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PUBLIC TRANSPORT – THE SMART, GREEN SOLUTION

Financing Public Transport

(Plenary Session 2 of the Provisional Programme)

Final Draft

This background paper is prepared by Heather Allen of UITP, for the 5th Regional EST Forum in Asia. The views expressed herein are those of the authors only and do not necessarily reflect the views of the United Nations.



PUBLIC TRANSPORT – THE SMART, GREEN SOLUTION

**Background paper on financing public transport
Prepared for the
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Note

This paper has been prepared by Heather Allen of UITP. The views contained in this paper do not necessarily reflect official positions of UITP but put forward state of the art examples in achieving economic sustainability as part of a commitment to sustainable development. The information compiled has been checked as far as possible, but the author takes no responsibility for any unforeseen errors.

UITP (International Association of Public Transport) is the international network for public transport authorities and operators, policy decision-makers, scientific institutes and the public transport supply and service industry. It is a platform for worldwide cooperation, business development and the sharing of know-how between its 3,200 members from 90 countries. UITP is the global advocate for public transport and sustainable mobility, and the promoter of innovations in the sector. UITP launched an ambitious strategy in 2009 to double the market share of public transport worldwide by 2025. For more information, please visit www.uitp.org.

August 2010

Introduction

The increased urbanization that has occurred in much of the world over the past fifty years has also brought with it urban sprawl and traffic congestion. Towns and cities generate an ever growing need for urban transportation which, in turn, creates demand for collective and sustainable systems that provide affordable transport to the majority of their citizens. Yet this is rarely the case. Transport and our mobility behaviour have a strong influence on how we achieve sustainable development and urban transport has a specific role to play in this.

To be sustainable the system must not only fulfil the environmental criteria of being energy and resource efficient, but it must also satisfy social needs, and ultimately be economically viable. All these elements are interdependent and the decisions made about transport today will determine how robust an economy will be in the future.

The last twenty years has brought unprecedented growth especially across the Asia region, yet it cannot be said that improvements in transport and access to markets, education and health facilities has followed. National aspirations for economic growth strongly influence the construction of transport infrastructure, with ambitious road, rail and air based projects often being seen as a reflection of development. Many countries across the region have benefitted from such improvements.

However, there is undeniable link between income and mobility. As incomes rise across the region and cars become more affordable, in particular for the growing middle classes, motorisation rates have risen and obviously the number of kilometres travelled per capita has also increased. Recent figures show that car ownership in many Asian cities doubles every 3-5 years. Yet despite major investments in large scale projects, congestion and environmental pollution are growing and the quality of life for many is increasingly diminished, due mainly to the negative aspects of our present model of unsustainable transport.

Nowhere can this be seen more than in towns and cities across the region. Population growth and rampant migration from the countryside into towns and cities has resulted in widespread urban sprawl and a corresponding strain on all public service infrastructures. And it is usually the poor that pays the highest price.

The provision of affordable public transport plays an important role in all aspects of sustainability – economic vitality, environmental protection and social inclusion. Failing to invest in urban transport today will have medium- and long-term consequences on the creation of wealth in the future and undermines international and national policies to reduce poverty. The poorest of people have no alternative but to walk, cycle or use public transport to access jobs, healthcare, education and culture.

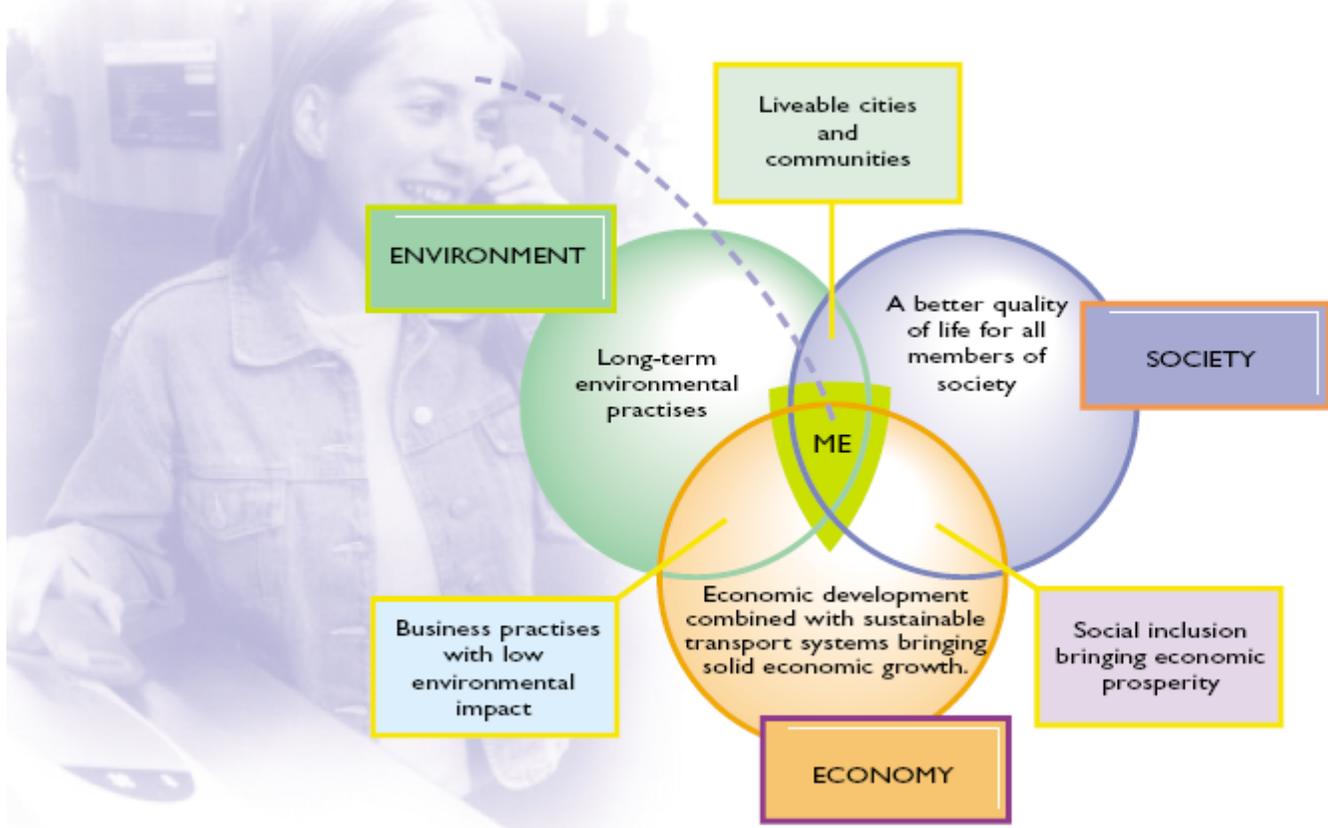
The reality is that in almost all towns and cities, local governments are struggling to reconcile a growing demand for all types of transport infrastructure with limited public funds. Indeed the gap between efficient, equitable and environmentally friendly urban transport systems, and the financial resources available to meet these demands seems to have widened over the past twenty years. Instead of declining urban poverty is on the increase¹.

Sustainable Mobility - A cornerstone of sustainable development

Sustainable transportation is an aspect of global sustainability, which involves meeting present needs without reducing the ability of future generations to meet theirs.

¹ A new paradigm for sustainable urban transport – Changing Course Asian Development Bank (2009)

The Concept of Sustainable Mobility



Source: Ralph Hall, *Introducing the Concept of Sustainable Transport to the U.S. DOT through the Reauthorization of TEA-21*

A sustainable transportation system is one that:

- “allows individuals, companies and societies to meet their basic mobility needs in a way that preserves human and ecosystem health, and promotes equity within and between successive generations;
- is affordable, efficient, offers a choice of transport mode, and supports a vibrant economy, as well as balanced regional development; and
- limits emissions and waste to within the planet’s ability to absorb them, uses renewable resources at or below their rates of generation, minimises consumption of non-renewable resources, the use of land and the production of noise.

In short, a sustainable transport system is one that uses resources efficiently to carry people and goods, supports equality of access to support the needs of the whole society, and protects the natural environment².

² Source: European Council of Ministers of Transport (ECMT, 2004) now known as the International Transport Forum (ITF) and UITP’s report *Ticket to the Future* (2004).

Most definitions of sustainability include three dimensions: environmental, social and economic. In practice, however, the emphasis has been on environmental sustainability. In order to be able to achieve any level of sustainability all components need to be taken into consideration in decision making processes. And new thinking about sustainable development also includes the requirement of the right framework for action in the form of governance and including sustainable criteria for more development related decisions.

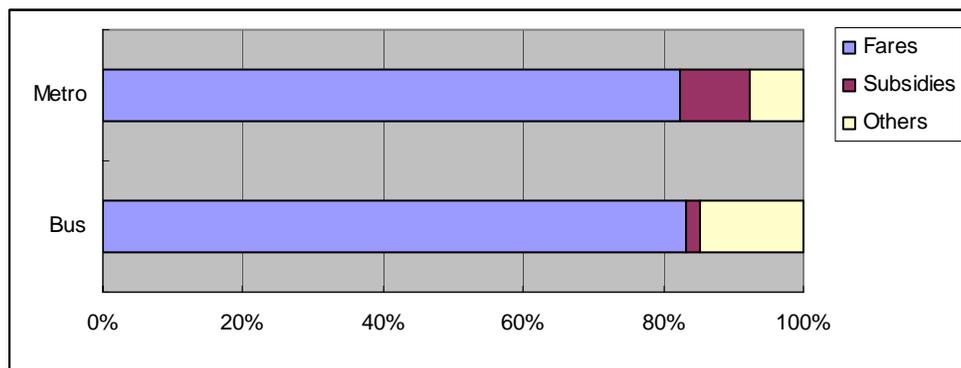
There is an increasingly compelling case for change. Asia now loses between 2-5% of its gross domestic product due to congestion, the majority of which takes place in urban areas. Therefore addressing funding and financing sustainable urban transport³ is a crucial element for the future and economic vitality of the region.

