

# The Buenos Aires Suburban Railways and Subway Concessions: Lessons Learned

Jorge M. Rebelo

*The World Bank, Washington, D.C.*

**ABSTRACT:** In 1994, the Government of Argentina (GOA) decided to concession to the private sector the operation and management of its suburban railways and of the Buenos Aires subway. What was the outcome of these concessions from the fiscal, economic and social standpoint? Are users better off under private sector management of the rail-based systems? Should these experiences be replicated elsewhere? This paper discusses some of the results so far, the lessons learned and whether these experiences should be replicated elsewhere. Furthermore it suggests that Buenos Aires would benefit from learning with Madrid and Paris the advantages of having a Metropolitan Authority which promotes modal integration. Similarly, Madrid and Paris might learn from the BA concessions to promote higher private sector participation in their systems.

## 1 BACKGROUND

The Buenos Aires Metropolitan Region (BAMR) generates daily about 18 m motorized trips of which slightly more than 50% are by public transport. The share of public transport trips has been decreasing in favor of other modes, particularly automobile, despite some improvements in the rail-based transport systems. BAMR with 13 m of inhabitants has a multimodal transport system which includes: a suburban railway of about 840 Km of line, carrying 1.5 m (million) passengers daily; a subway network of 42 Km, carrying 1m passengers a day; and a bus system operating 15,000 buses carrying 7.5 m passengers. Another 7.5 m daily trips are made by individual or private transport: 5m by private cars; 2 m by taxis and other ways of cars for hire and the remaining trips by other modes such as: minibuses, informal buses, etc.

In 1994, after having tried for years public management of the suburban railway systems and of the subway and faced with increasingly higher operating subsidies and very poor level-of-service, GOA decided to concession them out to the private sector. The suburban rail network was split into 7 concessions and was operated by 4 concessionaires: Trenes de Buenos Aires, Metropolitano, Metrovías and Ferrovías. Argentina chose the “integral” concessions in which each line is held and operated by one operator concessionaire in charge of operating and maintaining the infrastructure and equipment. The concession was awarded to the bidder which provided the highest net present value to the State of a combination of operating subsidy and investment

over the term of the concession, with the government committing to undertake part of these infrastructure investments and equipment rehabilitation. There was also a sunset clause on the operating subsidy, in other words, the operating subsidy would end at some point in time specified in the bid.

An internal World Bank study evaluated the impact of the rail-based concessions in BA from the user, community and fiscal standpoints and compared the situation before and after the concessions took place. From the standpoint of the users the study attempted to evaluate the savings in their generalized cost including savings in tariff, travel time, reliability and comfort. From the standpoint of the community, the study evaluated the overall travel time savings for the community and the savings in operating costs.

<b>Table 1: BAMR motorized trips (millions/day)</b>		<b>%</b>
Suburban Railways (7 networks)	1.5	7
Metro (subway)	1.0	6
Buses	7.5	42
Taxis	2.0	12
Private Automobile	5.0	28
Other (minibuses/informal buses)	1.0	6
<b>Total transport daily trips</b>	<b>18.</b>	<b>100</b>
<b>Population (in millions)</b>	<b>13</b>	

**Table 2: Buenos Aires public transport system data**

Commuter railroads (7 networks)	
Lines	840 km
Stations	259
Electrified lines	178 km
Electric cars	736
Diesel electric locomotives	177
Cars	622
Diesel cars	16
Metro	
Heavy metro lines (7 lines)	40 km
Stations	67
Electric cars	540
Light rail (1 line)	8 km
L.R. stops	16
L.R. cars	14
Buses	
National (federal) regulated buses	10,000
Province (state) regulated buses	3,000
Municipal regulated buses	2,000
Informal buses	Not accounted

ment of operating subsidies and lack of compliance of investment obligations by the State, the ridership decreased, the level-of-service deteriorated and the subsidies increased due to the tariff and subsidy policy adopted by the administration to ensure user affordability and to accommodate labor pressures. Nevertheless, despite these shortcomings, even after 2002, the concessions stood their ground at least from the standpoint of the user and the community. Insofar as subsidies are concerned, government policy has led to an increase which is eroding the previous savings achieved.

