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Fact Sheet

University of Stellenbosch
The BOP Learning Lab

Bus Rapid Transit: A public transport solution for the BoP ?

Two years ago, the BoP Learning Lab took its first look at the state of public transport in South Africa, and more specifically in the city of Cape Town. There was a clear consensus that overall, public transport solutions were falling very short of the expectations as well as the needs of the population, and especially with regards to the poorer sections of South Africa's people who are totally dependent on public means of transport. After years of debate and procrastination, however, it seems that the public transport landscape is finally about to change drastically, following the adoption by Government of a Public Transport Strategy in 2007, and the enactment in 2009 of the National Land Transport Act[1], aimed at creating fully integrated mass transit networks, in which 'Bus Rapid Transit' or BRT systems will have a key role.

The BRT has attracted a flurry of media attention in South Africa over the last year or so, and commuters in Gauteng province have already been able to use the first BRT system, known as Rea Vaya (Sepedi for "we are moving" along the main routes linking Soweto with the centre of Johannesburg. Rea Vaya currently transports around 16,000 people per day[2]. The plan is to deploy BRT networks in other major South African cities, including Cape Town, Port Elizabeth and Pretoria.

The main features of BRT systems are high capacity urban buses, deployed in physically segregated bus lanes on main trunk routes. Passengers access buses from secure, enclosed and covered bus stations.

Starting with Curitiba (Brazil) in 1974, an increasing number of cities around the world, especially in developing countries, have developed, fine-tuned and expanded BRT systems, with a marked acceleration of the trend over the last decade or so. The Colombian capital Bogotá's TransMilenio BRT system has been hailed as one of the most successful BRTs to date and has attracted the attention of many South African urban planners over the last few years. BRT has often been presented as as a cost-effective alternative to other mass transport systems such as underground or light rail systems: According to some estimates, the cost of building a BRT network amounts to around US$ 2 million per km, compared to around US $ 20 million for an equivalent light rail system[3].

"Public transport was until recently only a miscellaneous item on the Government's agenda. We've been slow to put the pieces together". Jeremy Cronin, Deputy Minister of Transport, September 2009

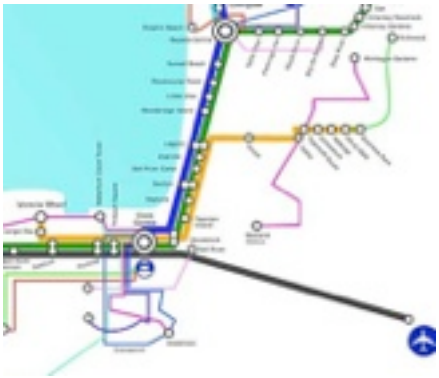
On paper then, BRT systems look like an urban planner's dream: When all goes well, they are supposed to relieve expensive-to-maintain roads from congestion by inciting people to make less use of their cars; they facilitate mobility, which in turn is a powerful stimulant for the economy; and they provide access to affordable transport to people who don't own cars. Or do they really ? How is the BRT likely to affect the lowest income segments of the population, considering, among others, the possible collateral effects of the BRT on other means of transport, especially the taxi industry and the side effects that new transport options may have on current social and economic trends ?

To try to answer these questions, we need to first have a look at the current urban public transport landscape in South Africa. We will then discuss some of the challenges facing public policy makers, before looking in more detail at how the BRT is likely to benefit, or not, the poorest sections of the population.