Indeed, the neglect of financial sustainability can no longer be disassociated from the recognised environmental and social benefits public transport has to offer. That said, it is also crucial to increase productivity and reduce costs. Indeed, improving the financial sustainability of public transport would help realise the potential environmental and social benefits of public transport, since it would make expanded public transport service more affordable, both for the governments who provide it and for the passengers who use it⁴.

Different profiles of urban areas

Asia is a huge region, populated with cities that are very diverse in geographical situation, profile and income levels. The possibilities for the sustainable financing of urban public transport in a large, rich city is quite different to a small or medium sized, market town. This paper will give an overview of some of the different models and give examples of case studies from around the world that may inspire the development of new approaches to funding and financing public transport appropriate to the Asian context. The information in the paper is intended to frame some guiding principles in particular for less developed economies and highlight aspects that should be considered in order to achieve sustainable, long term stability of sustainable urban transport systems.

The financing of public transport in cities such as Tokyo, Singapore or Hong Kong is quite different from what can be envisaged in places such as Jakarta, Chennai or Bangkok both in complexity and resources. However there are elements from the richer cities, as well as experience from Europe and the United States, that could be interesting to adapt and this paper attempts to give a short overview of many of the different models available and showcase some successes as well as identify possible pitfalls and shortcomings.



Sources of funding for Tokyo Metropolitan Bus and Metro Services
(Source: Bureau of Transportation, Tokyo Metropolitan Government, 2009)

³ This paper covers major the aspects of sustainable financing of passenger urban transport

⁴ Buehler, R., Pucher, J., Making public transport financially sustainable. Transport Policy (2010), doi:10.1016/j.tranpol.2010.07.002

There is a wide diversity of quality and density of public transport across the region from top level, world class examples to low quality inefficient systems. There has also been some considerable investment in public transport networks recently, in particular in China where impressive levels of investment have delivered many hundreds of kilometres of high speed rail, metro and Bus Rapid Transit (BRT) systems in a short period of time but this can be considered to be the exception. The focus of this paper is towards those countries who are finding urban transport provision a considerable struggle rather than on those who are succeeding in putting integrated multimodal systems in place.

Across much of the region travel demand far exceeds the limited supply of transport infrastructure and services. Public transport, in particular, is often completely overwhelmed and bus and train services are overcrowded, unreliable, slow and in general inconvenient.

The economic stability of public transport cannot be considered in a vacuum. All too often, political involvement combined with inadequate and inappropriate financial arrangements are in part the cause; and for the other part, the result of a general the worsening urban transport situation in most cities. In most cases this is demonstrated by:

- Decisions towards infrastructure investment that favours private cars (and road based transport in general) accelerating to widespread chronic congestion
- No or little priority for public transport in planning, ineffective compensation for social benefits and low fares structure
- The lack of investment in formal public transport organisations due to the historical legacy of inefficient and subsidised public entities allowing the explosion of small, market based informal public transport operators
- A general acceptance of the 'misguided' assumption that cheap fares translates into affordability (rather than looking at the percentage of disposable income spent on transport)
- Weak enforcement or complete lack of legislation (eg vehicle inspection and safety levels) meaning a general lack of quality and therefore attractiveness of public transport.
- Little or no investment in infrastructure to make sustainable modes more attractive than a car (e.g. interchanges, passenger information and fare integration systems, shelters at bus stops, footpaths and bicycle paths)
- Weak institutional arrangements leading to unfair competition between formal and informal modes of public transport increasing the requirement for subsidies and other financial support from local government.
- High traffic accident rates usually affecting the poor most (and those who are most vulnerable being at the most risk)
- Poor image and service quality of public transport often due to poorly maintained vehicles and lack of proper financial arrangements

Many publicly owned and managed public transport enterprises in the less well off economies have suffered over the past twenty or so years; on the one hand from low investment due to a poor image (mass transport being the mode of choice of the poor) and on the other from a lack of incentives for it to be run on a proper commercial base. This has led to its own demise, with management being heavily politicised rather than efficient and a delivery of low quality services.

This situation has helped create an opportunity for the rapid growth in many countries of informal, privately owned and operated transport in the form of minibuses, collective taxis and motor cycle taxis. Buses carry 90 percent of the population in India but out of the 85 cities that have a population of over 0.5 million only 20 had a structured bus service (Agarwal, 2009).

In the short term, it may have relieved the public purse from any responsibility to provide subsidies to public transport services. However as cities and urban areas grow, this in itself has now created its own problems. Increasing levels of congestion, inefficient use of energy and unacceptably high levels

of pollution apparent in many cities across Asia means that the market it has created now also needs reform. Of course, this is easier said than done, as resistance from the private incumbents poses its own problems.

Financing and funding

The difference between financing and funding is worth noting here. For the purposes of this paper funding is considered to be the provision of adequate and stable sources of money for the provision of a service (such as public transport). The very existence of formally organized public transport requires funding. In almost every case, funding is in some way government related, whether it is sourced from direct or earmarked taxes and it can be given in the form of grants, subsidies, compensation for positive externalities⁵ or tax relief. It may or may not be dependent on the achievement of specific objectives. Funding alone is a necessary component of mass transit but it alone is not sufficient.

On the other hand, financing is how you organize to pay for or finance achieving specific objectives. In the case of transport this can be policy based or commercial objectives and is usually related to large capital investments or major operational improvements such as new infrastructure, rolling stock, vehicles or systems (covering such things as signalling, real-time passenger information or new fare systems such as smart cards). Financing requires servicing in the form of the repayment of the interest due on a loan, the loan itself, and can take the form of complicated contracts (such as PPP's) and the multitude of other often complex types of accessing money that spread the financial risk and usually require the payment of third parties to set up such arrangements.

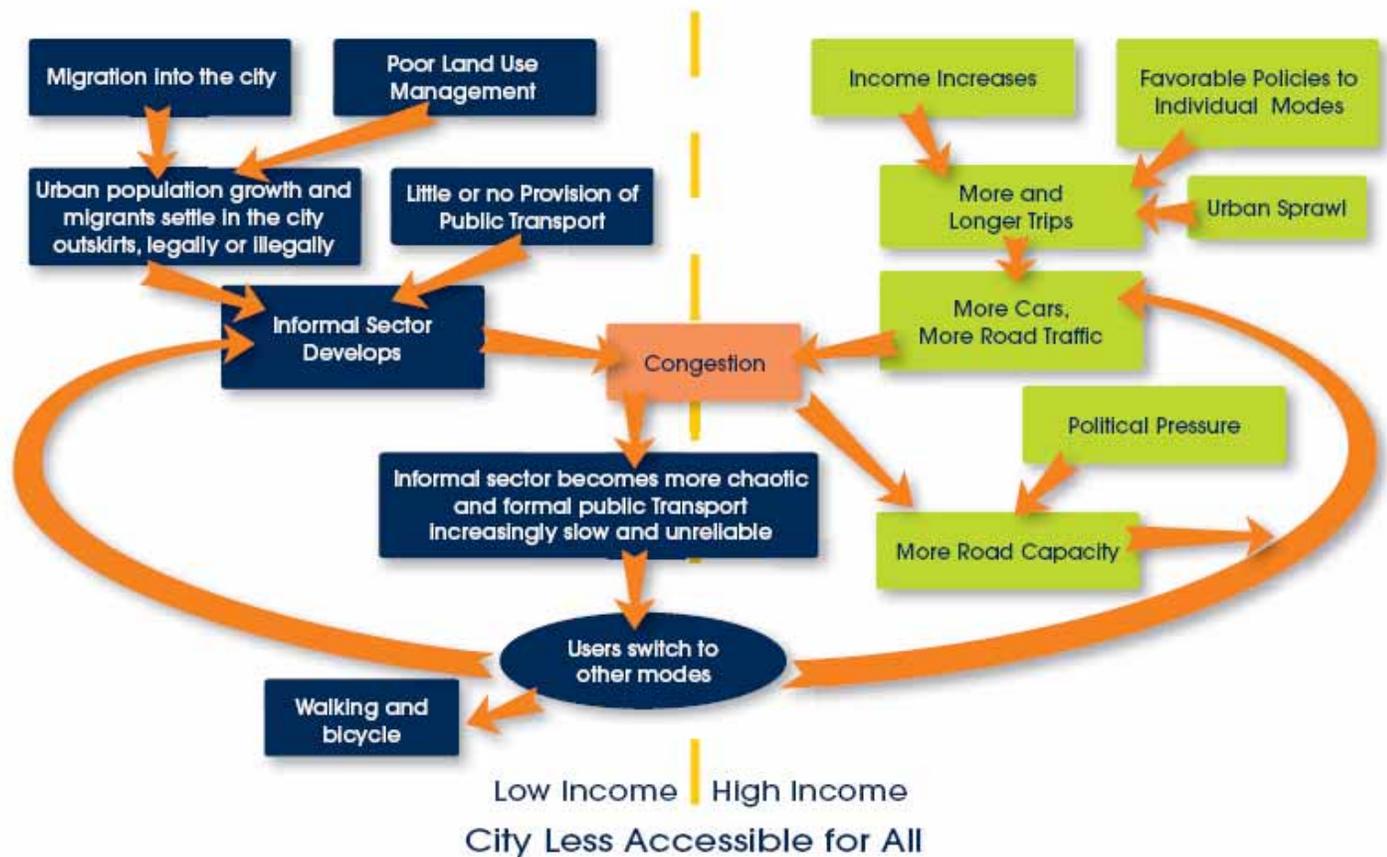
For the sake of simplicity, funding can be considered as a direct payment such as a subsidy; while financing is considered to be a form of loan which has to be repaid incrementally, in full, with or without interest. Funding usually has a social return whilst financing usually has a commercial return. In today's complex world with a focus on economic gain and the plethora of public /private initiatives the have become blurred. This may not matter for other sectors but in the case of fulfilling the social mission of public transport, these differences should not be discounted.

