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Ahmedabad, India—Yesterday, the Deputy Municipal Commissioner explained the problem to me. Ahmedabad is a center of textile production, she said, and here, if you are poor, you order your clothes by the numbers. The clothes never fit very well, because while everyone’s body is different, all the clothes are cut the same. If you have money, you go to a tailor where the clothes are custom fit. You look better; you feel more comfortable. Cities are as diverse as the human body. What is happening on the street is as unique as the people living and working there. What is needed, she explained, is a tailor for the street.

“In the only man who behaved sensibly was my tailor. He took my measurements anew every time he saw me, while all the rest went on with their old measurements and expected them to fit me.”

– George Bernard Shaw
Well-tailored solutions, like the planned Ahmedabad BRT system seen above, are needed for our city streets.

sidies because they are badly designed or built on wide roads at the urban periphery where there is little ridership and no congestion.

In our projects, from Ahmedabad, Johannesburg, Dar es Salaam, Mexico City, to Guangzhou, we always try to design the systems to not require operating subsidies. It is the best way to ensure that BRT systems are sustainable in the long run and get built where they benefit the most people.

Recently, however, even TransMilenio has found it hard to maintain high quality service as the system expands to less lucrative routes, so long as parking and road use is subsidized. We are working with the help of the Clinton Climate Initiative to help them solve these problems, but carefully structured subsidies may be in the cards. Ahmedabad has very low cost competition from shared three-wheelers and motorcycles. Dar es Salaam has very low incomes. Johannesburg has long trip distances and low population density. In these conditions, cities face tough decisions about what parts of the system to subsidize, where to set the level of service, how clean and comfortable the buses should be. One size does not fit all. Carefully tailored business plans embedded in carefully written contracts that create incentives for high performance are what is needed, not rigid policies that inhibit optimal solutions.

Today, thanks to the efforts of ITDP, the Energy Foundation, and other partners, many Chinese mayors are learning to be better tailors, looking to Bogota, Paris, London, and Seoul for inspiration. Guangzhou is set to build a state of the art BRT system that is carefully crafted to Guangzhou’s needs, while reintroducing bike lanes and bike parking facilities.

The best transportation solutions are rarely clearly ‘left’ or ‘right’. In Latin America, leaders of the Mexican left (Obrador) and the Chilean left (Lagos) famously built blighting urban highways, ostensibly to generate jobs, even though they did little to benefit the poor. Today, Mexico City’s left-oriented Mayor Ebrard, from the same left political group, is proving to be a leader of the sustainable transport movement, cycling to work himself, initiating a big expansion of their bike and BRT networks, while mega-highway projects are rarely mentioned. In Bogota, the ‘left’ candidate is campaigning against the world’s most famous BRT system in favor of a metro system that would cost hundreds of millions of dollars to improve travel for a few rich neighborhoods.

Sadly, in the United States too, our national leaders are still giving us solutions by the numbers. US Democratic congressional committees have tried to obstruct congestion charging and market-based transport programs, while the US Secretary of Transportation does not even recognize bicycling as transportation. We are also witnessing the costly results of a US foreign policy conducted ‘by the numbers’.

The world needs a politics of tailor-made solutions based on analysis of specific problems and tough negotiation in the public’s interest, not policies that assume the private sector, or the public sector, is always right. Mayors are emerging as some of the world’s best tailors. The Paris Velib bike sharing program, London and Stockholm’s congestion charging systems, Bogota’s TransMilenio BRT system, were all made possible by a fundamental yet subtle renegotiation of the relationship between the government and the private sector. Clever governments and clever companies figured out new ways of making money that reduced the burden on taxpayers while providing a higher quality public service and a secure investment environment for the private sector. In the efforts of these great local leaders, who struggle daily to improve the everyday lives of their constituents, lay the seeds of a profound political transformation.

Letter From the Executive Director
Beyond the white sands of Ipanema and the majestic views from Corcovado mountain, Rio has a new attraction: Lapa. The hard work of active civic organizations and a dedicated municipal government has turned around decades of decline in Rio’s historical city center; streets being reclaimed, buildings restored, and business is booming.

Lapa lies adjacent to Rio’s historical and commercial center and port. In the 1880’s, a new street plan was established for this part of Rio. This plan was inspired by Baron Haussmann’s transformation of Paris, where the old, twisting streets of the medieval city were replaced by the wide, tree-lined boulevards and expansive gardens.

From the end of the 19th Century to the 1930’s, the city’s elite made its home in Lapa, where baronesses and counts mixed with Rio’s bohemian population. The city’s best cabarets and theatres were located there. Sarah Bernhardt, the famous French actress, is said to have ordered a white wine and liver at one of the neighborhood’s bars after her performance at Teatro São Pedro in 1886.

From the early 1930’s, as the city’s bourgeoisie fled southward to bossa nova and the beaches of Copacabana, Rio’s historical center entered into a steady decline. Busy managing growth in the affluent south, public authorities neglected the old part of the city. Lapa’s buildings, a mixture of the Parisian eclectic style and the blue and white tiles of Portugal, began to crumble. Ceilings fell in. Prostitutes and bank robbers inhabited the abandoned buildings that once housed the wealthy. By the early 1990’s, Lapa’s streets were littered with garbage and the occasional corpse. When it rained, the antiquated drainage pipes overflowed, drowning the streets in half a meter of raw sewage and runoff, filling the air with an unbearable stench. “Nobody wanted to live here,” said Wilson Muniz, who has lived in the neighborhood for over 40 years. “For years, I was embarrassed to tell people that I live in Lapa.”

“Traffic was heavy, chaotic, and the area was unfriendly to pedestrians in general,” explained Antonio Correia, the director of urbanism at the Instituto Pereira Passos (IPP), Rio’s central urban planning agency. Lapa became a place people drove through on the way to somewhere else.

In 1983, a municipal decree estab-
published a “cultural corridor” that included Lapa. The streets of this corridor housed the city’s most important historical sites, where artists, poets, actors, and other characters from Rio’s rich cultural past once held court. Most of these buildings remained in a state of bad disrepair, however. Then, in 1986, the city offered tax exemptions to landlords and businesses for restoring the facades of historical buildings in the center. “This is a very strong incentive,” says Antonio, “since taxes are quite high.” Gradually, crumbling plaster gave way to vibrant colors on the playful rococo curves and neoclassical columns.

Around that time, a group of antique dealers began to organize into a neighborhood association called “Novo Polo do Rio Antiguo” (New Center of Old Rio). They worked together to improve the neighborhood and lobbied Rio’s authorities for improvements. These were mostly creative professionals, designers, publicists, and architects who collected and sold antiques as a hobby. Lapa’s low rents and historic buildings were a suitable backdrop for their activities.

According to Plinio Froes, President of “Novo Polo do Rio Antiguo,” interest in Rio’s rich past grew dramatically after Brazil’s economy went bankrupt in 1991. “Because wealthy Brazilians could no longer travel so easily, they began to value their own culture and past. We started getting more visitors to Lapa, looking for antiques and enjoying the history here,” said Plinio.

In the early 1990’s, the municipal government of Rio began to improve public space. In Lapa, the city widened sidewalks, took out a lane of traffic, installed a pedestrian island, and improved the plaza under Rio’s famous aqueduct at the southern end of the neighborhood. On top of this aqueduct, Rio’s last surviving trolley still runs.

“At first, car, taxi and bus drivers complained, because they felt that space had been taken away from them. But Mayor Alencar stood by the changes, and eventually they came to accept that the new design made traffic more orderly and improved the area,” said Antonio.

That redesign was led by Augusto Ivan, then an architect at the IPP, now
Rio’s dynamic Secretary of Urbanism. Augusto heads a dedicated team that has worked continuously to improve Rio’s central neighborhoods over the last decades, including expanding Rio’s network of high quality bike lanes. “We have had the benefit of a stable group of technicians that have been working on the center for quite some time,” said Augusto. “We work well together and are familiar with the issues that need to be resolved in the city center, and are able to keep the same programs even if the administration changes.”

In 1996, the antique dealers association organized its first street fair on Rua do Lavradio, where most of their shops were located. As the word spread, thousands more each year flocked to the colorful, car-free, cultural events. By shutting down streets to cars, passers-by could marvel at antiques, musicians and street theatre performers with ease.

In 1998, the association asked the municipality to improve the Rua do Lavradio. At that time, the sidewalks were 80 centimeters wide (about 31.5 inches), as they are in most of the old part of the city. Garbage was everywhere and flooding was endemic. The newly designed road was finished by 2001. Rua do Lavradio now has wide, comfortable sidewalks, an expansive pedestrian island, a row of impressive imperial palm trees, and turn-of-century-style streetlights that are consistent with the street’s historical buildings.

As in many cities around the world, residential buildings were prohibited in Rio’s center since the 1960’s. “This was the old functionalist thinking, where people were meant to live in one place, and work in another, with highways connecting residential neighborhoods with commercial areas,” explained Antonio. “Since then, we have come to realize the huge benefits of having people live in the same areas as they work; you reduce congestion by decreasing trips and travel times, and the business areas become more lively and safer because people are living there.”

In 2002, residential buildings were again permitted in the city center, but the market was slow to react. “Developers are very conservative in Rio; they invest in areas where they are sure to make money,” said Antonio, “and they thought that they could not make money in the center, so there was no supply.”