**Table 3: BAMR Concessions**

Concessionaire	Line or network	Start Date	Term
METROVÍAS	Urquiza + red subterránea	1st jan 1994	20
FERROVÍAS	Belgrano Norte	1st april 1994	10
METROPOLITANO	San Martín	1st april 1994	10
METROPOLITANO	Belgrano Sur	1st may 1994	10
METROPOLITANO	Roca	1st jan 1995	10
TRENES DE BUENOS AIRES	Mitre + Sarmiento	27th may 1995	10

Estimates of externalities and accident reductions were not possible because of lack of data, although the shift in ridership is likely to have produced such impacts. But because the measures were not accompanied by a bus rationalization action, these benefits are hard to measure and were not accounted for. From the fiscal standpoint, the study estimated the savings in operating subsidies to the system before and after the concessions. Here are some of the main conclusions:

a) The concessions of the suburban railway and subway systems of BA produced very positive impacts from the social, economic and fiscal standpoints until end of 2001, with a very successful recovery in ridership, a noticeable improvement in the quality of service indicators and a significant savings in travel time, operating costs and state operating subsidies. In addition, there was an increase in investment in the railway infrastructure and equipment higher than expected in the case without concession;

b) After 2001, with the change in the country's macroeconomic conditions and the delays in pay-

ment of operating subsidies and lack of compliance of investment obligations by the State, the ridership decreased, the level-of-service deteriorated and the subsidies increased due to the tariff and subsidy policy adopted by the administration to ensure user affordability and to accommodate labor pressures. Nevertheless, despite these shortcomings, even after 2002, the concessions stood their ground at least from the standpoint of the user and the community. Insofar as subsidies are concerned, government policy has led to an increase which is eroding the previous savings achieved.

## 2 RIDERSHIP RECOVERY

Paid passenger demand in the suburban railways grew from 212 m passengers per year in 1993, last year before the concession to 480 m in 1999. This was probably achieved because all level-of-service indicators including punctuality, cancellation of trains, seating capacity, frequency, reliability and safety improved. For example, between 1993 and 1997 the number of train cancellations and delays fell 86% while the supply of car-kms increased by 70%.

Traffic stopped growing in 2001 with the economic crisis which led to a GNP drop of 11% in 2002. This generally impacts formal employment and thereby ridership. As a result, traffic level came down to 357 m in 2002, 25% than in 1999.

Part of the traffic reduction in 2002 is explained by higher fare evasion than before due to lax security

enforcement at exits. As a result of delays in payments of subsidies, some concessions reduced outsourced services such as security personnel which are key to deter fare evasion. This suggests that the actual reduction in overall traffic was probably not as severe as official numbers for paid traffic suggest.

The subway had a similar traffic evolution going from 145 m trips in 1993 to 260 m in 1999 (almost 80 % growth).

After a pause in growth, there was a fall to about 222 m trips in 2002. However this reduction was only of 15%, much less than the one experienced by the suburban railways.

In 2003 and 2004, most of the suburban railways recovered. In 2004, the suburban railways reached 395 million paid trips. The same year, two of the lines experienced again growth, surpassing their best year before the economic crisis.

The subway also recovered to reach 241 m trips in 2004. There were 3 new stations inaugurated between 1997 and 2000 and that might have helped in the recovery. However, intermodal integration at the Once, Constitución and Retiro terminals was lower than before and that limited some of the traffic growth.

### 3 TRAIN SUPPLY

The suburban train system supply went from 95 m car-kms in 1993 to about 169 m car-kms in 1999 (a 78% increase). The concessionaires maintained the supply level between 1999 and 2001 thanks to better maintenance which allowed better availability and utilization rates of the equipment received at the start of the concession. Several trains which were immobilized were rehabilitated and brought back into service and so were some cars used for intercity services which belonged to Ferrocarriles Argentinos and were immobilized.