For the financing of public transport there are further complications. Credit ratings at national level often differ from local city ratings (which in turn are quite different from ratings for public or private companies or local institutions). Multilateral and development banks play a role here in providing more advantageous terms and periods of grace, usually at the national level. This allows greater financial stability without strangling a project with financial debt before it has time to properly establish reasonable levels of returns. Servicing privately sourced funds is also almost always more expensive than servicing publicly sourced funds.

Urban transport, in particular, suffers from time based inertia – in other words it takes several years for the full benefits of sustainable integrated urban transport to be really felt and yet it takes very little for it to return to gridlock if one small piece of the 'puzzle' is defective. This has a considerable impact on the economic sustainability of urban transport.

Successful sustainable public transport does not just rely on the relationship of demand and supply. Many different aspects, both inside and outside the transport arena, have an impact on its success and economic viability. In this graphic 'City less accessible for all' the negative effects of an unsustainable approach to urban transport, allowing the informal sector to entirely fill the gap if public transport is not properly supported leads to everyone being a 'loser'. Walking and cycling become less safe, private and public transport vehicles (as well as freight) are caught up in a vicious spiral leading to frustration, inefficient use of resources and wasted development opportunities.

⁵ Positive externalities are benefits to the wider community due to public transport, not just to those who use public transport. This usually means congestion reduction, improved local air quality, healthy life style through physical activity, noise reduction and safe travel.



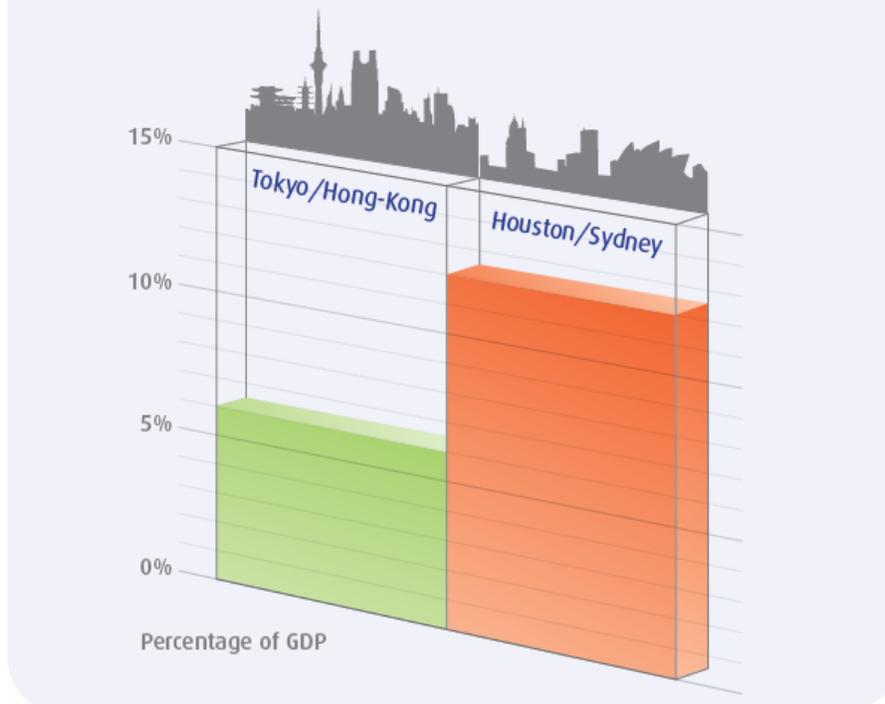
Source: UITP Better Mobility of the Developing World

In almost all cases, the ultimate success, and therefore sustainability, of most urban transport relies quite substantially on:

- the long terms vision and adherence to a system rather than a series of projects that may or may not be ideally integrated. A partly completed project that is not supported with complementary measures and policies will not deliver a similar proportion of the results promised from the whole and complete project.
- the predictability of the funding sources. Stable and predicable investment and funding has shown the best results. Certainly public transport must respond to today's changing demands and be well managed. However, if there is a gap in funding for whatever reason it is difficult for public transport systems to catch up starting a downward spiral and reduced efficiency.

UITP's Research in 100 cities worldwide (the Millennium Cities database) showed clearly that cities gain competitive advantage if they have robust public transport networks. Cities where the majority of trips are made by public transport, walking and cycling outperform those where the majority of trips are made by private car. Less GDP is wasted on the negative externalities of transport and the quality of life in terms of time spent on travel and other benefits for their citizens was higher.

In cities with a high share of public transport, walking and cycling, the cost of transport for the community is half that of cities where this share is low. The cost of transport represents only 6% of the local GDP in Tokyo or Hong Kong but more than 12% in Houston or Sydney. Such efficiency gain can be valued at around 2,000 euros per inhabitant per year.



Source: UITP Millennium Cities Database (2002)

However, it cannot be said that financial sustainability is the single component that ensures that the sustainable development objectives for the city are achieved – however, it is a necessary condition that enables them to be met. The provision of infrastructure and the economic viability of the operations obviously have important impacts on the organization of the service level and its attractiveness and not surprisingly, in turn, its economic sustainability.

What do we mean by public transport

In this paper the term public transport⁶ refers to the public service offer of transport within a metropolitan region or city area. It does not mean that it is necessarily operated by a public organisation (but this may be the case). This paper will focus mainly on the operational aspects of passenger urban transport. This includes the vehicles and rolling stock, supporting infrastructure (such as station areas, bus stops, 'last mile' services, passenger information), ticketing, operations i.e. service delivery rather than transport infrastructure provision.

For the purposes of this paper: public transport refers to the formal, more traditional organization of public transport usually rail and bus systems operated by public or private operator under a contract, franchise or other regulated scheme. It is characterised by the provision of scheduled transport services, offered by a legal company that has to adhere to an authority's regulations.

For the sake of simplicity, any other collective transport of passengers with poor or no control of its operations by an overall regulatory authority; usually characterised with an unplanned and ad hoc

⁶ Public transport also means transit and covers all road and rail based modes operating within a city or metropolitan boundary, such as city buses, minibus services, light and heavy rail (usually metro and commuter rail), and in some cases collective taxis. It does not include intercity rail or coach services.

service offer; with varying or sometimes no respect of routes; no published, clear fare structure is referred to in this paper as informal public transport. From another perspective, informal transport may also be characterized by its opaque internal management whether in financial or human resource matters. Informal transport is usually privately operated collective transport services such as minibuses and taxis (all forms) for motorised modes. To be correct many non motorized modes such as cycle rickshaws etc should be included as informal transport, as these are widespread in Asia and provide a valuable source of income for many. For the purposes of this paper, the term informal transport refers to motorized modes only.

One of the real problems in creating a viable economic model for sustainable urban transport is precisely illustrated here. The provision of seamless journeys that are not based on a car required a substantial number of actors and each one has to provide an efficient link in the transport chain – be that in the provision of convenience and service at affordable price, full journey coverage across different modes and all this has to be ‘overseen’ by a competent authority with the skills and resources to ensure that these actors deliver to citizens what is promised and responds to their needs. The larger the surface area to be covered, the more important it is to have a strong and competent organising authority (or authorities).⁷

There are obvious difficulties to include all kinds of what is usually called “informal transport” under a single category, because of the large number of variations in its definition and the different levels of enforcement of existing regulations on the ground. And in some places the reality is somewhere in between.

Different actors – different roles in financing urban transport

Paying for public transport in its many forms comes from various sources such as:

- Local or regional administrations, governments or institutions;
- National and regional governments;
- Local taxes;
- Private sector, public /private entities created under special regimes or around specific projects for infrastructure development, operation, maintenance or other service provision;
- Donors/international organisations usually in the form of Official Development Assistance (ODA) and can take the form of support for project planning, implementation, technology and knowledge provision. This is usual for the first few years of a project before it becomes the full responsibility of the local actors.

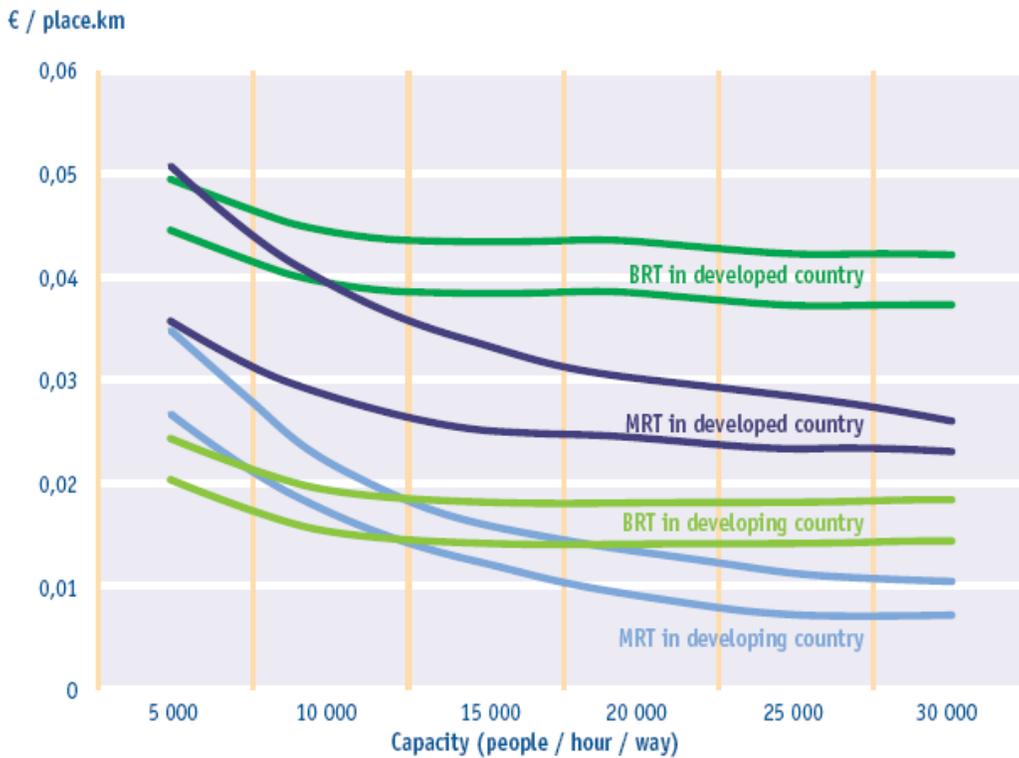
Different levels of public authority (central, regional and local) play differing roles, ranging from capital investments to regulations and planning. In much of the developing world, national and local interventions are organized under different political or institutional regimes, which often lead to a lack of coordination. There is also a tendency for investments to be channelled into certain modes of transport rather than into an integrated transport system to provide mobility over an area. For example, rail is often centrally supported while bus systems are more often locally organized.