In April 2007, eight hundred, sixty-six residential apartments in Lapa sold in less than two hours. According to Antonio, “this showed that the center is a good place for people to live, because they want to be close to work, and that there is an opportunity to invest here. The perception of the center as an undesirable, run-down area, not fit for living in, is finally changing.” A recent article in the Rio newspaper O Globo reports that real estate values in Lapa have raised 30 percent since 2005.

The last block of the Rua do Lavradio, lined with tastefully decorated restaurants, nightclubs, antique stores and a neighborhood barbershop, was entirely pedestrianized. Although ostensibly closed to traffic, the block continues to be jammed by taxis and private vehicles, but not for much longer: “We [the merchants of the block] are going to pay for a 24-hour security guard, who will stop cars that try to enter,” said Plinio. “As the Brazilian poet Castro Alves said, ‘the street belongs to the people, just as the sky belongs to the condor,’ and that is why we will make sure that cars don’t enter this block and park where they should not.”

The public space improvements are not only enjoyed by the wealthy. “Everybody comes here, from street children to businesspeople,” said Plinio. A study that the Association commissioned shows that Lapa’s visitors represent a hugely diverse socioeconomic spectrum.

Attending clients sipping coffees or caipirinhas at sidewalk tables, waiter Darley Dos Santos said, “Cariocas like to be in public space – they feel comfortable being outside. Lapa is constantly improving, and business is better everyday.”

Despite the renaissance in Lapa, Rio’s urban planners know that they still have much work ahead. “Taking care of the city center is a continuous process, and we are always at work because degradation happens very quickly,” said Antonio. “It is like maintaining a storefront; you always have to stay on top of it and constantly be making improvements.”

The facades of many of Lapa’s buildings are well kept, partly due to the municipal tax exemptions.
Parisians are known for favoring revolutions over peaceful reform.

On the morning after Bastille Day 2007, Paris awoke to thousands of new gleaming, pearl grey bicycles stationed at former parking spaces all over the city. Within hours of the system's opening, the streets were filled with “freedom bicycles.” Vélib, the new bicycle-based mass transit system, proved that the revolution will be non-motorized.

By the 18th day, Vélib had logged one million rides. The ubiquitous bikes are now an integral part of the city's identity, a symbol of Mayor Bertrand Delanoë and Deputy-Mayor for Transportation Denis Baupin's multifaceted efforts to address traffic congestion, reduce air and sound pollution, and revitalize the city's public space.

The Vélib revolution began with doubling the amount of cycleways in the City, making a fairly coherent and continuous network. In early 2001, bicycling represented about one percent of the 10.6 million trips made daily. Between 2001 and 2006, bicycle mode share increased by 48 percent while keeping the number of crashes and injuries stable. Vélib is expected to double or triple the number of daily bicycle trips and to accelerate the rate of independent bicycling.

A few months ahead of the municipal elections, Vélib is indeed “a success beyond our expectations” said Pascal Cherki, Deputy Mayor for Sports.

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Buses and bicycles, including Vélib’s, share the same segregated lane.
How Vélib Works

Vélib is an important innovation over earlier city bike sharing programs. Amsterdam famously put free bicycles on the street in the 1960s, but they were not well maintained and eventually all were stolen. Starting in the late 1990s, both JC Decaux and Clear Channel improved on this model, with successful automated and credit card based programs in Rennes, Amsterdam, Vienna, Lyons, Oslo, Brussels, Stockholm, Helsinki, and Barcelona. The Vélib program in Paris is however by far the largest and the most successful. When it comes to bike sharing programs, size (and density) matters.

Vélib requires the user to pick up and leave the bike at automated, self-service bike stations. Users can either have an annual membership or pay for short term subscriptions for daily or weekly usage. A one-day subscription costs 1 euro, a weekly subscription costs 5 euros and an annual membership costs 29 euros.

Terminals at each station allow the purchase of a short term subscription with a credit card, which gives you a subscriber number and a password. Getting the bicycle then only requires typing the number into the terminal any time during your subscription period, selecting a bike stand number, and stepping to the stand to unlock the bike. Annual members use their smart card and just swipe it at the parking stand instead of going to the terminal.

In addition to paying the subscription fee, short term users must pay a security deposit of 150 euros, which is pre-authorized on their credit card to help guarantee the return of the bikes. This cuts back dramatically on theft.

Beyond this, for the first 30 minutes, the bicycle is free to use. However, after that, usage costs are incurred (see table). This system, including the pricing system, is designed for short range, individual trips. As a result, in the first two months of operation, 92 percent of the trips lasted less than 30 minutes.

The bike comes with its own lock for intermediate stops, but when the user is finished, the bike has to be returned to one of the Vélib stations. Because of this, there needs to be enough stations that riders can readily find one. Vélib opened in July with 10,648 bicycles and 750 stations; by December of 2007, the system will have 20,600 bicycles and 1,451 stations – or one every 300 meters in central Paris.

If a station has no empty stand, 15 minutes of free time can be added in order to reach the next station by swiping.

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<td>First 30 minutes</td>
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</tr>
<tr>
<td>Second 30 minutes</td>
<td>EUR 1</td>
<td>EUR 1</td>
</tr>
<tr>
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<tr>
<td>Every half hour increment afterwards</td>
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the smartcard or logging into the terminal. The terminal also shows the status of nearby stations and their current number of empty slots.

Vélib stations tend to be located on converted parking spaces. About 15 to 25 meters long, each station displaces three to five parking spaces – or roughly 6,000 parking spaces total by the time of full implementation.

Although the system was planned with about 70 percent more parking stands than bikes in operation, the even distribution of bikes and open stands at stations remains the main challenge of the system. Optimizing station sizes and locations presents an interesting challenge to system planners. In Paris, the plan was done by the Atelier Parisien d’Urbanisme (APUR). Many stations are near historical landmarks and required approvals from the Department of Architecture and Heritage. Because it was difficult to predict where pick-ups and drop-offs would concentrate, the system operator has staff with 20 compressed natural gas (CNG) vehicles dedicated to shifting bikes from full to empty stations.

Vélib also has a support center on a barge that moves between 12 landing points on the river. It features a shop with 10 mechanics and ships the more seriously damaged bikes daily to the main logistical base outside the city.

Vélib Bikes

Particular attention was given to a bike design that would blend elegantly in the Paris landscape. At 22 kilos (compared to about 18 kilos for a standard commercial bike), the three-speed bike is not designed for speed, but to be substantial, sturdy, and to handle some 18,000 kilometers in a year. Particular attention was given to prevent taking on passengers. Thus, there is no back rack, no horizontal frame bar, and no child seat option.

The shifting, dynamo and brake systems are all located inside wheel hubs. Control chips inside the bikes report on their condition, as well as on tire pressure and on the bright LED lights, directly to the central computer via the docking stand. If a bike is defective, it remains automatically locked on its stand (a red light appears) until the mechanic clears it. Bikes returned to the stand for less than a minute stay locked for inspection as well.

Weight, along with the distinctive design, was also thought to discourage theft. However, this has been only partially successful. As of September 10th, 250 to 300 bikes had been stolen. “This is a lot” said a JC Decaux official. Some of the bikes have been removed from the stations by sawing through the arm that locks the bike to the rack. In most cases, thieves simply took bikes improperly locked at the stand by their users.

The Contract: The City and JC Decaux

Vélib is privately operated by SOMUPI, a joint venture owned by JC Decaux, an outdoor advertising and street-furniture multinational, and Publicis, a large advertising and communications corporation. Most profits are derived from billboard advertising.

SOMUPI is responsible for covering the entire cost of implementing and managing Vélib, as well as any additional fees. In return, it receives exclusive rights to provide and operate the bus shelters, public announcement boards, and other street furniture, which then serve as the physical support for 1,628 lucrative advertising boards. The revenue directly generated by Vélib subscription and rental fees, expected to be in excess of 30 million euros a year, goes to the city. If SOMUPI meets all contractual standards of good operation of the system, it is entitled to revenue sharing of...
12 percent of Vélib revenues plus payment by the city of an amount equal to 12 percent of advertisement sales, i.e. about 10 million euros.

Since 1976, SOMUPI had held the street furniture and billboards contract with the city. The contract was not supposed to expire until 2010. However, in January 2006, Mayor Delanoë decided to break it and tender a new one designed to emulate the success of Velo’s, Lyon’s bike share program, also run by JC Decaux. Delanoë wanted at least 3,000 bikes by the summer of 2007, and 6,000 by the end of the year. He also demanded a 20 percent reduction in the 2,000 existing billboards.

The top two bidding companies were SOMUPI and Group for Paris, a joint venture led by Clear Channel, the Texas-based global media conglomerate and number one outdoor advertising company worldwide, and including major French companies. Initially, Group for Paris made the winning bid in November 2006 with a proposal for 14,000 bikes; SOMUPI’s proposal was for just 7,500. However, SOMUPI attacked the bidding process on technicalities and obtained its cancellation at the Paris Administrative Court. In February 2007, SOMUPI won the new bid by tripling its initial offer to 20,600 bikes and pledging to implement the first phase by summer 2007. Group for Paris’s bid remained 14,000 bikes, and offered a slower timetable.

No precise numbers regarding Vélib implementation and operational costs have been published, but various public statements by Decaux officials suggest that capital investment and bike procurement amount to about 90 million euros. Maintenance costs in Lyon’s similar bike-share program are reportedly about 1,000 euros per bike per year.