But then, the 2001 crisis hit and the State faltered in its obligations which until that time had been timely discharged. First, the State delayed and then interrupted in 2002 the payment of operating subsidies. In response, the concessionaires reduced supply, cutting down the number of trains programmed and decreasing the number of cars per train. In 2003, supply was reduced to 130 m car-kms, 77% of the 1999 level, but there were significant differences between concessionaires. One of the concessionaires almost resumed its 1999 supply level, another, in the other extreme, still maintains a level which is 2/3 from the 1999 level.

In the subway, the supply increased from 19 m car-kms in 1993 to 36 m in 1999 (a 90% increase). This concession reduced its supply in 2002 but in a lesser scale than the suburban railways. Therefore its return to its 1999 level was faster. In its performance, some importance should also be attributed to the opening of the 3 new stations referred above.

As a result of the changes in supply and demand, the ratio passengers to car-kms decreased in the beginning of the crisis but the reduction in supply in 2002 led to higher occupation rates in 2004, thereby reducing comfort in the trains when compared to 1999.

In the subway, the ratio “passengers/car-kms” is higher than in the suburban railways due to the higher density of stations, population and jobs in the area of influence of the lines. The occupation rates were at their lowest in 2001 but afterwards they have recovered their original level.

### 4 TARIFF AND SUBSIDY POLICY

Until 1999 the tariffs practiced were those set in the original 1991 concession contracts, with the adjustments allowed to recognize a tariff bonus when the concessionaire would meet some performance targets preset in the contract. The “higher tariff for better service” formula was very successful and it improved the level-of-service offered. The adjustments for quality (10 to 15%) did not reduce the gap between the rail and bus tariffs with the latter being much higher; these adjustments had little negative impact on ridership. In 1999 and March of 2001 there were two tariff adjustments of 15% each aimed at increasing the investments.

From 2002 onwards, there was a change in tariff policy and the administration decided that the railway, subway and bus tariffs would remain unchanged. The suburban railway tariffs continued to be much lower than that of its main bus competitor (\$ 0.40/0.50 for trip lengths up to 12 km compared to \$ 0.75/0.80 for the buses for shorter trip lengths).

From 1994 onwards, the subway tariff was closer to the bus tariff and that situation continued in 2004 in which that tariff was 12% lower than the bus tariff.

This policy of maintaining the tariffs unchanged reduced the incentives to expand the supply and requires an increasing amount of subsidies. In the beginning of the concessions, the railway and subway tariffs were clearly higher than their long run marginal costs to increase the supply, creating thereby incentives for the operators to expand their supply. But in 2005, with the policy of unchanged tariffs and

facing increased costs, there was no incentive to increase the supply of services.

In response to the change of costs experienced by the concessionaires from 2001 onwards (materials, spare parts, salaries and energy costs) without change in tariffs, the administration decided to compensate them with an additional subsidy to the one stipulated in the original contract. This additional subsidy compensates for the increases in all operating costs. It also covers changes in labor laws which require higher number of staff and /or salaries as it happened with the subway. The increase of subsidies without improvements in the service offered, sets back one of the crucial positive impact of the concessions, i.e. their fiscal impact.

The behavior of the concessionaires during the economic crisis was not the same for all of them, as the demand evolution suggests. In some cases, the decrease in quality of level-of-service and the non compliance with the contracts were such that, by June 2004, the government rescinded the concession contract with Metropolitano for the San Martin line which experienced a strong fall in demand since 2001. In February of 2005, the State assumed the concession and signed a management contract with the 3 other concessionaires. The State indicated that it would call for bids for this concession.

## 5 LABOR IMPACT

In 1999, after the strong initial staff reductions made by the State, when the concessionaires took over there were 7412 persons employed by the suburban railways. In the subway, in the same year there were 2032 employees considering the subway and the Urquiza line together because they were under the same concession. All concessions used outsourcing for security, cleaning and rolling stock and facilities maintenance.