In most cases, but not all, capital investment in infrastructure is separated from operations. There is a less clear definition on some larger investments such as the purchase of vehicles and depreciation that might be included in some cases but not in others.

This argument is often used to compare rail and road based systems such as metropolitan railways (usually underground) and BRT systems. There can be no denying that tunnelling and the systems required for running a modern underground are rather expensive. But there is also a huge difference in life cycle costs between the different modes – an underground or light rail system has a much longer time scale requiring little further investment for a period of as much as 30 years, whilst a BRT

⁷ More information on the role and structure of organising authorities can be obtained from UITP via several publications (in hard copy and CD-Rom) in particular on Tenders and Contracts available from the UITP website in various languages www.uitp.org

system will need major resurfacing and other maintenance after as little as 3-4 years. Staffing of the two systems are quite different as well. With this in mind, urban transport should be developed as a system rather than as a result of a series of mode based projects that might manage to link together sometime in the future. Staffing requirements are also quite different.



©Systra. Source: *Stratégie de mobilité durable dans les villes des pays en développement. (Sustainable mobility strategy in cities in developing countries.)* MEEDDAT. CERTU. (2008)

Operating costs (with amortization) based on GDP

The financing of public transport operations is based, in general, on a combination of:

- the fares collected;
- specific compensation for concessionary fares and social/regional obligations;
- other commercial revenue (advertising, property rentals etc.) and
- any further remuneration or subsidy given by the public authority(ies) to enable the required levels of service to be achieved.

Cost coverage of operations

Setting the issue of transport infrastructure aside, in general, it is difficult, if not impossible, to fully cover the financing operations of public transport entirely from fare box revenues. Operational expenditure includes staff, fuel and electricity costs, day-to-day maintenance and administration costs. In the provision of formally organized public transport information on the cost coverage is usually available, however, there is little real data available from the informal sector – so how can efficiency and economic viability really be understood or properly compared?

The coverage ratio of expenditures covered by fares can differ greatly from one situation to another, but in much of the developing world, fares are kept low for formal public services to comply with the social nature of public transport, and therefore it makes it more difficult to achieve economic viability without substantial financial support. The private sector in some cases are able to set the price of their fares (taxis are sometimes regulated) but in many places, minibuses or motorcycle taxi services price tickets according to their commercial needs. Sometimes there is an added dimension with a

strong influence of locally organised groups that self regulate these services, in some case this borders on an almost criminal level of pressure.

CASE STUDY

Turning a loss into a profit through good management principles

Bangalore, India is India's 5th largest city with a population of 5.6 million. In 1998 the Bangalore Metropolitan Transport Company operating some 5400 buses on 5191 routes was making substantial losses. A series of reforms and cost cutting activities turned this around into a profitable financial situation by 2003. This was in part due to the introduction of IT systems improving productivity and reducing waste, a streamlining of maintenance and outsourcing some services and most importantly restructuring the fares and an introduction of weekly and monthly passes. This provided more stable revenue streams and the sales of these tickets quickly soared and now provides more that fifty percent of fare box revenues.

BMTC - A Story of Positive Transformation

(From 1998-99 to 2007-08)

A series of reforms initiated

- Structural reforms
- Strengthening of Infrastructure
- Fleet modernization
- Augmentation of services
- Revenue mobilization measures
- Improvement in Systems and Processes
- Extensive use of IT
- Cost minimization measures
- Transparency in HR policies
- Outsourcing of activities with PPP



Average fare cost coverage

UITP⁸ carried out research in 50 cities world wide (Mobility in Cities database⁹) mainly in Europe with some notable cities in the developing world e.g. Sao Paulo with data for the year 2001) and found that the coverage rate of operating costs by revenue is on average 60% and that the average costs of exploitation i.e. direct operations, maintenance and service delivery was 3.3€ per km.

⁸ UITP – Union International des transports publics (the international association of public transport) is the representative body for public transport world wide.

⁹ This data base with its cousin The Millennium Cities Database (100 cities) provides worldwide city wide validated data and is almost unique in the world. Available from UITP www.uitp.org

Around the world

The average cost coverage for operations from fares in Europe is 52%¹⁰. In France 25% is the national average. This varies between 33% in cities of over 300,000 and falling to 21% in towns of less than 100,000¹¹. It is somewhat higher in Paris itself. The system of 'versement transport', a tax paid by employers has kept fares low.

In Germany cost coverage has grown from 59% in 1992 to a national average of 77% (2007) whilst (in the main) retaining service levels. In some large cities such as Munich and even some smaller ones such as Leipzig between 80 -95% costs are being covered. This has required major efforts to reduce costs from within the organization (wage freezes, renegotiated labour contracts, increased working hours, reduction in employee benefits, more outsourcing and organisational restructuring etc as well as complementary policies and measures set at national, regional or local government level.

30% is the average in North America¹² with some notable exceptions such as Toronto Transit Commission, the third largest transit system in North America after New York and San Francisco, with metro, streetcar (tramway) and buses operations now achieves 69% cost coverage.

It is not always easy to compare cost coverage as there are no standard ways of accounting and so they do not always mean exactly the same things and additionally it varies across modes and countries. For example, it varies if the operating company owns the right to use the infrastructure (usually in rail) and/or own or just lease the vehicles and rolling stock, the treatment of depreciation, the allocation of financing costs, whether charges are applied for the use of such assets as stations or other interchanges. As a result there are wide differences in the requirements for and the form of funding public or private based operations.

However, it is an undeniable fact that outside financial support is required, in almost all cases, to fill the gap between income from passenger fares and overall costs of operations (usually including maintenance). Outside support also has to cover infrastructure costs and in some cases other capital investment e.g. vehicle or rolling stock purchase or lease. A notable exception is the MTR Corporation, Hong Kong, which is able to cover both rail infrastructure and operations (see example later in text).

However, these shortfalls should not be interpreted in itself to mean that a company is inefficient or non-viable. It only reflects the fact that fares and service levels are set with specific policy objectives in mind, rather than only for commercial profit.

There are examples of financially stable public transport operators from less wealthy developing nations and the recent increase in profitable private international operating groups mean that money can be made from public transport operations.

CASE STUDY

CURITIBA, Brazil: a multimodal management of public transportation, without public subsidies

Curitiba was the first BRT (Bus Rapid Transit) system to be introduced and has been highly successful. Fares cover all of the operating and maintenance costs of the Integrated Transport Network (Rede Integrada de Transporte, RIT). Private operators run the city and BRT (Bus Rapid Transit) services in the city and surrounding towns within the metropolitan area,. These service levels are organized under a transport authority URBS owned by the Curitiba municipality.

¹⁰ Source SPUTNIC – European funded project www.sputnik

¹¹ **Who pays what for urban transport – a handbook of good practices.** compiled by the "Agence Française de Développement" (AFD) and the French Ministry of Ecology, Energy, Sustainable Development and the Sea (MEEDDM). Available for download from www.codatu.org

¹² Source APTA Fact Book

This authority approves the routes, collects the revenue and redistributes it among the operators according to the type of vehicle and the number of kilometres covered, (not the number of passengers transported) avoiding rivalry between operators. The discount or concessionary fares given to the elderly and students are not borne by public funding. The cost of these concessionary fares comes out of the full fare price which was increased by 16%. Despite this the cost of the fare remains average to low compared with fares in Brazilian cities (2.20 reais i.e. €0.80).

Approximately 38% of journeys are made on the transport system under the 'Vale Transporte', a form of financial assistance paid by all employers to their employees when the cost of transportation exceeds 6% of their salary. Furthermore, to enable all inhabitants to use public transport for leisure purposes or shopping, URBS has implemented a reduced fare (almost 50%) for everyone on Sundays, when the shops are open.

All levels of governance have different roles to play. Urban transport has suffered in the past as it was thought to be a local competence and there was little support from central governments. This has led in many cases to a 'disconnect' in transport infrastructure. For example new infrastructure built to link major centres will stop abruptly at the city boundary. Local government certainly understand the local needs best but help is also required in most cases to properly address the challenges they face. Central governments start to comprehend that if urban transport is not well organised the development of the whole country can be put at risk. In this context, central governments, local authorities and other bodies, including the private sector, must therefore make finance available to deliver public transport for economic, social, transport and environmental reasons.

CASE STUDY

Jawaharlal Nehru National Urban Renewal mission (JNNURM), India

According to the 2001 census, India has a population of 1027 million with approximately 28% (285 million) people living in urban areas. Urban populations are expected to increase to about 40% of total population by the year 2021. By 2011, it is thought that as much as 65% of GDP will come from urban areas, however, this higher productivity is contingent upon the availability and quality of infrastructure service. The Ministries of Urban Development and Urban Employment and Poverty Alleviation, Government of India put together [JNNURM](#), with Rs. 50,000 crore (\$11 billion equivalent) support for urban infrastructure development and the provision of basic services to the poor in 63 of the largest cities in India. The mission period lasts seven years, 2005-2012, and nine sectors including urban transport. The thrust of the JNNURM is also to ensure improvement in urban governance and service delivery and therefore envisages a set of mandatory reforms at state governments and local urban levels as a prerequisite for accessing the fund. Capacity building and the creation of integrated master plans for urban transport can be supported. This has stimulated an interest in metro and BRT projects across India. In the second phase support for equipment such as the purchase of buses to support the operational side of mass transit, which is often a missing component from central funding, is included.