On this basis, the total investment and operational cost of Vélib over the 10-year contract is estimated to be about 300 million euros. Decaux separately said that he expected the 1,628 billboards to earn 60 million euros per year for SOMUPI -- or about 600 million euros total. The consortium also has to pay for the billboards, street furniture, and up to 32 million in space rental fees to the city.

Critics have raised the question of whether JC Decaux’s back-lit billboards consume as much fossil energy as is saved by people using Vélib over motorized forms of transport. The billboards, however, pre-existed. While many of them are being retrofitted with rolling ads mechanisms, the increased energy consumption may be relatively marginal. A more important question is whether the city should have paid for Vélib directly out of its budget. It could then have either auctioned the advertising contract separately at a higher price or simply cancelled it as an undesirable encroachment on the public realm.

Local governments clearly like deals that make urban amenities appear to have no cost to the tax-payers, a business concept JC Decaux pioneered in the 1960s. In the case of Vélib, the bidding process was so competitive that in the end the city got a much better contract than it initially thought. Also, with JC Decaux’s experience, SOMUPI was able to implement Vélib on schedule and with only minimal glitches.

At about the same time, Barcelona has shown that different financing schemes are possible. The city pays 4.5 million euros per year for the 3,000 bike-share program managed by Clear Channel. The separate urban furniture and advertising contract, operated by JC Decaux returns 11 to 18 million euros per year.

**Behind Vélib: The Paris Mobility Plan**

Vélib is just one component of Paris’s new mobility plan. When the Delanoë Administration came into office in 2001, they took a sharp turn away from previous administrations. They understood that new road construction just led to more car trips, further degrading the urban environment. They set out to scale back motorized traffic, focusing instead on revitalizing local life and public spaces, by converting acres of roadway and parking spaces into pedestrian space, bike lanes, busways and tramways.

In the summer of 2002, the Quartier Verts (Green Neighborhoods) program was the first initiative to reclaim neighborhood streets for the community. Squares and plazas were renovated, sidewalks widened, and new landscaping and raised crosswalks were added. To slow traffic, street directions were revised to carefully eliminate all through-routes, making vehicles exit back onto the avenue from which they entered. The legal speed limit was lowered to 30 km/h from 50 km/h. On most of these slow speed, one-way streets, cyclists are allowed to use the road in both directions.

New pedestrian spaces and traffic-calmed streets have renewed street life. Wide sidewalks give more space for pedestrians, outdoor cafes, and bike parking.
A network of pedestrian-priority shared streets was also created, where the legal traffic speed was lowered to 15 km/h. New low-floor microbus circulators were introduced to improve local accessibility and connections to transit stations. Free parking was eliminated altogether. Although parking permits are issued to residents for a nominal fee, they are only valid for parking spaces in the immediate vicinity.

The Espaces Civilisés program was launched to tame the heavy traffic that dominated many of the wider boulevards and avenues. Boulevard de Magenta was one of the first to become a “civilized space.” Dubbed by residents as the Magenta expressway, it had endured traffic volumes up to 1,400 vehicles per hour in each direction, frequent speeding, and many fatalities at intersections. Noise and pollution levels were among the highest in the city.

Under the program, 24 million euros were invested (about 260 euros per square meter) into widening sidewalks from 4 to 8 meters, planting trees, and building bikeways. Granite separators were put in to protect a new dedicated bus lane. To accommodate deliveries, 30 minute truck parking spaces were placed on the curb-side of the bus lane. Intersections were made safer with secured crosswalks, widened median refuge islands and extended crossing phases for pedestrians. New pavement, landscaping, and street furniture were added to sidewalks and plazas. Businesses signed “charters of quality,” harmonizing displays and signs and promoting good public space practices.

While Paris regularly expands its Metro and recently opened a new tram line, the administration is also building a light BRT system, with 17 major lines in the City of Paris, and 150 lines in the metropolitan area. The Mobilien system has dedicated bus corridors, signal priority at intersections, and raised stations for rapid boarding and alighting from any door of the low-floor buses. Fare payment is mostly done by Navigo smart cards and enforced by roaming ticket inspectors. The first three BRT lines opened between 2005 and 2006. Though bus ridership was disrupted during construction, by the second half of 2006, ridership on new Mobilien busways increased dramatically.

The city is also developing a new car sharing program, with self service pick up stations similar to the Vélib system. The city will be supplying three recently licensed car sharing companies with parking spots in public garages and at on-street stations. One car-sharing vehicle is estimated to substitute 10 personal cars, and experience shows that users tend to reduce their mileage by about 20 percent due to pricing incentives.

These improvements and traffic restraint measures led to a decrease in private vehicle traffic by 20 percent, trucks by 11 percent, and tourist buses by 11 percent between 2001 and 2006. The Metro received the biggest ridership increase, at 12 percent. With the completion of the first Mobilien corridors, bus ridership is also now growing rapidly.

Over the same period, all indicators of air pollution improved regularly, with the exception of summer ozone levels. Six percent of the overall 32 percent reduction in nitrogen oxides (NOx), as well as all 9 percent of the reduction in carbon dioxide (CO2) emissions, were attributed to the reduced number of cars and trucks in the city. Air quality had strongly improved along the streets and avenues that have been reorganized, with a reduction of 10 micrograms of NOx per cubic meter on many streets. Injuries also decreased...
by 25 percent between 2001 and 2005, in spite of a rapid increase of motorized two-wheelers. Motorcyclists constitute 50 percent of road casualties in the city.

**The Future**

Mayor Delanoë is running for reelection in March 2008, as is his Green Party coalition partner, the Deputy-Mayor Baupin. They are opponents in the first round of the election, and both are claiming credit for the legacy of their mobility achievements. However, if they are re-elected, it is probable that they will join in coalition again. Although Baupin has occasionally been called names such as ‘Pol Pot’ and the ‘Khmer Vert’ by disgruntled motorists, this critique has largely fallen flat given the increasing interest in environmental and climate change issues in opinion polls.

The administration has only been charging ahead. In February 2007, it presented a 15-year sustainable Mobility Plan which the Council of Paris approved for public hearings and a final vote in 2008. The 2020 objectives of the plan include: reducing traffic by 40 percent; reducing greenhouse gas emissions by 60 percent; increasing transit capacity by 30 percent; and raising non-automobile transportation mode share from 78 percent to 83 percent.

The city has become a role model for sustainable transport. Should the next administration receive a renewed mandate to continue these policies, Paris would be able to sustain their revolutionary efforts. 

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2008 Sustainable Transport Award Winner: **London**

This year, London expanded on the success of its groundbreaking 2003 congestion charging plan with a doubling of the congestion zone, increased fees for motor vehicles, and new city-wide emission-based tolls that are spurring more rapid adoption of cleaner, fuel efficient vehicles. Prior to the charge, London drivers spent 50 percent of their time in traffic jams, costing the city between £2-4 million every week.

Inspiring cities both in the United Kingdom and abroad, London is the largest city to undertake such a measure. A £8 flat fee is charged when a vehicle enters the congestion charge zone between 7am and 6pm with a stiff penalty (up to £250) for non-payment. Drivers have until the next day to pay. Payment methods include on-line, by a text message, by phone, or at pay points located in the zone.

Cameras at every entry point record license plate numbers with a 90 percent accuracy. These plate numbers are verified against the list of payees. If a plate number is not on that list, then the national Driver and Vehicle Licensing Agency’s database is used to find the owner of that plate to issue a fine.

Traffic congestion in the western extension zone dropped 25 percent this year. Some 70,000 fewer vehicles enter the extended congestion charging zone on a daily basis. Within the congestion charging zone, there was an 8 percent reduction in NOx, a 7 percent reduction in PM10, and a 16 percent reduction in road traffic CO2 emissions.

Overall, the congestion charge has increased bus patronage by 32 percent. Bike use has increased by 43 percent. Each year over £123 million are raised for public transport improvements. The gross revenue from congestion charging is about £213 million, of which £90 million cover the operating costs.

London also introduced a Low Emission Zone (LEZ) in May of 2007. The most polluting diesel-engine trucks, buses, coaches and large vans must meet specified Euro targets or pay a fine. The zone will expand to include all of London by 2008.

London also created a long range plan for 2025, which introduced innovative performance targets. Government performance will be evaluated based on progress towards the following targets: a nine percent mode shift from car to public transport, walking, and cycling, CO2 emissions reductions of 22 percent and a nine percent reduction in travel time from the 10 percent most deprived areas in London to town centers and the central business district.

Because of these groundbreaking initiatives, the Steering Committee of the Sustainable Transport Award recognizes London, as well as Paris, as the winners of the 2008 Sustainable Transport Award.
A commercially-viable, zero emission vehicle is the Holy Grail of many sustainable transport efforts. Often overlooked, however, is a zero emission vehicle already in operation around the world - the trolleybus.

By Walter Hook

Trolleybuses generate no tailpipe emissions, and they make little noise. The greenhouse gas impact of the trolleybus depends on how the power is generated to run the system. In São Paulo, it is from hydro-electricity. While some hydro-electric dams generate methane (a potent greenhouse gas) from decomposing vegetation, hydro-electricity is generally considered much better from a greenhouse gas point of view. So why is the world not rushing to embrace the trolleybus?