With the 2001 crisis, some concessions rationalized their maintenance services, closing down and merging facilities and that created a decrease in staff "outside the contract". From 2004 onwards, there is an increase in labor conflicts with claims for more subsidies and better labor conditions, and the new administration policy puts pressure on the concessionaires to incorporate more employees in their regular staff.

In the specific case of the subway, in 2004 there was a substantial increase in staff due to the change of the number of working hours per day from 8 to 6. There was also pressure from the unions to include in the formal staff some of the outsourced personnel or at least to unionize them.

## 6 SERVICE COVERAGE, EQUIPMENT AND INFRASTRUCTURE

Service coverage of the suburban railways is quite ample: 840 km of lines and 260 stations. There are frequent services (at least 3 trains per hour) in about 400kms of lines of which 180 kms are electrified. Over the other half services are less frequent (1 hour headways) and lower quality rolling stock. Service is provided for about 20 hours per day without service between midnight and 4 am. The subway has a 42 km network and 69 stations with service provided between 5 and 11 pm.

The concessionaires received the fleet assigned by the State with several cars immobilized due to deferred maintenance, vandalism or cannibalization. The increase in supply in the first years of the concession was due to mobilization of these trains which were repaired by the concessionaires.

The contracts included incorporation of new or used equipment as an obligation of GOA. The concessionaires could also add to the existing fleet if they wanted to do so with their own means.

New equipment: 80 new cars for the subway, contract which was paralyzed in 2002 and was reactivated in 2004 financed by the State; diesel electric locomotives, financed by the State; and 17 locomotives leased by one of the concessions.

Used equipment: Intercity cars which belonged to Ferrocarriles Argentinos which had major repairs; used locomotives bought in Spain; 182 used cars added to the subway fleet. Almost all the equipment was added before 1999, contributing to the substantial improvement in supply up to 2001.

The suburban rail infrastructure did not have major changes since the concession. The main works were track rehabilitation, bridge strengthening, grade crossing improvement and substation modification. The programs were modest and slower than planned. With few exceptions, the infrastructure did not improve in a way as to allow substantial improvements in service.

One of the major investment components which called for the elimination of about 30 grade crossings, was not completed. There was opposition from the neighbors and business owners dwelling close to the grade crossings. In the City of Buenos Aires, a program financed by the Bank to grade separate a number of crossings was reactivated in 2004 with World Bank financing.

The State complied with its obligation of extending Line D of the subway to the Belgrano neighborhood

with 4 stations. Two were opened in 1997, one in 1999 and the last one in 2000. In 2003, the City of Buenos Aires inaugurated two stations in Line B which were not part of the original concession contract.

## 7 IMPACT ON USERS, COMMUNITY AND STATE USERS

The most important benefits for a user of a transport system are savings in time, savings in fare as compared to an alternative mode, reliability, safety and comfort. The study examined the savings in time for the user, the savings in fare as compared to the alternative mode. It did not quantify the improvement in reliability, safety and comfort described above. The main results were:

- As a consequence of the improvement in the level-of-service offered, and the modal shift towards rail-based mode, users obtained substantial benefits in time savings and in fare when compared with the alternative bus mode;
- Expressed in time savings the benefit for the suburban railways user was equivalent to about 20 minutes and to the subway user was about 10 minutes per user;
- Insofar as fare savings (out-of-pocket cost) while those which were already rail/subway users only benefited from the time savings, those who shifted from buses to rail/subway benefited from a fare savings equal to the difference between the APP bus fare and the rail/subway bus fare;
- The net present total savings for the rail plus subway users was estimated at 1,588.3 million pesos of 1997.