1. The state of transport in urban centres of South Africa

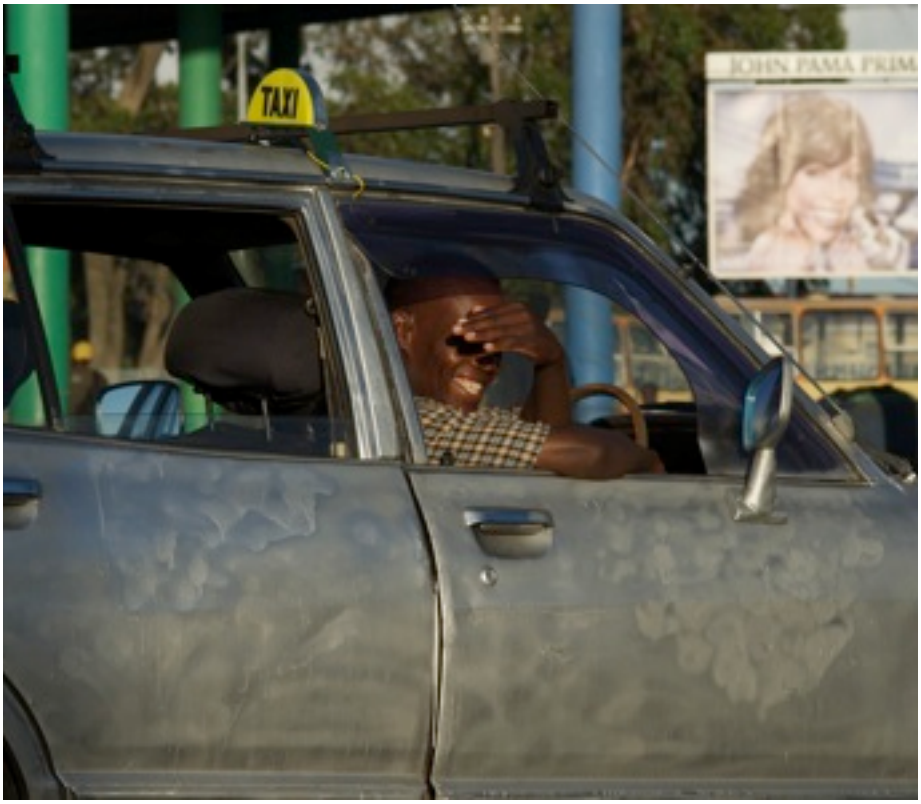
The overall spatial organisation of South Africa's urban centres is the result of decades of enforced racial segregation during apartheid. As a rule, black residential areas were located quite some distance away from work places, and even further away from white residential areas. Public transport, in as much as it was available, was geared towards the needs of moving workers from their residential areas to the workplace and back, and certainly not conceived as a public service designed not only for work, but also to facilitate the movement of individuals for their personal needs. Fifteen years after the end of white rule, this basic spatial organisation is still very much in place. It also forms the historical background behind South Africa's exceptional urban sprawl compared to most other countries. Cities like Johannesburg or Cape Town, with their low-density habitat, are spread over areas many times larger than far more populated cities like Paris, London, Mumbai or Kinshasa, for example. As a result, South Africa's main cities, especially Johannesburg, have a road infrastructure built to cater for private vehicles, with a maze of highways, expressways and wide avenues. The prevalent "car culture" in South Africa is also evidenced by the massive growth of private car ownership around the country. In Cape Town alone, the number of private cars on the road has grown from ca. 790,000 in 2001 to around 1,050,000 in 2007, a growth rate of over 20% in a matter of just six years, with no sign that the trend is slowing down[4]. In Johannesburg, no less than 57% of commuters use private cars to get to work[5]. This may be welcome news to car dealers, but it carries a heavy environmental cost and diverts more public resources towards road maintenance, not to mention the economic cost of millions of hours lost in traffic jams: The daily congestion on the N1 highway between Johannesburg and Pretoria alone is said to cost Gauteng's economy R 300 million per year[6]. Drastically improving the public transport offering is therefore also an environmental as well as an economic necessity, yet by the admission of senior government officials such as Jeremy Cronin, Deputy Minister of Transport, "public transport was [until recently] just a miscellaneous item on the government's agenda. We've been slow to put the pieces together"[7].

In most South African urban areas, public transport commuters typically use a mix of trains, minibus taxis and suburban buses. In Cape Town, for instance, this modal split is 54% of public transport commuters using rail, followed by 29% using minibus taxis, and 17% using buses[8]. Countrywide, however, minibus taxis clearly dominate, with a 70% overall market share of commuters[9]. If the BRT really takes off, it is therefore likely to be at the expense of minibus taxis, who fear that they will see their market share decline dramatically, and that they might be confined to "feeder routes", with the distinct possibility that excess capacity could sharply increase competition and put the more vulnerable minibus taxi operators out of business.