Globally, there are some 340 trolleybus systems in operation today in both developed and developing countries. Between 1990 and 2000, 37 new trolleybus systems opened and 29 were shut down. Are they a passing phase or a technology whose time has come?

The problems of the trolleybus are partly economic and partly operational. Whereas the operational problems of other clean bus technologies relate more to immature technology, the problems of the trolleybus...
are more about inter-governmental coordination and badly structured contracts.

In São Paulo, trolleybuses have been in operation for over fifty years. In 2002, just before the Suplicy Administration took office, there were 474 trolleybuses operating 26 routes on a 326.8 kilometer (km) network, carrying 3.26 million passengers daily.

In late 2002, with electricity prices rising, the Suplicy Administration cut 143 km out of the network, taking 261 trolleybuses out of operation. Nearly one million trolleybus passengers shifted onto diesel buses, generating some 65,000 to 70,000 additional metric tons of CO2 emissions each year.

Despite these adverse environmental impacts, the removal of the trolleybus was popular politically. Passengers were fed up with frequent service breakdowns. Some people also do not like the look of the overhead wires.

Today, São Paulo retains a 181.5 km trolleybus network, serving some 2.56 million passengers daily. However, the financial and operational problems with trolleybuses are so serious that there is a good chance that the next mayor will dismantle the rest of the system. If these problems cannot be solved soon, this transition from trolleybus to diesel could lead to an increase in roughly 150,000 metric tons of additional CO2 annually. Are the trolleybuses worth saving?

**Trolleybuses in São Paulo**

Every few months, there is a major service breakdown on the trolleybus lines. The most serious failures occur when a section of the overhead power lines, called catenaries, fails. This short circuit leads to power loss, and the entire trolley line comes to a complete stop, tying up traffic behind them. With diesel buses, an engine failure only affects one bus. Trolleybuses have difficulty maneuvering around obstacles because of the need to remain connected to the catenaries. Trolleybuses are also more likely to get stuck behind road repairs, double-parked vehicles, street vendors, and other obstacles, leading to traffic bottlenecks, whereas normal buses can be rerouted around such obstructions.

Catenary failure generally results from poor line maintenance. Line maintenance problems are aggravated by specific conditions. Poor pavement, like potholes, will tend to increase stress on the catenaries. Drivers, if not trained properly, can damage the lines by not keeping the bus under the power lines. Sharp turns and frequent obstructions will also increase tension on the overhead wires. If the catenary is in bad shape, rain can also increase the risk of a short circuit.

Line failures are much less frequent on the EMTU BRT system in the State of São Paulo where there are fewer turns, fewer obstructions to the right of way, and better pavement conditions. BRT and trolleybuses are, hence, natural allies. On high volume busway corridors, trolleybuses could provide local stop services, with standard buses, which can pass more easily, providing express services.

As part of the privatization of power distribution in São Paulo, maintenance of the catenary is the responsibility of ElectroPaulo, the private power distributor. The trolleybuses are operated by a private bus company, Himalaya, which is regulated by SP Trans. It is cheaper for Electro Paulo to just fix a line when it breaks, but failures are an economic disaster for the operator and for traffic conditions. This contractual relationship needs to be changed. Having the catenary maintenance contract under the control of SP Trans, with some sort of compensation payment by ElectroPaulo, has been suggested as a solution.

Some people think catenaries are ugly. Others like the look of trolleybuses and feel nostalgia for them. The problem of visual pollution can be alleviated significantly by employing steel poles with fashionable designs, which can also support street-
lights, such as those used in Nancy, France.

The most serious problems facing the trolleybuses are economic. Trolleybuses cost more to install and operate than diesel buses. The overhead power lines cost roughly $840,000 per kilometer (for both directions) to install. In addition, there is the cost of sub-stations, which also require between 8 and 50 square meters of land, depending on the type. The old trolleybuses with Direct Current (DC) cost $345,000, and the new trolleybuses which use Alternating Current (AC) are cheaper, costing roughly $250,000. This is considerably more than a comparable diesel bus in Brazil, which costs around $150,000.

When the cost of electricity, the cost of power line maintenance, and vehicle maintenance are all included, trolleybuses also cost more to operate ($0.52 per kilometer) than diesel buses ($0.42/km). Engine maintenance is slightly cheaper for a trolley bus, electricity is currently slightly more expensive, and power line maintenance is the main cost difference. Peak period electricity pricing surcharges of 40 percent, introduced only recently, are blamed for most of this higher operating cost. In many places transport companies get an exemption from the peak period surcharge, and evidently this is under discussion in São Paulo. Trolleybus advocates feel that clean and quiet trolleybus operations more than justify the higher cost.

The streets in downtown São Paulo are noisy and polluted, and hundreds of bus lines pass through them. Removing the remaining trolleybus system without replacing it with a clean and quiet alternative would be a step backwards for downtown São Paulo. While the operational problems of the trolleybuses are not easy to solve, the obstacles facing alternative clean bus technologies are just as daunting.

The Alternatives

Cleaning up the diesel bus fleet and introducing additional exclusive corridors is still probably the most cost effective way of reducing emissions and particulates in São Paulo.

A study published in June 2007 by the São Paulo-based IPT (Institute of Technological Research) concluded that deadly emissions of particulate matter were reduced by 55 percent when using cleaner diesels, with some reductions in CO2 and NOx. After-treatment filters for engine exhaust were also shown to make very significant pollutant reductions, such as catalyzed diesel particulate filters, which led to an 82 percent reduction in CO, 15 percent of NOx, and 98 percent in particulate matter.

However, this depends on the availability of low sulfur fuel. Currently, most buses in Brazil are Euro II operating with 500 parts per million (ppm) sulfur diesel. Federal and municipal legislation mandates the introduction of 50 ppm sulfur diesel by 2009, and most of the fleet could be upgraded to Euro III at that time. While the availability of clean diesel fuels could be delayed, progress in cleaning up the fuel over time is quite certain. Clean diesel also lowers greenhouse gas emissions compared to conventional diesel because it virtually eliminates the black emissions that contribute to global warming.

Ethanol is another option being explored in São Paulo. EMTU (Metropolitan Urban Transport Company) tested an ethanol bus from Scania in 1997 and 1998. At that time, the operating costs of ethanol buses were four times higher than diesel buses because of the high cost of ethanol. Ethanol is a
less efficient fuel, requiring about twice as much to go the same distance as with diesel. Ethanol significantly reduces particulates, but only reduces NOx by about 8 percent. The full fuel cycle CO2 benefits of ethanol made from sugarcane appear to be significant, although they vary enormously depending on how and where the ethanol is produced.

Today, the cost of ethanol in Brazil has fallen significantly, but the operating costs of ethanol buses remain 30 percent higher than for diesel, and future price volatility is an issue. Also, typically ethanol engines are less powerful than diesel, which is an issue on São Paulo’s steep hills.

Scania is developing a next generation ethanol engine, which is basically a diesel engine that works with ethanol plus an additive supplied by Sekab. This engine could be operated with a Brazilian chassis and a Marco Polo bus body. Such a bus is currently being tested by EMTU.

A Brazilian firm created a locally produced hybrid, but it has performed poorly, primarily because of a lower quality battery. The battery life is only one year, and the bus weighs two tons more than a normal one. Because of excessive battery weight, this hybrid bus consumed 20 percent more diesel than a standard diesel bus, so there was no environmental advantage. Underpowered, the hybrid bus labored to get up hills. The hybrids that were tested in the EMTU corridors are currently sitting in the depot unused because of these problems.

Hydrogen fuel cells are also discussed as a long term alternative. In Brazil, the plan is to generate hydrogen fuel cells using electrolysis, which generates no CO2 emissions, but costs more. The use of electrolysis faces the same issue of escalating power costs that currently undermine the economic viability of trolleybuses, except that an electrolysis facility can take power from the grid during off peak periods when power is cheaper. The main problem is that they still do not have a working prototype. The one under development is estimated to cost about $1.875 million per bus, with a range of 300 km, powered by a 210 kilowatt engine. Also required, an electrolysis plant will cost $2 million to build and only power five buses. Experts believe we are still at least a decade away from commercial viability.

**Back to the Future: Trolleybuses in São Paulo**

Trolleybuses could play an important role in future clean bus systems. They function best on exclusive BRT corridors. Extending bus priority onto São Paulo’s inner ring road would go a long way to minimizing operational problems in the city center. But if trolleybuses are to regain the public’s trust, São Paulo will also need to change the contracts governing line maintenance. The environmental and noise benefits are not free of cost, but in the city center where large numbers of people live and work, these benefits are at a premium.

The long run economic advantages of different clean vehicle technologies are difficult to predict. From an economic and health perspective, clean diesel is still the safest bet. Maybe technological breakthroughs in hybrids, ethanol, or hydrogen will make these alternatives, which are better from a greenhouse gas perspective, more commercially viable. Faced with such uncertainty, it would be a shame to dismantle São Paulo’s remaining trolleybus system and remove an option that has as good a chance as any of getting us to a cleaner future.
After five years of working with independent African bicycle dealers (IBDs) to establish the California Bicycle Coalition, the project is at a critical crossroads. To-date, 6,568 California bicycles have been distributed to moderate income Africans: 2,709 in South Africa, 2,633 in Ghana, 631 in Senegal, and 440 in Tanzania. Roughly 929 bicycles remain in African warehouses.

Distribution networks are firmly established in four countries. Many IBDs now have access to better quality bikes than ever before, with better credit terms.

