

Document of
The World Bank

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Report No: 48915-BR

PROJECT APPRAISAL DOCUMENT
ON A
PROPOSED LOAN
IN THE AMOUNT OF US\$130 MILLION
TO THE
STATE OF SÃO PAULO, BRAZIL
WITH THE GUARANTEE OF
THE FEDERATIVE REPUBLIC OF BRAZIL
FOR THE
SÃO PAULO METRO LINE 4 (PHASE 2) PROJECT
MARCH 25, 2010

Sustainable Development Department
Brazil Country Management Unit
Latin America and Caribbean Regional Office

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CURRENCY EQUIVALENTS

(Exchange Rate Effective February 2010)

Currency Unit = Brazilian Real
R\$1.8 = US\$1

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

ATC	Automatic Train Control
BNDES	National Economic and Social Development Bank (<i>Banco Nacional de Desenvolvimento Econômico e Social</i>)
BUI	Single Integrated Fare Ticket (<i>Bilhete Único Integrado</i>)
CBTU	Brazilian Urban Train Company (<i>Companhia Brasileira de Trens Urbanos</i>)
CETESB	Environmental Technology Company (<i>Companhia de Tecnologia de Saneamento Ambiental</i>)
CDTI	Integrated Transport Coordination Commission (<i>Comité Diretor de Transporte Integrado</i>)
CMSP	São Paulo Metro Company (<i>Companhia do Metro de São Paulo</i>) also known as METRO (see below)
CPTM	São Paulo Metropolitan Train Company (<i>Companhia Paulista de Trens Metropolitanos</i>)
CVA	<i>Consórcio Via Amarela</i> , the construction consortium selected for Line 4
EIA	Environmental Impact Assessment
EMTU	Metropolitan Bus Company (<i>Empresa Metropolitana de Transporte Urbano</i>)
EMU	Electric Multiple Unit
IBGE	Brazilian Institute of Geography and Statistics (<i>Instituto Brasileiro de Geografia e Estatística</i>)
ICB	International Competitive Bidding
ICMS	Circulation Tax on Goods and Services (<i>Imposto de Circulação sobre Mercadorias e Serviços</i>)
IERR	Internal Economic Rate of Return
METRO	São Paulo Metro Company (<i>Companhia do Metropolitano de São Paulo</i>). Same as CMSP
MR	Metropolitan Region
PCU	Project Coordination Unit

PITU	Plano Integrado de Transporte Urbano
PMU	Project Management Unit
PPP	Public-Private Partnership
SEAIN	Federal Secretariat for Foreign Affairs
SMA	Secretariat for the Environment <i>(Secretaria do Meio Ambiente)</i>
SPM	São Paulo Municipality
SPMR	São Paulo Metropolitan Region
SSP	State of São Paulo
STM	São Paulo Municipal Secretariat for Transport <i>(Secretaria de Transportes da Prefeitura do Município de São Paulo)</i>
STMSP	São Paulo State Secretariat for Metropolitan Transport <i>(Secretaria de Transportes Metropolitanos Região Metropolitana de São Paulo)</i>

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Country Director:	Makhtar Diop
Sector Director:	Laura Tuck
Sector Manager/Sector Leader:	Aurelio Menendez/Jennifer Sara
Task Team Leader:	Jorge M. Rebelo

BRAZIL
SÃO PAULO METRO LINE 4 (PHASE 2) PROJECT
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BRAZIL

SÃO PAULO METRO LINE 4 (PHASE 2)

PROJECT APPRAISAL DOCUMENT

LATIN AMERICA AND CARIBBEAN
LCSTR

Date: March 25, 2010 Country Director: Makhtar Diop Sector Manager/Director: Aurelio Menendez/ Laura Tuck Project ID: P106390 Lending Instrument: Specific Investment Loan	Team Leader: Jorge M. Rebelo Sectors: General transportation sector (100%) Themes: Access to urban services and housing (P) Environmental screening category: A
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Project Financing Data

Loan Credit Grant Guarantee Other:

For Loans/Credits/Others:

Total Bank financing (US\$m.): 130.0

Proposed terms: US\$ denominated, IBRD flexible loan with variable spread option, commitment-linked with all the conversion options, repayable in 30 years, including 5 years of grace and level repayment schedule.

Financing Plan (US\$m)

Source	Local	Foreign	Total
Borrower	340.9	--	340.9
International Bank for Reconstruction and Development	--	130.0	130.0
Japan Bank for International Cooperation (JBIC)*	--	130.0	130.0
Private Sector Concessionaire	104.8	202.6	307.4
TOTAL	445.7	462.6	908.3

Borrower:

State of São Paulo
 Rua Boa Vista, 175 - 10th floor
 01014-001 São Paulo - SP
 Brazil
 Tel: 55-11-3291-2231; Fax: 55-11-3291-2110
 gbellini@sp.gov.br

Responsible Agency:

Companhia do Metropolitano de São Paulo
 Rua Boa Vista, 175 - 6th floor
 01014-001 São Paulo - SP
 Brazil
 Tel: 55-11-3291-5494; Fax: 55-11-3291-5453
 egranado@metrosp.com.br

* The Borrower has negotiated a loan with JBIC for partial financing of Line 4 Phase 2.