Different models from around the world

The purpose of this paper is to outline some of the different forms of financing and funding mechanisms used for public transport operations rather than for major capital investments such as infrastructure, and to consider the measures required to ensure that the maximum benefit is obtained from such funding. Unfortunately, or maybe fortunately, there is no 'one size fits all' magic formula and over the last twenty years there have been numerous new approaches.

The traditional rather narrow perspective of public transport based on the provision of a basic transport service for social good is no longer adequate or realistic in today's modern world. A new approach is required as public transport benefits the wider community irrespective of income or social status. A first step might be to quantify more precisely the negative aspects of individual car dominated transport and the benefits that a sustainable transport system using a wider set of criteria that includes the environmental, social as well as the economic aspects. This would bring a higher acceptance of the monetary value of investing in public transport systems overall.

In any event sustainable urban transport can only develop over a period of time. Here it is important to take decisions today that can be adapted to needs in the future. Much of the cost of any urban transport project is the acquisition of land – and therefore if provision is made for this early on – whether it is a BRT corridor that later could be adapted to a metro or light rail – it is important to have the backbone of your sustainable transport system protected for future generations, both physically and economically.

A very basic **definition** of financial sustainability is one when costs are balanced with expenditures, in other words when total incomes is equal to or exceeds spending, including provision for the future.

In much of the developing world, despite the growing levels of motorisation, the majority of trips are still made using sustainable modes. The problem is that these modes do not have a good public image..

A better understanding of how to fill the funding gap and yet move away from a pure subsidy emanating from public funds between revenues and costs towards a more holistic view on a compensation model based on the polluter pays would seem to be a more equitable system. At present there is no reward for 'good behaviour' at citizen level and therefore little incentive to retain this behaviour. With those taking the most sustainable modes (walking, cycling and public transport) suffering most from the negative effects of traffic that they are not associated with.

The creation of jobs from public transport is often forgotten in any cost benefit calculation, yet these jobs can be considered rather sustainable and 'green'. They are local and can never be outsourced, and each euro or dollar invested generates wealth in the local economy is difficult to have figures for Asia, but in Europe over a million jobs can be directly attributed to public transport and each job generates between 2 and 2.5 indirect jobs on average.¹³ In countries where there is high investment in organized public transport such as Switzerland this increases to four.

The recent introduction of Rea Vaya BRT and reform of the minibus sector in Johannesburg South Africa has improved the stability of employment. Minibus taxi drivers incorporated into the system now have improved working conditions and many of them earn more than 20% when compared to the average earning of those who earn a salary¹⁴.

The good news is that this is still possible in many countries, and indeed it will be critical for them to avoid building a future based on cheap oil which we already know will not last for ever.

Examples of ways to fund urban transport

From a wide range of local and national contexts, many original mechanisms have been developed: taxes on employers and business activities, betterment taxes to capture land value increases in areas served by public transport systems, and road infrastructure and parking charges. Depending on the context, these mechanisms associate different levels of public institutions, sometimes the urban transport authorities, but also private actors, especially in the context of public-private partnerships.

¹³ UITP position paper December 2009 – Financial and Economic crisis – the situation of public transport sector in EU 27.

¹⁴ TransAfrica EU funded Project led by UATP, African public transport association: <http://www.uitp.org/knowledge/projects-details.cfm?id=444>

Their goal remains the same: the continual and efficient development of urban transportation and its sustainable adaptation to the city's growth.

There are new and emerging streams of funding linked to a carbon constrained world such as the financial mechanisms linked to the Kyoto Protocol or the more recent Copenhagen Treaty do not yet look promising for funding sustainable transport. At present most carbon related mechanisms are not well adapted to the transport sector and the few successful examples of either the Clean Development Mechanism (2 approved projects) or Joint Implementation (0 projects) demonstrate this. The newer Nationally Appropriate Mitigation Actions (NAMAs) might be prove to be the most promising source but they are not yet funding any transport projects. Barriers include the requirements to measuring the mitigation potential of policy actions (and the associated incremental costs), together with the lack of data to allow the measurement, reporting and verification of mitigation actions. Some carbon crediting mechanisms (such as the CDM) also suffer from large transaction costs and the fact that national rather than local actors are in general more interested in these approaches¹⁵.

Comparing different modes and funding schemes

It is important to have a vision of the type of urban transport system in order to be able to find the right mechanisms to fund it. There are benefits and drawbacks with all choices.

Bus Rapid Transport (BRT)¹⁶ is often compared with metros and light rail systems, and promoted as being the 'best' option for many cities in the developing world. This needs further attention as one needs to be sure that correct comparisons are being made.

How much do you need?

On the basis of international comparisons of cities in developing countries, the funding of a metropolitan area's urban modes of transport requires between 1% and 2% of its GDP to cover spending on urban road investments, public transport investments and operating needs.

Examples:

- Teheran's transport plan (2005/2006) recommends 1.2% of the municipality's GDP to be invested in public transport between 2005 and 2016.

- In Greater Cairo, the Master Plan for Transport puts forward a public transport investment of 1.7% of GDP for the period between 2002 and 2022.

Source: MEEDDAT. CERTU. Stratégie de mobilité durable dans les villes des pays en développement. (Sustainable mobility strategy in cities in developing countries.) Systra (2008).

Structure and organization affects financial sustainability

The provision of formal public transport becomes even more complex when no single authority has the task of managing urban modes of transport at region, city or metropolitan area level. This is sometimes the situation for large and is often the case for medium sized cities across the developing world. Either that or there are overlapping responsibilities or gaps across agencies that lead to confusion and many levels of bureaucracy and make it difficult to pass any legislation or reforms that would benefit the transport systems. In some countries tax revenues for motorised transport is still inadequate and vehicle registration fees (as well as inspection and maintenance) is lacking. If the required data and taxes are not collected, it makes it doubly difficult to understand the situation and make informed policy development that would achieve sustainable transport goals. It means that those taxes cannot be allocated to the provision of public transport – the citizens are almost obliged

¹⁵ More and updated information can be found on the Bridging the Gap web site www.transport2012.org

¹⁶ BRT is when a bus is operated with many of the same features as a metro such as exclusive dedicated corridors, off board ticket payment, station and branding. There are many versions of BRT such as high, quality bus services, BRT lite where some of these features are in place but not all.

to use the private sector for their mobility needs if they do not have a car. This may work for smaller cities but any city over 1 million needs a more formalized approach to create sustainable systems.

Central support for local delivery of public transport is required until the structure and organisation can be considered to be mature and self supporting.

Example : In Brazil, the Ministry for Cities funds urban transport through three specific programmes:

- the “Urban Mobility Programme” supplements funding from municipalities and the federal states. The programme receives government funding and aims to promote the coordination of transport, traffic and accessibility policies. It prioritises public transport systems, non-motorised forms of transport and accessibility;

- Pró-Transporte with funds from the “workers retirement fund” (around €340 million in 2008) is particularly targeted at cities situated in the country’s poorest regions. It funds engineering studies, public transport investments and developments for pedestrians and cyclists in cities which have established or are in the process of establishing a transport master plan;

-PRÓ-MOB (Programme for the funding of infrastructure for urban mobility), which is managed by the national bank for economic and social development, is open to municipalities and promotes work which favours the introduction of transport projects to depressed urban areas.

Fare policy is also key to the financial sustainability of public transport. Without formal, organized public transport it is impossible ensure that it remains affordable for those that need it most, usually the poor. Citizens are held ‘hostage’ to maintaining the profit margins of private operators as fares can vary according to markets. This was clearly seen when the price of oil fluctuated and fares changed almost on a weekly (sometimes daily) basis and many ‘penny wars’ were created between private operators for the same route.

In addition, it is also impossible to introduce integrated ticketing that is important for seamless door to door mobility and making public transport a mode of choice. A passenger travelling across town would have to pay a single fare for each leg of the journey whilst with an integrated ticket only one payment is required.

CASE STUDY

LAGOS, Nigeria – making formal public transport more attractive than informal

With more than 15 million inhabitants, Lagos is one of the largest cities in the world, and its population is growing rapidly at a rate of nearly 6% per annum.. The rapid growth of the private vehicle fleet, combined with reliance on commercial vehicles and motor- cycles (locally called molues, danfo, taxis, okada etc.) has resulted in this extreme traffic congestion and a poor quality of public transport. Deteriorating conditions of the road network compounded with congestion, high levels of pollution and serious numbers of traffic related accidents is severely hampering the development of the city and the working and living conditions of its citizens.

Before the implementation in 2008 of the Lagos Bus Rapid System (BRT-Lite), public transport in Lagos could best be described as chaotic, inefficient, expensive and unsafe. The implementation of Phase one is a 22 kms mostly segregated corridor (conception to operation) was delivered within 15 months at a cost of 1.2 million €per km, far less than usual for BRTs. It is referred to a ‘BRT Lite’ as it does not have fully segregated lanes or some other features normally associated with a BRT.

This success was achieved through some important steps:

- Establishment of the Lagos Metropolitan Area Transport Authority (LAMATA): in order to provide consistent planning, address the present transport problems and efficient implementation of policies. LAMATA has the overall role of coordinating the transport policies, programmes and actions of all transport related agencies and of implementing and managing public transport services in the Lagos metropolitan area. The Lagos State government also established in 2003, with the support of the international backers, the Lagos Urban Transport Project (LUTP), an executive agency for urban transport.
- Implementation of an appropriate regulatory framework: In 2007, LAMATA was successful in passing the necessary regulation through to improve transportation in Metropolitan Lagos and introduce franchises for routes. It empowered LAMATA with the tendering of exclusive operating rights for specific transport services on defined routes or within geographical areas.
- Construction and implementation of the BRT: The franchise arrangement was applied to the BRT corridor, stipulating that it was the Lagos Government's responsibility to provide the operating infrastructures (corridors, terminals, shelters) in good condition while each operator was responsible for the purchase of his own vehicles and for the profitability of their operation. LAMATA was also committed to cover some areas of the public transport management as regulation, route planning and operational methodology.
- Synergy with all local stakeholders: LAMATA provided to the incumbent operators and 'Unions' the opportunity to visit successful BRT systems in Latin America via study tours and held regular meetings to exchange and share the vision of the reform. This component of reform should not be neglected as the incumbent operators (and often the local government and civil servants having to implement the projects) have little possibility of really understanding the reform proposals unless they have travelled widely internationally.
- Massive use of all media to communicate on BRT operations: one of the methods used was TV/radio talk shows/discussion programmes promoting BRT ("the BRT hour"). In this weekly programme, senior officials from LAMATA discuss key issues pertaining to the operations of the BRT scheme. Were also developed appropriate jingles and television commercials for campaigns on agreed corporate and thematic subjects.