Year	Time Savings	Fare Savings	Total Railways
1994	6,0	0,2	6,2
1995	113,3	9,5	122,9
1996	256,1	21,0	277,1
1997	335,5	35,1	370,6
1998	361,1	31,6	392,7
1999	359,7	32,1	391,7
2000	345,9	32,3	378,2
2001	298,8	25,2	324,0
Total	2.076,5	187,0	2.263,5
NPV@ 12%	1.155,5	104,0	1.259,5

NOTE : In the initial years the savings were prorated for the part of the year in which the concession was in force

Year	Time Savings	Fare Savings	Total Subways
1994	12,6	10,1	22,7
1995	18,8	19,1	37,9
1996	23,5	25,7	49,2
1997	34,1	38,7	72,8
1998	46,8	62,9	109,7
1999	49,2	59,8	109,0
2000	48,3	55,0	103,4
2001	38,1	43,0	81,1
Total	271,5	314,3	585,8
NPV @12%	153,4	175,4	328,8

Year	Time Savings	Fare Savings	Total Rsil+Subways
1994	18,7	10,3	29,0
1995	132,1	28,6	160,8
1996	279,6	46,7	326,3
1997	369,7	73,7	443,4
1998	407,9	94,5	502,4
1999	408,8	91,9	500,7
2000	394,3	87,3	481,6
2001	336,9	68,2	405,1
Total	2.348,0	501,3	2.849,3
NPV @12%	1.309,0	279,4	1.588,3

## 8 COMMUNITY

The community as a whole enjoyed the time savings of all users plus the savings in operating costs of the system. The savings due to reduction of the traffic congestion, less accidents and pollution could not be quantified.

The time savings for the community are the same as those estimated for the users above.

The operating cost savings were those due to a lower operating cost of the rail/subway system and of a lower operating cost of rail as compared to bus for those who shifted from bus to rail. Additional benefits for the community would have been realized if GOA had put in place a bus route network rationalization program to adjust for the demand that shifted to rail. This was not done but it is estimated below.

## 9 STATE BENEFITS

The State's main benefits are the savings it would obtain in payments of operating subsidies when the concessions were compared with the situation without concessions. Not only did the State save in operating subsidies, but also used part of these savings to comply with its investments obligations in the concession contracts adding therefore to its equity. This was not possible before because the operating subsidies were so high that they would consume a substantial portion of the budget.

The operating subsidies paid to the concessionaires was significantly less than the operating deficit that the public enterprises (FEMESA and SBASE) that were running the suburban railway network and the subway before the concession. This subsidy was about one third of that deficit in the year in which the highest subsidy was paid.

Up to 2001, the annual operating subsidy paid decreases in general on a regular basis throughout the concession term. In three of the concessions, the concessionaires start paying a concession from a certain point in time. In general all the subsidies were paid as planned and the concession fees which were paid by those three concessions were applied towards the investments which the State was supposed to finance.

Part of the concessions design was the increase of State investment for the rehabilitation and modernization of the suburban railways and the subway. This increase in investment was about 50% higher than in the case without concession.

## 10 CONCLUSIONS AND LESSONS LEARNED

The BAMR suburban rail network and subway concessions were, by all means, quite successful from the standpoint of the users, community and state. While the State complied with its obligations, the concessionaires complied with the contracts, improved level-of-service and had the incentives to meet or surpass the targets set by the administration. Even after the 2001 economic crisis, and non-compliance of obligations by State and some concessions, the latter stood their ground although State subsidies increased. This Buenos Aires experience with some adjustments to reflect the lessons learned should be replicated in other Metropolitan regions.

Allowing for an operating subsidy and proposing to invest on a preset package of investment was a clever way of giving enough time for the concessionaire to adjust to initial demand uncertainty and providing a safety buffer which could turn into a saving which the concessionaire could apply in improvements to the system. This would force him to be cost-efficient so that it could save money to apply in the investments which he had to do to set the concession in motion.

All worked well while the State could pay on time its obligations. When that became difficult because of the crisis, and was not possible for the State to pay the operating subsidies, the concessionaires responded with service curtailment and decrease in the level-of-service quality. Since macroeconomic shocks occur more often than desirable, the lesson is that a concession with operating subsidy needs to be supported by a guarantee (from a third party) which would be triggered when the State defaults on its obligations. The guarantee in some cases will be hard to obtain but without it, any fiscal space constraint that restricts availability of funds, will tend to either delay payments or lead to a default. And this will lead to a concession crisis. This is what happened by the end of 2001.