Cape Town' projected BRT trunk routes and feeder network

[1] REPUBLIC OF SOUTH AFRICA, Government Gazette, Vol. 526, April 9, 2009, Cape Town
[2] http://www.mobilitymag.co.za/index.php?option=com_content&view=article&id=968%3Area-vaya-&Itemid=29
[3] HOOK Walter, "Let's get on the bus", Delivery Magazine, December 2009, p54
[4] Source: Philip Van Ryneveld, BoP workshop, Cape Town, 11 March 2010
[5] Source: Ndaba Dlamini, "One ticket system plan for Gauteng", October 2008. http://www.joburg.org.za/content/view/3053/209/
[6] Source: Financial Mail, "The Transport Revolution - An Acceleration", September 11, 2009
[7] ibid.



2. The Challenges

Among the main challenges surrounding BRT and its implementation are opposing political and economic interests, as well as a series of operational challenges linked to the specific spatial constraints of the South African situation.

The main **political and economic challenge** is to integrate the existing offering, especially the taxi industry, into the BRT. There is clearly great anxiety among minibus taxi operators regarding the BRT, as evidenced by strikes, protest marches and occasional threats of violence. Perhaps not too surprisingly, the assurances given by government authorities have failed to convince many in the industry that their concerns have been duly addressed. One of the difficulties is that the taxi industry, by the very nature of its informal, unregulated and cash-based business model, is very decentralised and that no single organisation can claim to represent the industry as a whole, with shifting alliances and factional dynamics massively complicating the engagement process[10]. It can also not be denied that the taxi industry suffers from a poor image with its users, with many complaints about reckless driving, disregard for safety and rude drivers. It is significant that while minibus taxis are by far the dominant players at this stage, they are also the least preferred mode of transport among users, according to a government household survey[11].

In addition to this major obstacle, there are three main operational challenges linked to the implementation of BRT, and, for that matter, of any integrated public transport system in South Africa:

Trip length: As a result of the urban sprawl mentioned, the average commute in urban areas in South Africa is around 20 kilometres. This is twice as long than the average commute distance in Asian emerging countries, for example, and translates into 40% higher transport expenses for many of the poorest South Africans[12]. In addition, this cost premium of urban sprawl makes it very difficult to ensure the economic viability of most routes. Even in densely

Key Challenges:

1. Integrating the minibus taxi industry into the BRT, which currently transports 70% of daily commuters in South Africa

2. Trip length: The average South African commuter covers twice the distance and pays 40% more than his counterparts in emerging Asian countries

3. High peak-to-off peak ratios: Expensive equipment and infrastructure remains unused for most of the day

4. Income levels: 30% of South African households spend more than 11% of their income on public transport, and for 18% of households that proportion rises to more than 20%

Metrorail transports around 2 million commuters daily in South Africa's main cities

South Africa's minibus taxi industry transports around 70% of the country's public transport commuters

populated and comparatively rich cities such as Paris, London or New York, public transport runs at a loss, and the shortfall is covered by a subsidy (in other words, the taxpayer). South African cities, already struggling to balance their books, are not surprisingly reluctant to put further pressure on taxpayers or to divert resources from other areas.

Peak-to-off-peak ratios: In the current environment, patterns of usage in South Africa are characterised by very high peak-to-off-peak ratios, as the bulk of workers and employees use the service only twice a day, between 6-9 am, and again 4-6 pm. This means that expensive equipment, drivers, and installations remain underused for most of the time, again adding to cost pressure. Such ratios are only likely to change if people can be persuaded to use public transport as an alternative to cars in the course of their daily business.