The indicators used to assess the impact of this new policy demonstrated a significant improvement of the mobility along this corridor from the previous system to the new one. Hereinafter are described the main impacts found:

- Following the introduction of the BRT, the number of collective transport vehicles (bus) on the corridor was reduced by 35% whilst retaining the same number of passengers carried.
- Significant service improvements included 35% reduction in travel times, 55% reduction in waiting times (rising to 73% at peak times) and the fares were 30% cheaper than previously.

Benefits to the city:

- Formalization of the informal operators reducing the number of actors involved.
- Improved safety and reliability
- Fuel consumption fell by 32% for vehicles using the corridor or 25 000 tonnes of CO2 per year being avoided.
- 40% of the local businesses said that the introduction of the BRT was beneficial and among them 35% actually quoted a profit increase

Benefits to the operators

- solid business case with the possibility to buy new vehicles (recovery rate over 3 years 99%)
- training and better management that benefitted them across all their operations
- more satisfied customers fewer 'problems' and regular, predictable fare revenues

Source: TransAfrica

Through different kinds of weekly and monthly passes, a discount is often given to frequent users compared to those users who purchase a single ticket. Such passes help to build the loyalty of users and increase occupancy rates. Experience has shown that any temporary drop in revenues (as the unit price of the trip drops) are usually quickly replaced. Special pass fares are very often targeted at certain customer groups: pupils, students, the unemployed, senior citizens, etc. for whom there is a political will not to make them bear the cost of transport. There may also be commercial policies aimed at students, for example.

Weekly, monthly and annual tickets are widespread in Europe and offer an average 60% discount per trip compared to single trip fares. This makes it economical and convenient to use public transit on a daily basis and as an irrespective of whether you own a car or not. In fact, German public transport has successfully expanded the share of passengers using these type of passes from 60 percent in 1992 to 76 percent in 2007 (VDV, 2001–2008). In some cities over 90 percent of passengers rely on monthly and annual tickets. Indeed without the high number of school children using regular public transport passes many rural services would not be possible at all.

Weekly and in some places monthly passes are less well established and there are few annual passes in the USA. However contracts with universities and employers are frequently made giving as much as 90% reductions over single fare tickets as long as all the students or employees are included in the arrangement. This works as not all of them take up the pass although it has been paid for.

Reasons for supplementary Financing of Operations

Operational support is required to provide levels of service or specific additional services which provide an important social function but are unlikely to be profitable (such as night services, services for handicapped persons, rural services, etc.) and/or to provide lower fares than would otherwise be possible.

Such measures may be intended to:

- (a) redress the competitive balance between public transport and private motoring (the free use of the road network, external costs, etc.) and thus to encourage a shift of demand away from the private car;
- (b) facilitate access to essential services (shopping, education, health, etc.) by those who do not have access to a car. This includes concessionary travel, either free or discounted, for deserving groups of people such as the elderly, people with physical disabilities or learning difficulties and children. This has become possible even for medium sized communities as advances in information technology are made.

Indirect Sources of Funding

The alternatives to direct funding by the user can be considered under three main headings:

- **Polluter Pays:** those who cause a problem compensate for the cost imposed on the community. The compensation paid may then be used to fund alternative, less polluting forms of transport

The proceeds of the *German Mineral Oil Tax* (Mineraloelsteuer) to fund public transport, environmental taxes on the use and ownership of cars and parking charges (if they are used to fund public transport). Between 1971 and 1987 a fuel tax of 3€cent/litre was levied on both diesel and

petrol. Since 1987 a amount between 1.3 and 3.4 billion € (level set by government) from the fuel tax is put aside for transport investment. Around fifty percent of this is allocated to public transport improvements.

On the one side this creates a relatively stable funding stream and is especially useful for local governments to be able to co finance larger infrastructure projects, new rolling stock and IT equipment. On the other public transport was excluded from any extra investment from the government in its recent economic recovery package.

- **Beneficiary Pays:** those who gain benefit from a service meet its costs. Thus employers and retailers both gain from the provision of public transport services which give them access to a wider labour-markets and retail markets respectively.

The French Transport Tax (*Versement Transport*) introduced in 1973 requires employers with more than nine staff to contribute towards the cost of public transport investment and operations in their area. The rate is based on a percentage of the total of all the salaries of employees in the company and varies from locality to locality. The percentage depends on the public transport service offer and the distance of the employer from transit. The average is about 2.6 % in the Paris region (Ile de France) and 1.2% in the rest of France. In addition, in the Paris area, employers are obliged to reimburse to their employees half the cost of the public transport season tickets.

This funding stream covers nearer 50% of public transport operations in Paris where the majority of jobs are and means the local government has to make a smaller contribution to 'fill the gap'. Outside Paris, in less well patronised systems it covers 40-45 percent and a similar percentage needs to be found by local government.

The '*versement transport*' has been very helpful in helping to revitalize public transport since the mid seventies. The tramway has been a primary beneficiary of this funding stream. But it is vulnerable on two main counts – firstly in a period of economic downturn there are fewer jobs and salaries are frozen – just when public transport is most needed. Secondly it obliges local government to keep public transport fares artificially low and it is not publicly acceptable to raise them in line with increases in operational costs such as fuel.

- **General Public Pays:** through national and local taxation, whether or not they are public transport users. This is normally the principal source of external funding.

US model for operational exploitation

In the United States most of the capital investments (in terms of infrastructure, rolling stock and new vehicles) for mass transit comes from central government and each state can set aside a proportion of local sales and property taxes to fund the operational costs of transit systems. This system has the disadvantage that these revenues vary according to the local economy. In times of economic downturn as has been the case for the past few years, and when more people use and need transit most, revenues from these taxes have dropped by as much as 20% in some cases. In the recent economic downturn 84% of the members of the American Public Transit Association have had to cut services and lay off staff and workers.

Within these general mechanisms, a wide variety of possible sources of funding can be identified. Central, regional and local governments may each be involved in financing public transport. Each country varies in how this is put in place – but taxes must be paid and if they are not collected then the community suffers.

Where informal public transport is dominant this can be a major stumbling block, but reforming it is easier said than done. Here learning from experience in Africa (as in Lagos and Johannesburg) could be appropriate for some Asian countries that have a similar situation where informal transport dominates. Clear incentives include franchise agreements for routes, scrappage schemes and support for vehicle renewal as well as capacity building in management and financial controls.

CASE STUDY

DAKAR, Senegal - Professionalising the informal sector

The city of Dakar, capital of Senegal has pioneered specific policies to professionalise the informal transport sector with the introduction of a fleet renewal programme for the private operators but supported by public funding.

As in much of the rest of Africa, public transport in Dakar is dominated by the informal operations of minibuses locally known as “Cars Rapides” and “Ndiaga Ndiaye”. Their exact number is unknown. The ageing fleet is usually in poor condition with a service provided within a dense network with relatively low unregulated fares and erratic and poor quality service levels. The operators usually are owner /operator but may own as many as four vehicles. They are usually able to cover their operating costs but drivers’ salaries depend on how many people they transport and the operator/owner does not include any financial planning to provide for good maintenance or vehicle purchase to renew the fleet, leading to a gradual drop of the public transport offer.

This obviously leads to a certain dysfunction in the transport system which can be summarised by the following :

- lack of information and data on the market with the exact number of collective transport vehicles unknown (a past survey estimated the informal operators to be around 2500 in Dakar with each operator /owner having around one vehicle)
- very old vehicles (average age was 28 years) with high levels of pollution and a lack of road safety
- inefficient operations and intense competition (‘penny’ wars where operators will fight to attract clients)

The following steps were made to reform the sector and deliver better public transport.

- i) The establishment of a regulatory body: The Executive Council of Urban Transport in Dakar region (CETUD) responsible for the organization and regulation of the urban public transport of Dakar
- ii) Creation of viable entities: the operators were invited to regroup into formal and viable entities called “GIE” (economical gathering of operators). 13 GIE were created.
- iii) Renewal of the fleet: the vehicles to be used in the new operations were technically specified and locally built. Some loans were granted to the GIE for their fleet renewal and the members of the GIE were collectively responsible for the payment back of the loans.
- iv) Formal concession of the operations through contracts signed with the public authority including strict compliance with the basic rules of public transport operation and management. In particular, the operators were compelled to respect the routes, bus stops and fares set by the authority.

The incentives for the individual operators to join the GIE were based on capacity building and financial incentives. Staff members of the operating companies were trained and technically assisted in operational and financial management of the companies. Secondly the set up of the loans to buy the new vehicles (only one type of locally specified vehicle could be bought) at more advantageous rates than high street banks. These loans were underwritten by the GIE and the city. Most of the operators were not in any position to take out loans from the banks as they had little collateral but via the GIE this was made possible. Recovery rate was over 90% and often within the 3 year period.

Among the number of significant achievements attained through this policy, the following should be noted:

- The clustering of a multitude of operators into only 13 “GIE”
- Enhancement of the service to the users: including doubling the commercial speed, decreasing travel time and increasing the regularity of the services, increasing the fleet availability by 30-40% (from 60-65% to 85-90%)
- Improving the attractiveness of public transport and customer satisfaction
- Operations shifting from a simple license to contractual route franchises signed with the public authority including the respect of formal bus stops.
- Creation/consolidation of 2000 direct stable jobs with formal contracts and insurance coverage
- Better follow-up of the operating revenues and costs: improving the profit margin for all routes
- Increased transport environment: with the construction of safe terminal facilities and bus stations available for the routes contracted
- Clear and transparent accountability of operators with effective payment of various taxes
- Secured incomes: improvement of the turnover. All the minibus lines renewed show significant positive profit margins

In practice, funding of public transport involves a combination of different mechanisms. But this poses quite a problem for developing cities who do not have the local competence or experience in the creation of complex financing mechanisms. It may only be possible to “capture” the benefits to other parties through tax measures (for example the French Versement Transport).