It appears that the inclusion in the contract of a combination of a multilateral Bank loan to finance the State investment obligations in the concession contract and a guarantee for payment of operating subsidies, are key to ensure that the private sector will come and the commercial banks will provide them with the loans they need to jump-start the concession. But the investment loan must be insulated from the fiscal crisis so it can continue to disburse when the macroeconomic situation becomes difficult.

It is very clear that it was the concession with an operating subsidy and the good management of the concessionaires which allowed the State to maintain

the tariffs at levels much lower than those of the bus system. But even these low tariffs may not be affordable when an economic crisis hits a country. Since the users are mainly low-income, chances are that the State will try to prevent the contractual upwards adjustments of tariffs and will, as it was the case in BA after the crisis, resort to subsidy increases which might act as disincentives for provision of acceptable level-of-service. It would have been better to introduce some sort of targeted subsidy to the users of the system, through smart card technology and continue with the tariff adjustments.

Subsidies to compensate labor demands and any direct or indirect pressure to increase the staff of the concessionaire erode the control that the concessionaire has over its staff. One of the main reasons a concession saves money to the State, is, in fact, a sharp reduction of overstaffing of public operating agencies, which is the main cause for their very high operating subsidies. States should resist such pressures to interfere even if they are willing to compensate the concessionaire. One of the main advantages of the concession is that they are better managed because they don't have the interference in management and political pressures which most public agencies suffer from their State administrations.

The lack of a strong regulatory agency led to the delays in dealing with the concessionaires that decreased substantially the level-of-service. A strong regulatory mechanism is important to safeguard both the State, the concessionaire and the user. After the crisis is obvious that quick renegotiation of the contracts was necessary.

The lack of a Metropolitan Transport Agency in BAMR representing all levels of government and with powers to coordinate metropolitan transportation insofar as planning, modal and fare integration, tariff and subsidy policy was evident in this case. With the strong shift of passengers from bus to rail, the time was ripe to restructure the bus network, promoting route rationalization and integration with the mass transit system and designing bus feeders to the rail-based system. This normally is not done because of a very active bus operators lobby which keeps adding buses to already very congested areas. Insofar as Metropolitan Authorities are concerned BA could definitely learn from the experiences of the Consórcio de Madrid and the Syndicat des Transports Parisiens. But equally those two cities would benefit from learning how to increase private sector participation in their systems with the BA concession experience.

The lack of an integrated urban transport, land use and air quality strategy in BAMR was also evident because little was done to take advantage of land use

changes to promote investments which could finance the transport system as a whole. Finally, the introduction of a metropolitan wide smart card for access to all modes should have been contemplated to ease modal integration and to facilitate time-based tariffs and targeted subsidies.

Year	Time Savings	Operating Cost Savings	Community Savings
1994	18,7	35,5	54,2
1995	132,1	65,7	197,9
1996	279,6	72,5	352,1
1997	369,7	47,6	417,3
1998	407,9	40,9	448,8
1999	408,8	46,4	455,2
2000	394,3	60,7	455,0
2001	336,9	105,4	442,3
Total	2.348,0	474,8	2.822,8
NPV @12%	1.309,0	282,8	1.591,7

Year	Total Rationalization of APP bus network	Partial Rationalization attributed to concessions
1994	0,0	0,0
1995	236,3	165,0
1996	254,3	235,1
1997	321,4	263,3
1998	458,7	332,9
1999	485,1	296,5
2000	507,3	261,4
2001	537,7	183,6
Total	2.800,8	1.737,8
NPV@12%	1.526,4	997,7