Five years ago, the California Bicycle Coalition set out to create a sustainable commercial supply of good quality bicycles with reputable dealers. As the US AID grant that began this project draws to a close, the CBC is close to becoming a self-financing venture. We have come far, but are we there yet?

**Original Idea**

The California Bike Coalition came about because most African bicycle markets sold only low quality bicycles. Associated with poverty, bicycles were not considered a serious transportation option. When the African consumer got a little more money, they tended to buy a used car or motorcycle rather than a better bike.

To combat this, the CBC’s first step was to get a good quality, affordable bicycle into Africa. It seemed easy enough. Bicycles have been around for hundreds of years, one right off the shelf of a local bike shop should fit, right? Wrong. Most bicycles in the West are used for sports and recreation, and even commuting and work bicycles sold in the developed world cost close to double an African’s annual income.

California Bike set out to design an affordable bicycle that would be used by the whole household as a tool, yet also be trendy and cool. Ideally, the bicycle would have replacement parts available on the local market. Finally, the rider would need to feel proud of the bicycle. Although no one bicycle can fit everyone’s needs, we needed to start with just one model to get our feet wet.

Most African development efforts in the past focused on rural transport. We considered designing a robust, one-speed bicycle for farmers in the rural areas, but one already existed – the traditional upright roadster. Whether it is branded Phoenix, Avon, or Muzunga Volvo, this is the steel, 29” wheeled, rod brake, wrap-around handlebar workhorse of Africa. Although it had not been redesigned since the 1960’s, people were used to them, distribution channels already established, prices very low, and spares widely available. It could use some modest innovation, but the arbiters of taste and fashion rarely take their cues from the rural poor.

Instead, our target market was the “new African.” This African is young, full of energy and optimism, these young Africans want a bike that is fashionable and makes them proud. They got the chance to participate in the Cape Argus, the largest timed bicycle race in the world, on their new California bikes.
educated, energetic and looking to make their mark in life. This bicycle would need to be fun, useful and affordable. It would have features that caught the eye, be visible at night, but also be reliable – a serious form of transport. It would have to look like a mountain bike with the functionality of a town bike. This bicycle would need to be two words – cool and functional.

Our own design team got help from TREK Bicycles and Giant Manufacturing, and the product that came out of these three heads working together was a 6-speed, canary yellow hybrid bicycle for the urban commuter, the California Bike Los Angeles.

Spec’ing a bicycle is one thing; finding a reliable manufacturer to make the bike at a reasonable cost is another challenge. We knew from previous efforts that by consolidating the demand from several African countries, and ordering directly from a manufacturer, we could get the price down by at least 15 percent. We worked mainly with Trek and Giant, as their price and quality were by far the best.

Then, we needed a distribution mechanism. Most efficient, although least cost effective, would have been to just buy containers and let people take them for free. This approach was contrary to the aim of the project, which was to leave in place a sustainable commercial supply of good quality bicycles. ITDP did not want to undercut African businesses. Secondly, if someone does not pay for something, they rarely take good care of it. A bicycle is worth no more than the steel and aluminum that it is made from if it is not properly assembled and maintained.

Instead, we decided to sell the bikes through a network of mostly pre-existing independent bicycle dealers (IBDs). Since each country is very different, we set up national networks of IBDs. This was the concept behind the California Bike Coalition in 2002. Over the next five years we learned a lot about how to make this concept a reality.

**Convincing IBDs to Work with Us**

As program officer of Ghana at the time, when I first heard that I was responsible for building a network of independent bicycle dealers (IBDs) to distribute an unknown, untested product, it seemed an insurmountable task. Where do I find them? What if they are not interested? And most importantly how do I make sure they pay for the bikes?

Step one was to identify the dealers. During the initial stages, we tried to work with the dealers that looked most reputable, but a lot of it was just shooting from the hip. There were no credit references for our dealers, who normally flew below the radar, operating in an informal or semi-informal way.

The strategy was to spread our risk over many dealers, allowing them limited consignment to see who we could trust, who could sell the bike, and then later focus our efforts on dealers that moved product and satisfied a good location. We tried to balance the desire to move bicycles with the concern that flooding the market would hurt our dealers’ margin.

Initially, it was not easy to convince IBDs to work with us. Our product was the most expensive bicycle widely available in three of the four countries in which we operated. Many IBDs also

**In Ghana, Senegal, South Africa, and Tanzania, bike dealers were at first reticent to sell the California Bike, but through consignment, were willing to take that risk.**
only sold used bikes and this would be the first time that they sold new bikes. Finally, initially, I had no reputation or rapport with the businessmen with which I worked.

This took great salesmanship skills and a flexible, no risk mechanism for the IBDs to give it a try. Consignment, where we own the bikes in their shops until the moment they sell them, was that mechanism where IBDs were willing to try these new bikes. When we tried to shift to credit instead of consignment, sales dropped sharply.

Payment collection was not always easy or cost effective. In-country staff often made multiple trips and spent long hours on that, as well as inventory tracking. This came at a high cost—of time, travel, and communications. Once we had a smaller core group of IBDs, the risk of each IBD flat out not paying was low. We built relationships and trust, and with a few exceptions, most paid.

When I became the director of the CBC program and moved to Cape Town, I realized that partnering with IBDs in South Africa presented special problems. With few exceptions, IBDs existed predominantly in white upper-class neighborhoods. Independent black businesses were not allowed in townships during apartheid and have been slow to emerge since. Low-cost, new bikes were already sold through the big box retailers.

Unlike other CBC countries where the IBDs tended to be located in middle-class neighborhoods, in South Africa, ITDP and our local partner the Bicycle Empowerment Network (BEN) set up new IBDs in the townships, primarily poor neighborhoods. The shops suffered from all of the usual problems of start-up businesses. These IBDs survived on donated used bikes and factory seconds and never succeeded as a sustainable sales channel for the California Bike. In the end, almost all the California Bikes sold in South Africa were distributed through large volume sales brokered by BEN and ITDP staff.

Employee Purchase Programs

As consignment was the successful microfinance mechanism for working with the IBDs, employee purchase programs (EPPs) were the successful mechanism for customers. Many Africans pay a large percentage of their income to commute and often those distances are bikeable. With an EPP, a company would buy bicycles for its employees and then deduct a monthly payment from the employees’ paychecks. With this, the CBC was able to extend credit to individuals by having the company assume the risk. This strategy moved over one-third of all sales in Ghana and South Africa.

When we first started, we were brokering these large volume sales. However, not wanting to compete with our IBDs, we began orchestrating EPPs in conjunction with the IBDs, teaching them how to do it. However, different IBDs have varying degrees of capacity and in some cases less reputable companies defaulted on the payment to the IBD, who would, in turn, default to us. Now, some of our IBDs are brokering large volume sales on their own, while others still need help or are not there yet.

Skills Training

Some activities we never expected to be financed from bike sales. This included business and technical trainings for the IBDs, as well as events we
held to promote cycling, such as car free days and bicycle rides. Training was especially important, because when comparing the technical and business capacity of a third world IBD with a first world IBD, they are not even on the same chart.

But where does one start? Core business concepts such as cost of goods sold, net profit, inventory turnover, etc. were foreign concepts. One IBD might be operating under a tree and another might have a formal shop. How can one discuss the concept of using the proper tool for the proper job when the proper tool was not available?

The CBC developed a training program in each country, taking into account cultural, linguistic and budgetary considerations, but based on the common principal of training the trainer. This host country national could, then, perform ongoing trainings on a contract basis for us and oversee large scale assemblies.

In 2007, the trainings entered a new phase when we introduced the Industry Road Show. This training linked retailers in the developed world with our IBD network for a cultural and skills exchange. This satisfied two needs: first was capacity building; and secondly was to get the developed world bicycle industry involved in our projects.

**Business Model**

The CBC was expected to operate roughly on commercial principles to smooth the eventual transition to financial self-sufficiency. For the first two years we sold the bicycles through our IBD network at a 5 percent markup on the cost of the bicycles. We had not included warehousing in the initial cost of the bike, and faced a lot of unexpected costs, like currency fluctuations, bikes stolen from warehouses, bad debt, etc. The project, in short, was not able to recoup all operating costs from bike sales.

At the end of two years, we created a detailed financial model and business plan. The business plan determined that we needed to sell about 10,000 bikes a year at a 17 percent markup to fully cover the operating costs. It also called for diversifying the bikes we offered. No bike company could survive by only offering one model, and the CBC is no exception. We needed a one speed for employee payroll deduction sales and sales to development agencies. We also needed a higher end mountain bike for the growing number of middle class Africans.

**Product Diversification**

The next obvious step was a one speed, a model much more in demand in rural areas where bicycling was more prevalent. The traditional upright roadster, while robust and appropriate, was not “cool.” ITDP’s technical experts knew more or less what they wanted, but most reputable factories were not willing to develop specialty products without huge orders to justify their time and trouble.

In the end, using our connections in the industry, the CBC eventually supplied Qhubeka, an NGO in South Africa, with a one speed designed for rural areas. It was very similar to the original California Bike in terms of quality and style and did well in field tests. The bicycle had good quality hubs, a three piece crank, fenders and a rear rack.

After spending a lot of time exploring a frame with an integral rack, a mixte style frame, and a drop tube to accommodate women and men wearing traditional dress, we decided to use the same frame geometry as the 6-speed. Keeping things simple decreased the cost.