Tolls, User Fees and Road Pricing

Road Pricing schemes may contain elements of both the Polluter Pays and Beneficiary Pays principles. The vehicles that cause congestion pay a fee to use the roads, but they also benefit from less congested roads. The proceeds of road pricing increasingly provide a source of income for investment in transport. In the right conditions and if there are viable alternatives, they also offer the benefit of providing a “push” measure helping to encourage modal shift to public transport and thus increasing public transport fares income. This is the case of the congestion charge in London, introduced in 2005. The proceeds are earmarked for public transport improvements. Although this has been done in Singapore for many years, its introduction in London brought renewed political interest.

Several schemes have been put in place since then such as Stockholm, Sweden (where the proceeds are not earmarked for public transport improvement) and Milan, Italy (whose Ecopass is based on the environmental performance of the vehicle and part of the proceeds will retrospectively be invested in public transport improvements. But other improvements are planned in connection with Milan hosting the 2015 World Expo so this is difficult to estimate how much of the revenues from the Ecopass are channelled in this way).

Developments in information technology has enabled this to become a reality. Today these systems are still rather expensive and require stable political and economic landscapes to be fruitful, but this will certainly change as prices become more affordable. Seoul, Republic of South Korea has implemented tolls and road pricing on the tunnels leading into the city. Fees are collected electronically and voluntary ‘no drive’ days are also encouraged.

Urban road tolling and cordon pricing is also difficult to make publicly acceptable without a strong alternatives being available. Therefore they are less easy to implement in many Asian cities if there are limited or low quality public transport available.

Additional finance can also be raised from schemes such as workplace parking levies. In some countries legislation is in place which enables local authorities to charge companies and organisations for each commuter car parking space provided in a specified work place. The revenues raised should be reinvested into public or other sustainable local transport, and the flexibility to tailor the scheme specification as required means that exemptions can be made to certain types of employees or vehicles. Workplace parking levies as part of new developments can be implemented relatively easily as revenues can be generated after a relatively short period of time, but they can also meet with a

certain resistance from developers or suffer from local political interests. Their ability to act as an accepted revenue raising tool is strongly linked to whether the transport improvements that revenues are invested in are seen as being tangible and there are noticeable improvements.

In countries where public services are not widely privatized the use of cross-subsidy from other sectors to support public transport is possible. It has become rare in most of Europe and it is uncertain how long this practice will continue. Only in Germany is it still common, where it is principally achieved by the internal transfer of profits from other public services, such as electricity, gas and water, where these and public transport are provided by a single City Public Services undertaking (Stadtwerke). Cross-subsidy within public transport networks, where different modes are operated under one holding or management structure, is however commonplace. It has allowed many cities to maintain a high quality, fully integrated network (bus/rail operations). A strong institutional structure and common city wide goals are required for this to work, as well as a high level of trust between actors – but the benefits are also clear as German public transport is renowned for its high quality service even in small and medium sized cities.

Contributory and other 'commercial' revenues are essential components of a public transport network – and indeed of operations in many major industries. Public Transport operators should be allowed to determine how to deal best with these activities. Public Transport operators should also be allowed to benefit from profitable supplementary activities, such as tourist transport, real estate, advertising, etc. For example, in Taipei, 10% of the Taipei Rapid Transit Corporation income come from supplementary commercial activities; and JR East (operating a large part of the Tokyo system) has a wide service and product portfolio run by wholly owned or partly owned subsidiaries that cater for the wide range of needs of their travelling public and benefitting from creating commercial opportunities from the large numbers of people passing through their station complexes.

Indirect beneficiaries

In order to capture the full value of public transport, it is necessary to determine who is gaining in financial terms from it being there. It is not only the users of the system that benefit. For example, companies whose employees (and clients) are able to get to and from work more easily via the system are benefitting, without any effort or cost to those companies. They are benefit financially from the presence of that transport offer. In the main this approach applies most to rail based or quality bus systems (high levels of service or BRT). This is part of the 'selling' proposition in Hong Kong for their 'rail property model' and in the case of France, where firms are obliged to contribute to the funding of the investment and the system's operation through a tax on payroll ('Versement Transport').

Contributions from employers also includes assistance to employees for the purchase of season tickets (widespread in much of Europe such especially France, Belgium as well as the Vale Transporte social ticket in Brazil) and the development of Green Travel Plans, under which local companies sponsor, inter alia, developments such as service increases, publicity campaigns, and improved public transport access.

Other contributions can include extra taxes from business and individual households. This is sometimes called a 'betterment tax'. For example in Dublin, Ireland, inhabitants who benefit from the new tram line have to pay an additional tax because the real estate value of their property has increased due to tram. In the case in Doula, Cameroon where there was money allocated for road maintenance and repair from regional funds but it took a long time to come through. Some more enlightened local chambers of commerce therefore agreed under certain conditions to advance monies that could be used to repair or maintain roads to reduce the risk of breakdown or damage due to poor road surfaces of city buses or, in some extreme cases, able to continue services. These loans were repaid when the government money came in. Companies quickly understood that they were losing money themselves if their employees could not make it to work or could no longer afford to come to work!

Public-Private Partnerships

Public Private Partnerships (PPP) can be defined as any medium-to-long term relationship between the public and private sectors, involving the sharing of risks and rewards, multisector skills, expertise and finance to deliver desired policy outcomes¹⁷.

Public /private partnerships (PPP)¹⁸ are favoured by many as being *de facto* better than a public body for delivering public transport. However, too often the debate surrounding the involvement of the private sector has been polarized by those of the opinion that the private sector is superior in all circumstances and those that see any infringement of the provision of services for the public good as threatening. This has not been helped, and it was certainly true in the past, that traditional subsidy practices towards publically funded enterprises brought little or no incentive to improve efficiency levels or the commercial profitability of services.

Bringing in the private sector for the provision of urban transport ideally should create an environment of partnerships that take the best elements of efficiency of the private sector combined with the support of the public sector to deliver specified levels of service. Agreements with the private sector to take over operational responsibility take many different forms (e.g. net or gross contracts, or management, performance based quality partnerships). Sometimes they include compensation for fulfilling social policies (such as lower fares for school children, older people etc) and they vary considerably in complexity from relatively simple to extreme complex.

There are many examples of PPPs for infrastructure provision and a growing number of major international actors involved operations.

Principle reasons for a Public Private Partnership

- to make (additional) projects affordable when the public authority does not want to, or cannot, increase its levels of borrowing - *off-balance sheet financing*
- call upon private sector know-how, expertise and human resources
- to share or transfer risks
- to focus on life cycle cost

But in the end the key point is to ensure Value for Money!

In some cases, public authorities may also tie the payment of compensation or subsidies to obligations in terms of productivity, the fight against fraud and improvements in the quality of service by introducing a bonus/penalty type systems. In all cases and regardless of the method chosen, it is in the interest of the authorities to introduce a service agreement which lays down the rights and obligations of operators whether they are public or private.

As can be seen there can be many possible pitfalls with PPPs as each component requires experience and management skills that are not always available at local (or even national) level. The success of

¹⁷ Source: Standard and Poors

¹⁸ World Bank/PPIAF (2007) Toolkit on Market-Based Approaches in Private Sector Provision of Bus Services

<http://www.ppiaf.org/UrbanBusToolkit>

incorporating the private sector relies firmly on the capacity of the local authorities to manage and create proper partnerships. This is no so easy especially in small and medium sized cities.

Capturing value and involving the private sector

There is much debate over how increased value to property can be channelled back into helping to pay for the betterment of public transport. This is often referred to as Land Value Capture. There are 3 main models more or less favoured in different parts of the world. They are of particular interest and work probably the best for rail based systems as the rail services are there for a good number of years while it is easier for bus services to be changed or diverted.

For examples

- Joint development when the land is bought or given at a nominal rate e.g. in Hong Kong and Copenhagen's metro
- Property taxes to recoup part of the whole investment in PT e.g. Crossrail in London or in Dublin
- Tax Incremental Finance (TIF) or other similar mechanisms encourages property development close to transport hubs or stations. It has been successfully used in many places in the United States such as Chicago. It is particularly useful for funding new stations, refurbishment or improving access. For example two underground stations (serving the stadium) as well as pedestrian access were refurbished as part of the London's new Emirates Football stadium development

In many places urban transport has not benefitting financially from the improvements in local transport. The London Underground Jubilee line extension (JLE) is such an example as Transport for London was not able to act as a property company. The total land value increase that arose within a radius of approximately 1,000 metres from each of the new JLE stations was a staggering £13 billion when the construction cost of the line itself was only £3.5billion. An independent study carried out for Transport for London, has also estimated that between 1992 and 2002 the JLE caused land values to rise by £2.8bn close to just 2 of the 11 new stations (Southwark and Canary Wharf). The UK Government could have built the JLE at no cost to the public purse if they had just chosen to collect less than one third of the increased land values arising from the scheme which was basically funded from taxes (apart from two modest contributions),

Hong Kong's 'Rail Property Model' does just that and has allowed MTR Corporation to consistently cover the costs of high quality rail infrastructure and operational expenditure from linking the development of commercial, retail and residential property to the rail development and being able to profit from the proceeds of managing those properties. In Hong-Kong, the construction of new metro infrastructure is partly funded from the rents and sale values of property erected adjacent to metro stations.