**Table 9 BAMR: Modal shift from bus to rail**

Year	Annual passengers carried (millions)		
	Suburban rail	Subway	Buses *
1987	340	194	2,172
1988	286	180	2,115
1989	270	149	1,988
1990	274	141	2,102
1991	209	144	2,089
1992	209	146	2,140
1993	212	145	2,036
1994	246	171	1,864
1995	347	187	1,726
1996	414	199	1,686
1997	456	222	1,589
1998	477	254	1,437
1999	481	260	1,401
2000	476	259	1,328

## State Benefits

Year	Base Case			Concession Case		
	Subsidio	Inversión	Total	Subsidio	Inversión	Total
1994	113,5	26,9	140,4	58,5	0,0	58,5
1995	249,0	52,7	301,7	110,2	14,1	124,3
1996	294,5	64,0	358,5	109,5	111,5	220,9
1997	294,5	64,0	358,5	94,0	170,5	264,5
1998	294,5	64,0	358,5	64,8	129,4	194,1
1999	294,5	64,0	358,5	49,6	124,8	174,5
2000	294,5	64,0	358,5	36,2	89,9	126,1
2001	294,5	64,0	358,5	27,4	64,7	92,1
Total	2129,6	463,6	2.593,2	550,0	705,0	1.255,0
Difference between base and concession case				- 1.579,5	241,4	- 1.338,2
NPV@ 12%				- 898,2	126,7	- 771,5

En porcentaje respecto del caso base	En valor corriente	En valor presente
Of operating subsidy	25,8%	29,0%
Of investments	152,1%	145,9%
Of total State subsidies	48,4%	49,9%
% of State subsidy transferred to investment	15%	14%

Year	Base Case	Concession Case
1996	294,5	109,46
1997	294,5	93,99
1998	294,5	64,77
1999	294,5	49,63
2000	294,5	36,19
2001	294,5	27,37
2002	294,5	48,88
2003	294,5	93,78

NOTE : Up to 2001 the Exchange rate was 1peso = 1 US\$, and the currency was devalued as of January 2002.

But overall, the conclusion is that the Buenos Aires Concessions were a remarkable pioneer effort in Latin America and the world which achieved the main goals of improving level-of-service and decreasing State subsidies. But with a little extra effort which requires the creation of the Metropolitan Agency and an integrated transport policy which should aim at bus network rationalization and integration and medium and long term planning the results will be significantly better. It is in this area that twinning between Madrid or Paris and Buenos Aires would have mutual benefits.

## REFERENCES

The views, findings and conclusions expressed in this paper are the sole responsibility of the author and should not be attributed to the World Bank. The author thanks Mrs. Solange Van Veldhuizen for typing this document

- Rebello, J.M. 1992. Infrastructure Note UT-2, "Urban Transport Audits," Jorge M. Rebello, July 1992
- Rebello, J. M. 1996. PRWP-1633. Essentials for Sustainable Urban Transport in Brazil's Largest Metropolitan Areas, Jorge M. Rebello (August 1996).
- Rebello, J.M. 1999. Automated Ticketing Systems: The State of the Art and Case Studies
- Rebello, J.M. 1999. PRWP-2096. Reforming the Urban Transport Sector in the Rio de Janeiro Metropolitan Region: A Case Study in Concessions.
- Rebello, J. M. & Benvenuto, P.P. 1995. PRWP-1546. Lessons from São Paulo's Metropolitan Busway Concessions Program
- Rebello, J.M. & Benvenuto, P.P. 1997. PRWP-1859. Revisiting the Busway Concessions Program in the São Paulo Metropolitan Region: Lessons for the Future
- Rebello, J.M. & Machado, P. 2000. PRWP-2353. The São Mateus-Jabaquara Trolleybusway Concession in Brazil
- Gomide A, Leite S. and Rebello J.M., [Public Transport and Urban Poverty: A Synthetic Index of Adequate Service](#), October 2004, [www.worldbank.org](http://www.worldbank.org)
- Rebello, J. M. Rail Decentralization and Modernization Program in Brazil: Lessons Learned The World Bank, Washington, DC November 2003
- Rebello, J. M. & AL, 2005- Buenos Aires Concessions: A Review IBRD, Internal Documents

[Back to Session](#)