**Cash Flow and Lead Times**

Balancing cash flow and lead times was another problem. The ITDP Board placed a $25,000 cap on accounts receivable, and $140,000 cap on the liquidity that the CBC could tie up in inventory at any given time. This was enough to supply all four countries with bicycles supposing sales were reasonably stable. Unfortunately in Africa, sales

*continued on p. 30*
A general fighting along the borders need not listen to every order from the emperor far away in the capital.
– Old Chinese proverb

A n auspicious ‘Golden Pig Year’ is drawing to a close with Asia’s most promising – and most radical – bus rapid transit (BRT) system rapidly taking shape.

At a major urban transportation conference organized by Guangzhou’s Planning Bureau in September 2006, Qiu Baoxing, China’s Vice-Minister of Construction, and Zhang Guangning, the Mayor of Guangzhou, signaled an important new direction for Guangzhou. After more than a decade of policies hostile to bicycling, Mr. Qiu devoted a third of his opening day keynote address to the importance of bicycles. Mr. Zhang in a follow-up session on the third day focused on the need for the city to plan and implement a BRT system to improve the bus service.

A year later, the visions of these two leaders have moved much closer to reality, but it has been a struggle. In March 2004, the Ministry of Construction issued a directive that public transport priority was the appropriate transportation model for the development of Chinese cities. Three months later, Premier Wen Jiabao provided a formal endorsement. Yet in 2007, Guangzhou’s experience with bus rapid transit planning shows that the idea of public transport, especially buses receiving genuine priority, is still a radical one in China, especially in overwhelmingly metro- and car-oriented city planning bureaus.

A popular Western image of Chinese policy-making is that once a mayor decides on a course of action, lower level officials and agencies quickly fall into line. Perhaps some dogs continue barking and frolicking at the perimeter, but the caravan has moved on. Yet Guangzhou’s experience with BRT planning demonstrates that when powerful interests feel threatened, as in other countries, they will act to protect their interests regardless of the mayor’s imprimatur.

The preconception outside of China that the media is pliant and operates within confines set by fairly strictly defined and patrolled boundaries is also challenged by Guangzhou’s experience with BRT planning. Instead, as
elsewhere, when powerful commercial interests seem to be challenged and conventional wisdom uprooted (in this case by bus priority that threatens to deliver the service level and capacity of a metro), media timidity all but vanish in a storm of indignation and vested interest-driven misinformation.

It was the government, rather than the media, that was under siege. Following a particularly vicious metro-driven, anti-BRT media tirade by newspapers belonging to the Nanfang media conglomerate, Shenzhen’s Vice Mayor Zhang Siping consoled his Guangzhou counterpart. A champion of Shenzhen’s impending BRT system, Siping noted that the corporate media was driven by elite interests that paid scant heed to the needs of the common people for bus priority measures. These interests were quick to respond to perceived challenges to the primacy of cars and metros in the overall transport system planning.

Admittedly, this kind of media campaign is rare against an approved government project. Once the facts of the BRT design and implementation emerged later in August, the controversy and opposition were largely replaced by widespread support and anticipation. Indeed, the anti-BRT media campaign appears to have backfired, raising the profile of the project to stratospheric levels and reinforcing the leadership’s commitment to implementation.

Why did the Guangzhou BRT inspire such fear and loathing from metro interests and associated elements that they were prepared to risk a full scale media campaign against a project that had already been formally approved?

Guangzhou’s BRT seems increasingly likely to deliver on the promise of being the high watermark of BRT in Asia, at nearly 25,000 passengers per hour in one direction. It will deliver more than double the peak hour passenger volumes of any other Asian BRT system existing or in planning (the nearest being Seoul at about 12,000), at a higher speed and a lower cost and under better service conditions. Moreover, the project will deliver major improvements to mixed traffic, while also providing continuous dedicated bike lanes and high quality pedestrian facilities along the entire 23 kilometer corridor.

In the first phase, BRT passengers combined will save more than 100,000 hours each day, and other road users will also greatly benefit. Commuters using the new system – in which more than 600,000 daily passengers will ride in the first phase alone – will save up to an hour of travel time each day. Due to the higher operational speeds, hundreds less buses will be required to meet the same passenger demand. The Zhongshan Avenue Guangzhou BRT system, known as GRT, will be the highest capacity mass transit line in the city, with peak demand exceeding all of the metro lines. The cost of the 23 kilometer, 29 station BRT system...
infrastructure is equivalent to building around 800 meters of underground metro.

So far, BRT in China has largely failed to reach its potential. Kunming, with its median bus lanes, has been the only system to deliver short term benefits to passengers in terms of time savings, probably the best indicator of the success of a BRT system.

Beijing’s BRT has been greatly improved during 2006 and 2007 with the extension to 16 kilometers, the addition of 40 new articulated buses, and an improved terminal station. However, considering the time costs of transferring and the largely uncongested condition of the traffic lanes outside the BRT, it is unlikely to provide a net time saving to bus passengers or to users of the corridor overall. In fact, Beijing last November announced plans for 561 kilometers of metro, suggesting that BRT has failed to prove itself as a genuine mass transit alternative to the metro.

Hangzhou’s BRT system has impressive aspects, but it is also not likely to provide a net time-saving benefit to passengers or to people using the corridor. The system has a low level of ridership, has a high transfer cost imposed by the ‘closed’ operational mode, and exacerbates peak period congestion for non-BRT buses in the mixed traffic lanes, which still carry most of the public transport demand in the corridor.

Shenzhen’s first BRT line, also under construction, is also a closed system, meaning BRT vehicles are restricted to operate only within the specialized infrastructure of the medium capacity BRT corridor. The next BRT system to open in China will be Changzhou (see page 23), but ridership will initially be low.

Guangzhou’s GRT, in the short to medium term, offers the best hope for high capacity BRT in China and Asia, and the metro advocates and interests seem to be rightfully nervous about its demonstration potential.

The city government has put years of planning and design work into the BRT, led by the Guangzhou Municipal Technical Development Corporation, together with ITDP. The only question is whether GRT will reach its full potential.

The anti-BRT media campaign in July and August 2007 had some success, sowing doubts in the minds of some leaders and providing ammunition for opponents of the project within the Planning Bureau. The main parameters of the project – operating mode, corridor, alignment – have already been largely determined. Some key technical aspects of the project, especially the final station design and the BRT vehicle specification, have yet to receive final official approval. Road works, however, have already started, and the system is expected to commence operation sometime during the first half of 2008. Ultimately, it is the resolution of these outstanding technical issues which will determine where GRT will stand in the pantheon of BRT systems worldwide.

More information on the GRT can be seen at www.gzbrt.org.
A growing number of U.S. cities, following the footsteps of London, Stockholm, and Singapore, are advancing congestion charges on existing roads, thanks to new performance-based federal funding. But conflicts over how to use toll revenues and the application of new transportation financing tools could hinder progress.

Two dozen cities applied for funds under the new U.S. Department of Transportation (US DOT) Urban Partnership Program. Their proposals focused on congestion pricing of existing roads, combined with improved public transportation, traffic management, telework, and other smart market incentives, such as pay-as-you-drive insurance. In August 2007, US DOT awarded New York $354 million, San Francisco $159 million, Seattle $139 million, Minneapolis $133 million and Miami $63 million.

San Francisco and Seattle both seek new ways to manage traffic while financing the rebuilding of failing, heavily-used roads and bridges and expanding travel choices. Minneapolis and Miami aim to improve motorway traffic management and bus services.

New York Mayor Michael Bloomberg put forward the most ambitious proposal, modeled on London, that charges motorists $8 and trucks $21 to enter Manhattan below 86th Street. To win federal funds, NY’s final plan, subject to city and state legislative approval, must cut traffic by 6.3 percent while generating revenue for new buses and toll equipment (see page 26).

Like the United Kingdom’s similar national incentive grant program that has Manchester and other cities advancing important new initiatives, the US DOT’s program is clearing political roadblocks that hamper consideration of congestion pricing. The availability of this federal funding is playing a key role in convincing New York State legislators to support this proposal.

A large portion of these grant funds were made available only because the new Democratic Congressional leadership chose not to earmark funds as extensively as their Republican predecessors. But the Partnership Program, tolling, and efforts by US DOT to spur private investment in transportation have run into resistance in Congress.

Key committee leaders who have helped safeguard environmental and labor laws, Representative Oberstar (D-MN) and Representative DeFazio (D-OR), have gone on the attack. Earlier this year, they wrote to all 50 governors warning them against wider use of public-private partnerships for transportation. This undermined efforts by Governor Rendell (D-PA) and Governor Corzine (D-NJ) to fund transit and other programs through competitive leases of existing toll roads, which is especially unpopular with truckers.

DeFazio wrote to NY Governor Spitzer denouncing the Urban Partnership Program as an illegal blackmail scheme as leaders in the state legislature were working to block the Mayor’s congestion pricing plan. An amendment by Senator Shelby (R-AL) recently slashed bus funds available for the fiscal 2008 Urban Partnership Program by 90 percent, seeking to protect funding for bus systems in regions not contemplating any pricing initiatives to manage traffic.

But the Urban Partnership Program gained bi-partisan cover when leading presidential candidate Senator Hilary Clinton released her “Rebuild America Plan.” Her plan called for a 50 percent increase in funds for the Urban Partnership Program, along with a big boost in funds for public transportation and bridge repairs supported by new infrastructure bonds.