Income levels: With 19 million South Africans living on R 20 per day or less, there is little doubt that few in the 'primary target market' for public transport services can be expected to pay more than R 4-5 on a trip. A recent government survey estimates that 30% of households spend more than 11% of their income on public transport, with 18% of respondents declaring to spend more than 20% of their income on transport[13]. One of the main objectives sought by the introduction of the BRT is to reduce this proportion to no more than 10% of household expenses, even for the poorest. All three of these operational challenges boil down to one reality: that any integrated public transport solution will have to be partly funded by the public purse, as is the case in almost any city in the world. It also helps to explain why it has taken so long for public transport plans to take shape in the country, and why the minibus taxi industry, which is economically viable, receives no subsidy, and makes very effective use of its assets, have been conveniently filling the gap for more than two decades now.

The upside is that this does not need to be a massive drain on resources: once a credible public transport solution is in place, and provided it can project an image of safety, reliability and cost-effectiveness, it can reasonably be expected that sufficient numbers of people will switch from using their cars to using public transport, and make the financial drain acceptable to cities, considering the overall economic benefits. Such is also the explicit hope of the developers of the new, high speed rail link between Johannesburg and Pretoria: that exhausted motorists, who currently endure 60 km bumper-to-bumper traffic jams on a daily basis, will switch to the Gautrain and contribute significantly to covering its operational costs. There are also, of course, many indirect benefits in terms of productivity gains and a cleaner environment.

Key figures:

Taxi industry...

A estimated 200,000 minibus taxis operate in South Africa

The taxi industry's market share of public transport commuters is 70%

The BRT...

Rea Vaya in Johannesburg transports 16,000 passengers per day (March 2010)

Phase 1 of Rea Vaya, opened in September 2009, comprises 25 km and 20 stations between Soweto and Johannesburg

The full phase 1 is scheduled for 2013 and will run over 122 km with 150 stations

Cars...

57% of trips in Johannesburg are made in private cars.

Congestion on the N1 between Pretoria and Johannesburg costs the economy R 300 million per year in lost productivity

Private car ownership in Cape Town has risen by 20% between 2001 and 2007, to over 1 million

Trains...

Metrorail transports 2 million passengers per day, mainly in Cape Town, Johannesburg and Durban

Sources: Financial Mail, Delivery Magazine, Metrorail

3. The BRT response

Is the BRT a realistic response to the challenges we outlined above ? A quick overview of each of these challenges suggest that it may be, but only as part of a much wider reorganisation of the public transport landscape in South Africa, and by keeping in mind the constraints of South Africa's unique urban patterns.

The minibus taxi industry: Thanks to its flexibility an efficiency, the taxi industry has firmly established itself as the primary public transport mode for around 70% of South Africa's commuters. It can also legitimately claim its role as the longest standing source of black economic empowerment[14]. Considering the huge economic interests at stake, realism dictates that any public transport solution needs to take into account the taxi industry's interests. In this regard, the city of Port Elizabeth is attempting a hybrid model in order to address the bulk of the taxi industry's concerns about being sidelined[15]. After a protracted series of consultations, the local taxi operators are organising themselves into co-operatives that will be contracted to deliver public transport services to the Nelson Mandela Bay metropolitan area. The model will be rolled out using vehicles currently in use, but eventually the taxi fleet will be renewed as part of the taxi recapitalisation programme, and consist of a mixed fleet of buses. The rationale behind this approach is to safeguard the interests of an industry and minimise job losses, and it has gone a long way to alleviate the fears of the local taxi drivers. Other cities in South Africa are contemplating similar models which will also entail a contractual relationship between the taxi industry and local or metropolitan authorities, regulated fares and subsidies[16]. It will, however, involve a paradigm shift for the taxi industry and an end of the informal, unregulated and cash-based model which, for all its faults, is extremely efficient.