The MTR Corporation¹⁹ is a public/private formed company with the majority shareholder being the Hong Kong government (around 23% of shares are in private hands and many of the employees are also shareholders). It is viewed internationally as being a economically successful and stable organization and it has also a strong commitment to sustainable development. It is quoted on the Dow Jones Sustainability Index and the FTSE4GOOD (international sustainable responsible share indexes). In addition, it has won many awards for its sustainability reports. MTR is now expanding beyond the confines of Hong Kong and is becoming an international player; it has recently own contracts to operate urban transport in Stockholm, Sweden and Melbourne, Australia as well as building and operating several new rail lines in China (a PPP for Beijing Metro line 4 and Operations and Maintenance Contract for Shenyang Metro lines 1 & 2). All this implies that there is money to be made if the working environment

Private sector contributions in urban transport take various forms, and cover an important role in especially in capital investments in infrastructure via various mechanisms with or without a finance component such as 'build, operate, transport' (BOT) Design, build operate transfer (DBOT) and others. A growing number of companies are also answering calls for 'pure' public transport operations

¹⁹ http://www.mtr.com.hk/eng/homepage/corp_index.html

under contract or franchise. Major groups such as Veolia Transport²⁰ operates in Seoul (Metro Line 9); Transdev operates ferries in Brisbane Australia and Keolis (operates mainly in France and the US);

Major international companies of vehicle, rolling stock manufacture and development and turnkey systems particularly in the rail sector are also involved in operations. Siemens is part of the consortium that now operates the Bangkok Skytrain, under a Build-Operate-Transfer (BOT). There are many other actors not mentioned and consortiums that are created to respond to a particular bid or franchise. Whilst these are difficult to fully quantify, it is nevertheless important to recognise their large and increasingly important role in urban transport financing.

However, one cannot say that all involvement with the private sector have been successful or brought the desired efficiencies. There are some good examples and some horrendous failures. The Metro of Porto (Portugal) was delivered on time and within budget generating a useful bonus. Madrid, Spain has considered experience in using these mechanisms and successful examples include substantial extensions to the Madrid metro network and they are used widely for the provision of major interchange stations (with some land value capture elements) such as the Chamartin station development²¹.

Not all PPP's are success stories METRONET, London and cost to public purse²²

In 2007 two METRONET companies were formed to modernize London Underground's infrastructure after decades of under investment. Both went into liquidation when they become unable to meet their spending obligations and had to be bailed out to the tune of £1.747 billion by London Underground itself helped by a £1.7 billion loan from UK's Department of Transport. This was used to help Transport for London purchase Metronets debt obligations from the private sector that would otherwise have been repaid over the 30 year lifetime of the contracts. The National Audit office estimates that the overall direct cost to the taxpayer arising from Metronet's administration is between £170 million and £410 million in 2007 prices. In terms of improvements, London's taxpayers have had to endure late delivery of the scheduled work and cancellation of several station upgrades. The PPP contract was designed in accordance to nationally approved guidelines but due to the scale and complexity of it and the number of stakeholders its management was almost impossible contributing to its failure and the loss of taxpayers money that could have been otherwise better spent.

Public-private partnerships, under which construction and/or operation risks are shared between public authorities and the private sector, are becoming an accepted way of sharing the commercial risks of public transport and of raising project capital in many countries. Such deals however require the debt borne by the private sector to be funded, typically through an annual service charge, whose size will be determined by the private undertaking's cost of capital and assessment of the risk. Such deals will only be beneficial if the additional costs thus incurred by the private sector are outweighed by e.g. construction cost savings, performance gains or improvements in productivity.

Extra private sector financial support for public transport operation can also be attractive within the context of a specific benefit received, e.g. to sponsor stops or services or to extend a service to an employer's or retailer's premises.

In general terms, there are major advantages in sources of income which are not subject to large variations with changes in the political climate or national budget considerations (e.g. dedicated taxes).

Many of the failures have been due to inexperience and unintended consequences. Emerging economies in the developing world are particularly vulnerable to these pitfalls and they are also the

²⁰ Veolia Transport and Transdev are in the process of merging to form one new company (July 2010)

²¹ Received the 2010 prize for Innovation in public transport from the International Transport Forum (ITF)

²² The failure of Metronet, Department of Transport (June 2009) London Stationary Office

ones that are least capable to 'clear up the mess' – so caution and great care is needed when entering into these arrangements which require a complex understanding, both of the financial mechanisms and the peculiarities of urban transport.

That said, there is still a huge potential for the private sector to bring quality, affordable urban transport on board quicker than otherwise would be possible. And there is no reason why this should not be successful, if careful note is taken of existing experience within this area and multistakeholder entities are created with the appropriate competences and skills needed.

Maximising Value from external funding

A prime concern of authorities and operators must be to ensure that any external funding is to be used to maximum effect. Clearly defined and understood structures must be put in place for the payment and receipt of financial support.

The main basic principles are:

- Where costs are incurred for policy reasons, such as higher service levels or lower fares than would be justified on exclusively commercial grounds, those responsible for them must assume responsibility for their payment.
- So-called subsidies should therefore be considered and calculated as payments for services rendered, for which the operator should be fully remunerated in order to meet the policy objectives established, to the extent that they involve expenditure and risk over and above that which can be funded from fares income. This includes the remuneration required to incentivise the service provider and to allow facilitate appropriate investment.
- Funding levels must be agreed in advance between authorities and operators. This is greatly preferable to the situation where deficits are incurred on an unplanned basis and occasionally written off.
- The use of service contracts, which define clearly the responsibilities of each party. They should allow for inflation and specify that operators may be compensated for justified price rises - for example increases in fuel or wage costs that could not reasonably have been anticipated and other major unforeseeable cost increases on which the operator has no influence. This will help to avoid unplanned fare rises or deficits, or reductions in quality of service.
- Such contracts should include financial incentives, in the form of a bonus/penalty system, in order to provide an inducement to increase the number of passengers and the quality of service provided. In this way operators are encouraged to offer the best service at the lowest cost and authorities to ensure better conditions for the operation of public transport.
- A good understanding is required of where profits are earned and losses incurred, although the separation of profitable from loss-making services must not be to the detriment of policy or commercial objectives .
- Measures should be taken to demonstrate clearly that the authority is receiving value for money. These may include benchmarking, tendering or outsourcing²³.

In any event whatever the mode and structure (formal or informal), public transport should be run along efficient lines. Great efforts have been made over much of Europe to improve efficiencies and reduce costs. This has been triggered by European legislation to liberalise the markets that started in 1990. Deep changes in publically owned companies and the emergence on private international groups that need to respond to the financial demands of shareholders has changed the basic approach to how public transport is delivered. This has also required considerable effort and collaboration between the unions, workers and the management as new labour contracts have had to be negotiated.

²³ UITP publication Tender Structures is available from the publications section of the web site (www.uitp.org)

Conclusions

It is not wise to recommend a specific ratio of financial support to public transport or set standards for fare revenue cost coverage as local requirements vary so considerably.

The benefits of public transport go well beyond a direct benefit cost analysis and it should be accepted that, in most cases public transport requires external finance in order to provide a level and quality of service at a price which could not otherwise be achieved, for two principal reasons:

- Encourage a shift in demand from the private car to public transport, thus reducing congestion and environmental damage caused by the former.
- Assist in avoiding the exclusion from normal social and economic life of those without access to a car.

There are a plethora of different mechanisms available that can be put to good use and create sustainable funding sources for the provision of quality public transport that is appropriate for most urban and regional situations. Using these intelligently will go a long way to redressing the present trends of unsustainable transport in the region to a more energy efficient, socially inclusion and economically viable system that will prepare Asia for the future.

In order to allow public transport to fulfil its potential to facilitate movement, to improve the urban environment, and to avoid social exclusion, the following recommendations could be made²⁴:

- The need for public funding in most cases should be clearly recognised. Public transport should not be regarded as inefficient because of this.
- The full potential of public transport to contribute to mobility, to the functioning of urban economies, to the urban environment, and to combating social exclusion should be recognised in the objectives set for providers of public transport.
- Public transport should be funded in order to meet those policy objectives. The funding required is not a subsidy, but a payment for a service rendered to the community.
- The payment should be sufficient for the provision of those services, to the extent that they involve expenditure over and above that which can be funded from fares income. It should include incentives for the service provider and facilitate appropriate investment.
- The full range of possible funding and financing sources should be considered.
- Sources of funding which also help to discourage use of the private car are particularly to be recommended (such as parking or congestion charging).
- For supporting operating expenditure, dedicated taxes for example the Versement Transport or other funding streams that provide relative stability should be considered.

The following are also cornerstones of sustainable urban transport and have an impact on the financial sustainability of the provision of public transport and help ensure that maximum value for money is obtained from any external funding provided:

- A clear regulatory framework that provides business stability supports sustainable mobility and leaves room for commercial activities besides traditional public transport provision.
- The formalisation of relations between authorities and operators (under contract, franchise or other concessions);
- The provision for incentives for operators as well as making adjustments to contracts to meet changes in costs outside the control of the operator;
- Establishing performance measures (e.g. benchmarking) to demonstrate that value for money is being obtained;
- Fostering single pricing or ticketing policy, compatible timetables, collective marketing and optimise networks and interchanges making public transport attractive and a mode of choice;
- Ensuring that no one is excluded from using public transport (availability, affordability and awareness of services)²⁵.

²⁴ From UITP Focus Paper 2003 'Financing public transport'

²⁵ Except from UITP PT x 2 strategy

For developing Asia, decisions taken today will affect its performance 30 to 50 years hence. History shows this rather clearly. If the United States and Germany are compared in terms of transport development, today as then both have market economies with comparable levels of economic growth, being two of the richest nations in the world. Both nations have a deep love affair with their cars as icons of social status and car ownership is not much different between the two countries (560 per 1000 capita for Germany and 780 for the US). But it was clear by the middle of the twentieth century that they were on divergent development paths. Today, a US citizen drives 30% more than his counterpart in Germany, in a vehicle that is at best two thirds as efficient. Germans on the other hand, are five times more likely to take public transport as their American counterpart irrespective of income or social status. With this in mind it will be easier (but not simple) for Germans to adapt to a carbon constrained world and it clearly shows how development goals affect our mobility habits. This is the choice Asia has at the present time, and its future will depend largely on what choices it makes.