Senator Clinton has not joined with Oberstar and DeFazio in seeking higher gas taxes to fund more roads, bridge repairs,
On Earth Day this year, New York City Mayor Michael Bloomberg revealed his PlaNYC to make New York a greater, greener, more livable city.

Among the plan’s 127 initiatives was a proposal to charge $8 for cars and $21 for trucks to enter the central business district (below 86th Street in Manhattan) during weekdays from 6 am to 6 pm, with the revenue to be reinvested into public transportation. Congestion pricing was officially part of the city’s plan.

The transport and business communities in NYC have long been interested in congestion charging. Until the announcement, however, the government had systematically denied any interest. Today, New York’s congestion charging plan is the biggest and boldest congestion charging proposal in the United States.

With New York expected to grow by a million people in the next 25 years, Mayor Bloomberg realized he needed a plan that ensured that NYC would grow into a better, more attractive city that can compete globally with cities like London and Shanghai. Roads were already congested and transit had not expanded in over 50 years. How were these additional million people going to get around the city?

Underlying the concern over growth was climate change. New Yorkers produce 71 percent less carbon dioxide equivalent (CO2e) emissions per capita than the average American. However, the city as a whole produces 58.3 million metric tons of CO2e per year. If nothing is done, that will grow to 74 million metric tons by 2030. Cars and trucks account for 20 percent of that total and 50 percent of local air pollution.

The congestion charging discussion began in earnest in 2003, when the Regional Plan Association hosted Derek Turner, former managing director of Transport for London, to discuss London’s recent experience with congestion charging. Six months later, RPA released a report on four congestion pricing scenarios that could relieve traffic congestion up to 17 percent.

The Partnership for New York City, the city’s influential and powerful business association, had also been interested in congestion charging for some time. In 2005, the Partnership convened a working group to study various options, and developed a concept for a $7 dollar peak hour charge for anyone entering Manhattan south of 60th Street in a private motor vehicle. Reportedly, this plan would have reduced traffic by 15 percent.

A couple of days after Mayor Bloomberg was re-elected for his second term in November 2005, the outline of the Partnership’s plan was released and promptly shot down by City Hall, saying that it was not on Bloomberg’s second-term agenda. The Partnership never released the full proposal.

However, in January 2006, Bloomberg tasked his Deputy Mayor Dan Doctoroff to create a long term land use plan. They quickly realized that the focus needed to be broadened and in September 2006, established the Office of Long Term Planning and Sustainability to develop a comprehensive plan that also included transportation, air and water quality, energy, and open space from an environmental framework. This planning process was supported by a Sustainability Advisory Board composed of advocacy organizations, issue experts, key stake-
holders, and community and business leaders, including the Partnership for NYC and the Regional Plan Association, and other proponents of road pricing measures.

In the fall of 2006, the Partnership released a study showing that congestion costs the city $13 billion a year. The Manhattan Institute released a study on public perception of road pricing, concluding that for pricing measures to succeed, they need to enhance travel choices. Finally, grassroots organizations including Transportation Alternatives, the Tri-State Transportation Campaign, NYPIRG Straphangers Campaign, and Citizens for NY formed the Citywide Coalition for Traffic Relief, asking the Mayor to consider congestion pricing.

In December 2006, Bloomberg announced the Plan's framework of 10 goals and promised to deliver a detailed plan, in both action and financing, in the next three months. In April, PlaNYC was finally released, and the first details of the congestion charging proposal were released to the general public.

The Mayor's plan shifted the toll zone boundary to 86th Street, increased the charge to $8 and changed the tolling structure from the Partnership's 2005 general proposal. If a motorist enters Manhattan using a bridge or tunnel that is currently tolled, they pay only the difference between the toll and the congestion charge, not both. For example, if you enter using the Holland Tunnel, you pay a $5 peak-period toll (if using the EZpass), and you only pay an additional $3 for the congestion charge instead of a new additional charge of $8. For this reason, it is assumed that this lower charge reduced the traffic mitigation impact to an estimated 6.3% for vehicle miles traveled in the charging zone, and 11% reduction in vehicles entering the zone. The Mayor's plan was estimated to net $380 million in revenue every year that would go to improving public transit.

Rohit Aggarwala, Director of the Office of Long Term Planning and Sustainability, has said that moving the boundary to 86th was necessary because traffic tends to be regularly congested as far up as 86th street. There are many popular destinations above 60th Street, and there was concern that parking impacts in adjacent neighborhoods would be severe.

In May, New York City hosted the first meeting of the Clinton Climate Initiative and the C40, a joint initiative of Bill Clinton, Ken Livingstone and mayors from the world’s 40 largest cities to tackle global warming. Bloomberg featured PlaNYC, the city’s action plan for reducing greenhouse gas emissions by 30 percent, with the first step being congestion pricing.

To the Mayor's credit, he went for the difficult solution, says Bruce Schaller of the NYC Department of Transportation (DOT). Congestion pricing would be a heavy lift, Schaller continued, but willingness to take on tough political challenges, such as the contentious fight for control over schools, was part of the Mayor's popular appeal. Schaller joined the NYC DOT as the Deputy Commissioner for Planning and Sustainability in June 2007. He had been working on local transportation issues for over 20 years in both the private and public sectors, including at the New York City Taxi and Limousine Commission and New York City Transit. Schaller came back to work for the government because he saw this as a rare moment in the life of the city and a tremendous opportunity for implementation.

The Campaign for New York’s Future, an outgrowth of the Sustainability Advisory Board, is a coalition of over 140 organizations committed to being an outside force of support for all 127 proposed initiatives. Their role was to educate the public and the Legislature on the initiatives, beginning with congestion pricing.

Campaign leaders talked to members of the State Legislature in Albany about what this would mean for their constituents. They met with community groups and explained the transit benefits to their communities. Many organizations mobilized their members to attend public hearings, conduct information campaigns, and talk to their legislators about their support for congestion pricing. This outreach effort is, in part, why congestion pricing is still on the table today.

Neysa Pranger joined the Regional Plan Association as the director of pubi-
The majority of people in the city rely on public transit for their commute, with only five percent commuting into the downtown by car. Paul Steely White, the Executive Director of Transportation Alternatives, says that this forgotten majority supports congestion pricing, mainly because the revenue would go to mass transit and improving the commuting conditions for all. Earlier that day, White had been out promoting the idea in Bay Ridge, a middle class neighborhood in southwest Brooklyn, New York. Though underserved by the subway, only six percent of Bay Ridge commuters drive to Manhattan; 50 percent take transit. Residents are mostly supportive of congestion charging because they have been promised more express buses if the plan passes.

For Schaller, one fundamental change, and one of the most surprising outcomes of this process, is the broad consensus that the goals of reducing traffic, cleaning air, and producing revenue for transit are the right goals.

There are also coalitions organized against congestion pricing, such as the Coalition to Keep NYC Congestion Tax Free, led by the Queens Chamber of Commerce and key City Council members. The main criticisms are that it would drive traffic and parking into the neighborhoods surrounding the charging zone, and congestion to the outer boroughs. Some opponents have argued that it is a regressive tax on working middle-class families and small-business owners. However, most car commuters make more than 35 percent more income than their counterparts who take public transit.

The plan still has to pass the State Legislature to be implemented, and the initial effort to win approval failed. Many Democratic legislators said that the Mayor did not consult with them enough or give them enough information to gain their support. Given the tension between the formerly Republican Mayor (in June 2007, the Mayor left the Republican Party and registered as an Independent) and the Democratic majority in the Legislature, the plan never made it to the floor for a vote before the summer recess.

According to both Pranger and Schaller, even though the legislative session had ended, everyone kept working on it. The city applied to the Federal Government’s Urban Partnership Program for $500 million in grant monies to support congestion pricing with public transit improvements. Getting this grant was initially contingent on State Legislature approval by mid-July, but in the end the Federal Government was convinced to accept the compromise.

Governor Eliot Spitzer convened a special session for mid-July. As the NY Times reported, it took four men (Spitzer, Bloomberg, Assembly Speaker Sheldon Silver, and Senate Majority Leader Joseph Bruno) four days and nights to reach a compromise.

That compromise was legislation to form a Traffic Congestion Mitigation Commission. With this, New York was deemed eligible for federal funding. The US Department of Transportation authorized a $354 million grant for a pricing demonstration, contingent on the approval of a pricing program. The demonstration is a three year trial and most of the money is for transit improve-
aments, including bus rapid transit.

However, the Commission’s final proposal will still have to be approved by the New York State Legislature and the City Council by March 31, 2008, and there is still a significant risk that the proposal will be rejected. In the past, the State Legislature has rejected the recommendations of similar commissions.

Furthermore, the federal grant is conditioned on doing a pricing demonstration, but it does not specify congestion pricing; it could be tolling or parking measures, so long as it reduces traffic by 6.3 percent. The Commission is tasked with developing the implementation plan by January 31, 2008. There are 17 opinionated, out-spoken appointees on the Commission, both for and against congestion pricing. It will be a challenging task to resolve some of the issues facing the Commission and come to agreement on the framework of the plan within the timeline. But, as Schaller stated, the task of getting people to agree benefits from a deadline.