For the BoP: People at the base of the economic pyramid, who are most dependant on public transport, theoretically stand to gain the most from the introduction of the BRT : if the system lives up to its promise, the BRT will facilitate the movement of people, and, crucially, provide affordable, clean, secure and effective service to its users. Affordability is perhaps the single most important factor: Rea Vaya, for instance, charges an average fare of R4 to R 5, compared to R 9 for a similar trip by taxi[17]. Safety, too, is another important competitive advantage of the BRT for poor commuters, considering the bad reputation of the taxi industry and the sometimes high prevalence of crime on commuter trains. But there are other factors at play which may not make the ride quite as smooth as planned: If the net effect of the BRT comes at the expense of the taxi industry, it may end up reducing rather than expanding economic opportunities at the BOP, especially considering the real empowerment legacy of the taxi industry. It is precisely for this reason that the Port Elizabeth hybrid 'cooperative' model could be instrumental in ensuring the successful deployment of BRT systems in South Africa's big cities.

For the middle-income segments: The real victory for the BRT, in terms of ensuring some level of financial stability, would be if it can convince middle-income people currently using private cars to switch to public transport. For this to happen, security, relative comfort, and efficiency will be crucial factors. It will also involve the building of an extensive network

[8] Source: Philip Van Ryneveld, BoP workshop, Cape Town, 11 March 2010
[9] Financial Mail, op. cit.
[10] PIETERSE Edgar, "Countercurrents, Experiments in Sustainability in the Cape Town Region", African Centre for Cities, UCT, 2010, p98
[11] Financial Mail, op. cit.
[12] DEPARTMENT OF TRANSPORT, "Moving South Africa - A transport strategy for 2020", Report, http://nasp.dot.gov.za/projects/msa/msareport/msadraft82.html, 1997
[13] Financial Mail, op. cit.
[14] Bongani Kupe, BoP workshop, Cape Town, 11 March 2010
[15] Andrew Russel, BoP workshop, Cape Town, 11 March 2010
[16] ibid.
[17] Financial Mail, ibid.

so that public transport is not just available along the main BRT trunk lines, but also along thinner feeder lines, at reasonable intervals: the general measure is that public transport systems become widely used when 90% of the population is covered within a radius of 500 metres. A massive challenge, no doubt, for South Africa.

If the BRT can address the challenges and concerns of these three major constituencies, it is likely to have a good chance of success, but given the sprawl that South Africa has come to accept as a normal part of urban development, it is unlikely to ever reach the success it has had in cities like Bogota. This is, perhaps, where the taxi industry can play a big role, in that it is ideally placed to support the BRT in the form of thin, lower volume feeder routes able to serve anyone within a radius of 500 meters.

Conclusion

A profound reorganising of South Africa's public transport landscape is long overdue. The delay can perhaps be attributed to the magnitude of the political and economic challenges involved, but also, at least in part, to inertia, as has been recognised even within Government. The BRT is almost certainly a very positive development in the public transport landscape, but there is nothing revolutionary about running a modern bus system in dedicated lanes: cities around the world have been doing this for decades, and it is an indictment of South Africa's public transport policies that it took so long to develop even an embryonic bus system. One could even argue that a golden opportunity has not been missed to develop something entirely new, and designed not to cater for the next two decades or so, but much longer. Will the BRT be able to, in future, integrate other forms of mass transit such as metros or tramways? The argument that the corresponding investments are too high to bear for a middle income country could be seen as short sighted: such investments need to be financed over decades, and as they deliver economic returns over very long terms.

It is also fair to ask if, long before starting to implement the BRT, an intermediary, preparatory solution could not have been put in place long ago, in order to form the foundation on which to build the BRT. This could have been a matter of relatively simple, user-friendly things, such as properly maintained ordinary bus stops (no need to enclose them), readable network maps, numbered routings and basic schedules. Such basic urban bus transport structures should have been developed in most of South Africa's cities many years ago, possibly with the support and co-operation of the taxi industry and it would not have involved nearly as much infrastructure investment. This being said, the BRT is a most welcome development, and will most probably make a huge positive difference in the lives of the poorest commuters. It may also be a very concrete step towards bigger socio-economic integration of living areas, playing a crucial role in breaking down some of the the socio-economic barriers inherited from South Africa's past by reshaping the urban landscape.

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