholm system.**

- However, there are still several countries where transport decisions are centralized. In these cases it is fundamental to ensure articulation between local and central plans, so that the transport network can reach good levels of efficiency and effectiveness, in which case it will represent an added value, and so a potential value capture.

Consistent national and local plans.

In small municipalities, which are in the hands of the State, who in turn has more financial capacity, there is **some tendency towards a bias for "large" projects rather than small and efficient ones**. This is seen by locals as one of the major limitations of the system.

Consistent national and local plans, for multi-centre regional development and railways extension ensure ex-ante conditions for a balanced management of the network. One of the elements that influences the good performance of a transport system is the balance of demand across the network and along the service period. The genesis of this potential problem relates with the promotion of mixed uses along the network. Tokyo provides good evidence of this issue and how to adequately deal with it.

Regulation

- **Regulation** is also a determinant element, in particular in what concerns density and zoning to allow special FARs in key stations to attract private investment and comprehensive development.
- **Urban density is key to place a high premium on easy access to transit and, consequently, ensure high profit of real estate development around stations.**
- Since 2004 that studies report 30% increase in real state if the R+P project had a distinctively transit oriented design, reflected by nearby retail shops, high-quality pedestrian corridors and open space.
- But regulation must also be aligned between urban space and its use for transport and accessibility in general to avoid contradictory and conflicting guidance. Restricted automobile use and high population density contribute to high public transit ridership
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Promoting conditions for investment.

- **The transparency and efforts to maintain potential investors with reliable information is a factor much associated with maturity of the system**, that enables to operate mechanisms with many degrees of freedom.
- Many arguments have been developed in the literature that LVC can only be applied in cities where land is publicly owned. Tokyo provides a good evidence of the opposite through the application of **land readjustment mechanisms** together with cooperation between investors to adjust the investment and business scale.
- Collaboration between neighbours is more frequent in cultures like Japan than in other places. Although land readjustment can be initiated either by landowners or government adequate economic incentives (namely, adequate decentralisation of tax revenue) can help land readjustment to proceed smoothly even where less cooperative cultures exist.

Ring fencing captured values

- **Ring fencing captured values** is fundamental for the citizens acceptability and trust in the system.
- **A good communication** with stakeholders is an essential instrument and should start with the Strategic plan.
- **Citizens must be aware** of the future potential problem as well as on the value generation that transport provides. This will change their view on the role of transport in the development of their city and provision of good levels of quality.
- In Hong-Kong besides rail construction MTR also has the right to decide on land-use and on the destiny of the captured values, enabling to have a clear relation between value capture and creation of value, this is clearly transmitted to citizens and it is now an element of their cultural environment;

Managing the value capture balance

- **Managing the value capture balance,** meaning determining the right amount of value at the right time.
- **Different methods for value capture at different stages of the project life cycle, or development cycle**. That is some value comes from land sales, other comes from business taxes, other property taxes.
- If excess value is captured then development is discourage, so the **portfolio of options requires good management** that is good balance to maintain high level of attraction from investors.

Controlling risks through all stages of the project

- **Controlling risks through all stages of the project, t**o achieve this in such a complex project a mix of integrated planning, modelling, risk management and economic forecasting is required.

- **Competent teams prepared to support transversal and multifunctional decisions are required**. The more comprehensive is the mandate of the managing organization the more chances of success. Fragmented planning and decision, at the opposite, will put project at risk in several aspects.

Managing stakeholders

- **The technical project management is as important as the trust between investment stakeholders.**

- The mechanism adopted in Tokyo highlights the importance of managing stakeholders and drive them from that statute towards acceptance.

- Acceptance from population is fundamental. At the end citizens are the final users of this complex systems. They must understand why, and how it is done, as well as the degree of fairness encompassed in the pricing structure of all elements of this complex project

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Thanks !

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