The City Council represents another potential hurdle. Originally, City Council approval was not necessary. Some felt not sending it to the City Council gave political cover to Council members who were supportive but did not want to vote, while others took it as evidence of Bloomberg ignoring City Council once again. Silver, as part of the compromise, made City Council approval necessary.

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City Council Speaker Christine Quinn has endorsed the plan, but it is not clear if her members will be loyal to her, and the Council remains divided and undecided. Two-thirds of the Council are not up for re-election in 2009 due to term limitations. Many have ambitions to run for higher office and may want to avoid contentious issues that might provide fodder to their opponents.

Additionally, there is concern over how much revenue will actually be raised. According to the transportation technical report for PlaNYC, $600 million in gross revenue is expected from congestion pricing. Of that, $240 million will go towards operational expenses. The report is thin on details, however, and some experts are saying the operational expenses may be higher.

The operational costs are high mainly because of the institutional complexity of implementing the city’s current proposal. Some bridges and tunnel tolls are collected by the Port Authority for New York and New Jersey, while others are collected by the Metropolitan Transit Authority (MTA). Because of the discount being offered for motorists already paying bridge and tunnel tolls, managing and enforcing the charge requires cooperation between the Port Authority, the MTA, and a proposed new entity, the “Sustainable Mobility and Regional Transportation Financing Authority” (SMART Fund), which would collect and manage revenue from the congestion charge. Other options, such as imposing a flat $8 fee on everyone, would have been cheaper to administer, but perhaps politically less palatable.

Debate also continues over what to do with the net revenue. Some are arguing that the revenue should go towards capital improvements in the transit system. Others want to use the money for keeping fares at their current level, which polling suggests would be popular with voters. Most think the money will go to the MTA. Currently, the MTA is running a billion dollar operating deficit largely due to the repayment schedule of bonds issued under the Pataki Administration. The $380 million is not enough in itself to solve the MTA’s operating deficits.

In transportation policy, New York has been lagging behind other world cities. While central London has been transformed by congestion charging, and central Paris by the Vélib bike sharing program and other innovations (see Paris article, this issue), New York seemed trapped in the auto-dominated mindset of the 1950s.

Many believe losing the Olympic bid to London, with their bid focused on livability and sustainability rather than on mega-projects and stadiums, was a turning point for Bloomberg and his Deputy Mayor Dan Doctoroff. The concern and influence of the business community, most notably the Partnership for NYC, was a critical factor in advancing congestion pricing. Advocacy efforts from the transportation community, including the Regional Plan Association, Transportation Alternatives, Tri-State, and Straphangers, all played key roles in initiating and more importantly sustaining support.

After tackling school system reform and other issues, Mayor Bloomberg has finally turned his attention to transportation. The next two years will determine if New York becomes the leading urban innovator from the US. Congestion charging is an important bell weather to see if the city and its citizens have the courage to remake their city.
were irregular, and there were always surprises. For us, the surprises usually came in large, unpredictable bulk sales. This would wipe us out of inventory and leave the project stagnant until more bicycles could be imported. With a five month lead time, this meant that some of our IBDs would be without bicycles for months, missing some key sales opportunities.

To address this, the CBC tried to establish an endowment fund, so that the bikes tied up in inventory did not constitute a drain on ITDP’s liquidity. The markup on the bicycles would be used to cover in-country expenses and administrative costs, while the principal would be returned to the fund to purchase more bicycles. Any net profit could also be invested into it. Although the CBC Endowment Fund exists on paper, there have been no investors yet. We did, however, convince Trek to give us credit terms, which has helped.

With the ending of grant funding, ITDP was forced to reduce the liquidity cap to $65,000, wreaking havoc on the project’s cash flow just as the CBC was beginning to manage inventory and lead time effectively. Until the endowment fund has roughly $200,000, or an equivalent credit line, the CBC will not be able to keep the 1-speed and 6-speed in stock in each of the countries we operate, creating a very precarious position.

Industry Involvement

From the beginning, the CBC was designed to convince the global bike industry to take Africa seriously as a long term market opportunity. This has not entirely succeeded. The concept of a nonprofit organization supporting business development rather than giving away bikes has confused many people, the bike industry included. The image of Africa as a continent for charity rather than business persists.

Hats off to TREK and Giant; without their help, the CBC would be nothing. However, the CBC is not in line with their business strategies, and they participated more for charitable reasons. Where the project co-exists with their core markets, as it does in South Africa, the relationship between the CBC and TREK bicycles proper required careful negotiation.

The California Bike was conceived to be the first quality bicycle that an African family would buy, eventually trading up to a brand name bicycle like TREK or Specialized. The CBC business plan was not wedded to design-ing and procuring bicycles under its own brand name. It was open to acting as a distributor for brand name bicycles from reliable industry partners. In Dakar, we brokered a deal between Trek and a CBC partner, Bompthi Sports, to start importing Treks directly, and we brokered a similar deal with Firefox in Delhi, India. But neither was routed through the CBC, so it did nothing to improve the CBC’s financial viability.

ITDP also held long discussions with Dragon Sports of South Africa. Dragon developed and marketed a few bicycles similar to the California Bike. Their first attempt was too low quality to attract consumers. Due to its low price, their second attempt, an 18-speed bicycle from the Giant China line, was more successful, but quality has remained an issue. They are now planning to copy both the 1-speed and the 6-speed California Bike under their brand name, Avalanche.

The bike industry in the past five years has gotten more involved with aid and disaster relief. SRAM created World Bicycle Relief in response to the tsunami. They partnered with World Vision to donate some 26,000 bicycles to health care workers in Zambia. Fuji, with ITDP’s help, delivered some 50 bicycles to relief workers in Sri Lanka and 100 bicycles to earthquake victims in Yogyakarta, Indonesia. This year at Interbike, Stari’s World Bicycle Relief, Hans Rey’s Wheels4Life, Bicycling Magazine’s Bike Town Africa, Tom Ritchey’s Project Rwanda, True-LLC’s Sistershop Program, and ITDP came together to discuss international bicycle philanthropy.

ITDP supports these efforts, but we do not want the global bicycle industry to see Africa only as a basket case in need of ongoing charitable donations. There is a potential market of hundreds of millions customers in Africa. A company that establishes a trusted brand name and low cost supply position in this market would reap potentially enormous long term rewards, though they also face huge start up costs and risks. The CBC project has helped to underwrite these start-up costs, making it easier and less risky for the bike industry to enter this market — not as a donor but as a business.

Over the next year, as the CBC tries to survive as a financially self-sufficient entity, we will be reaching out to the retailers and manufacturers who have talked to us about concept stores, the socially responsible investors who have talked about making the CBC a for-profit venture, and the manufacturers with a long term strategic interest in Africa. Those with vision will see the opportunity available in Africa and may accept the risks with us.
transit, and non-motorized transportation. Neither has Senator Baucus (D-MT), who is in a key position to block a tax increase. The Bush Administration has vowed to veto any new tax or borrowing effort to fund transportation. New federal funding for transportation remains stalled as the Highway Trust Fund heads into deficit by 2009.

US DOT Secretary Mary Peters opposes tax increases in favor of better system management, private investment, and more targeted spending. The performance-based funding approaches of the Urban Partnership Program could provide a new model for federal leadership in transforming transportation.

Unfortunately, under Peters’ leadership, US DOT has antagonized many smart growth and transportation reformers. US DOT has sought funding cuts for transit and made it harder to fund expanded public transportation capacity. US DOT has short-circuited environmental reviews to illegally approve huge, destructive road projects like Maryland’s $3 billion Intercounty Connector that would spur new sprawl and pollution while doing little to relieve congestion. Federal judges in New Hampshire and Vermont have recently overturned two such illegally approved projects. In recent speeches, Peters has denigrated bicycling as a transportation mode unworthy of funding, antagonizing pro-bike leaders like Representatives Oberstar and Blumenauer.

The Federal transportation law expires in 2009. Many foresee a possible moment like that in 1956, when the Interstate Highway system was created, or like 1991, when the first Intermodal Surface Transportation Act was adopted. Rethinking finance and system performance are likely to be at the heart of the upcoming opportunity.

Current transportation law allocates mostly by funding formulas to states. The more people drive, the more money a state gets. This incentive is grossly out of tune with a carbon-constrained world stuck in traffic, breathing fumes that hurt us and our children. With scientists saying we need 80 percent reductions in greenhouse gases by 2050, we can ill afford to spend billions building bigger roads that fuel more sprawl and traffic growth.

Reform of U.S. transportation in 1956 took presidential leadership. In 1991, it was visionary congressional leadership by Sen. Moynihan. It is as yet unclear where this visionary leadership might come from in 2009.

Will tolls and public-private partnerships primarily be used just to build more roads faster? Or will they be used to build happier, healthier, economically competitive cities while cutting greenhouse gas emissions? Higher transportation taxes and user fees are unlikely to win support unless customers are convinced that the money will be used for better system performance and expanded travel choices. That demands not just pricing and sensible transit investment, but transforming transportation with smarter growth and support for walking, cycling, public health, and timely reductions of pollution and greenhouse gases.

The next major transportation battle in the US is likely to determine whether these market-oriented tools are used with proper accountability, transparency, and intelligent performance-based contracting, or to simply give free reign to the highway lobby.

Michael Replogle is president and founder of ITDP and transportation director of Environmental Defense.

For more information:
Eddington Transport Study: http://www.dft.gov.uk/about/strategy/eddingtontstudy/
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