Estimated disbursements (Bank FY/US\$m)									
FY	11	12	13	14					
Annual	8.2	47.6	62.8	11.4					
Cumulative	8.2	55.8	118.6	130.0					

Does the project depart from the CAS in content or other significant respects?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Does the project require any exceptions from Bank policies?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Have these been approved by Bank management? n/a	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Is approval for any policy exception sought from the Board?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Does the project include any critical risks rated "substantial" or "high"?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
It might have prolonged litigation in procurement award of trains/systems	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Does the project meet the Regional criteria for readiness for implementation?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

Project development objective (PDO):

The objectives of the Project are: (a) to improve the quality of service provided to the urban transport users in the area of influence of the new Line 4 stations (*São Paulo-Morumbi, Fradique Coutinho, Oscar Freire, Higienópolis-Mackenzie* and *Vila Sônia*), and (b) to facilitate the integration between metro and bus at those stations.

Project description:

Part A: Infrastructure and Equipment Investment

Provision of financing for: (i) completion of the works of the four stations of Line 4 initiated during the Line 4 Phase 1 Project; (ii) construction of one new station (*Vila Sônia*) and its access tunnel of about 1.5km extension; (iii) construction of additional facilities at the *Vila Sônia* yard; and (iv) acquisition and installation of escalators, platform doors, and signaling and telecommunication systems necessary to operate the stations referred to in (i) and (ii) above.

Part B: Technical Assistance

Provision of technical assistance for: (i) the management oversight and supervision of the carrying out of Part A of the Project; (ii) the carrying out of specific studies or assessments required during the execution the Project, including, inter alia, a study for estimating carbon emissions reduction due to the implementation of Line 4.

Which safeguard policies are triggered, if any?

Environmental Assessment, Involuntary Resettlement

Significant, non-standard conditions, **if any**, for: None

Covenants applicable to project implementation:

1. The São Paulo State Secretariat for Metropolitan Transport must maintain throughout the Project a Project Coordination Unit responsible for the overall coordination of the Project and to implement the studies included in the institutional component related to sector policy strengthening.
2. São Paulo Metro must maintain throughout the duration of the Project a Project Management Unit in charge of managing its respective components of the Project and tracking physical and financial progress.

3. No withdrawals shall be made for payments made prior to the date of the Loan Agreement except withdrawals up to an aggregate amount not to exceed \$26,000,000 equivalent for payments made within one year prior to this date but on or after February 28, 2009, for Eligible Expenditures as defined in the Loan Agreement.
4. The Borrower will, within the limits of its authority, commit to preserve the CDTI and the *Bilhete-Único Integrado* (BUI) at all times during execution and until completion of the Project, in the present or other format as long as it continues to enhance the mobility and affordability of metropolitan transport users, particularly those of low-income. In addition, the Borrower shall undertake its best efforts to extend the BUI to other modes of transportation and expand the CDTI to include other municipalities of the SPMR.
5. The Borrower, through STMSP, shall enter into an agreement (Subsidiary Agreement) with SP Metro, under terms and conditions approved by the Bank, which shall include, *inter alia*:
 - (i) SP Metro's undertaking to comply with the safeguards, fiduciary and technical requirements applicable to the Project in accordance with the provisions of this agreement;
 - (ii) SP Metro's undertaking to carry out the Project in accordance with the provisions of the Anti-Corruption Guidelines; and
 - (iii) the Borrower's undertaking to make the necessary proceeds of the Loan available to SP Metro to carry out the Project.
6. The Borrower shall take all necessary measures in a timely manner to ensure the operation of Line 4 to achieve the Indicators agreed with the Bank.
7. The Borrower shall cause the Project to be carried out in accordance with the provisions of the Operational Manual, which shall detail the procedures and guidelines for the execution, monitoring and evaluation of the Project, including, *inter alia* the procedures for the carrying out, monitoring and evaluation of the Project (including disbursement, financial management and auditing).
8. The Borrower shall monitor and evaluate the progress of the Project and prepare Project Reports in accordance with the Loan Agreement and on the basis of the Indicators agreed with the Bank.

Conditions of effectiveness:

As conditions of effectiveness, the Project must be registered at the Central Bank and the Subsidiary Agreement between the State and the São Paulo Metro must be signed.

I. STRATEGIC CONTEXT AND RATIONALE

A. Country and Sector Issues

1. **Background.** The São Paulo Metropolitan Region (SPMR) has about 19 million inhabitants spread irregularly over 8,000 square kilometers. Although dominated by the São Paulo Municipality (SPM) with 11 million inhabitants, SPMR is made up of 39 municipalities. The passenger and freight transport needs of such a region are enormous. The region generates more than 20% of Brazil's GDP and is considered to be the most important economic region of the country. The region continues to grow despite the negative impacts of the global financial crisis that began in 2008. Over the decades, rapid urbanization has resulted in uncontrolled urban sprawl with associated traffic congestion and increasing travel distances, exacerbated by social problems including crime and unemployment. Of the 26 metropolitan regions in Brazil, SPMR has the highest population density (2,245 inhabitants per square km) and the fourth highest share of people living in slums (9%).¹ The problems and costs of traffic congestion in SPMR affect both passengers and freight logistics, contribute negatively to the economic development and competitiveness prospects of the region, and tend to have a disproportionate impact on the poor.

2. **Overview of Public Transport in SPMR:** Each day, around 39 million person-trips take place, of which 13 million (33%) are by foot, 14 million (37%) by car and the rest by public transport (23% by bus, 4.5% by metrorail and 2.5% by suburban rail). Of the 12 million trips taken by public modes, about one-third of the passengers use more than one mode of transport and require some sort of modal transfer. In fact, 78% of all metrorail trips on the São Paulo Metro Company (Metro), 61% of all suburban rail trips on the São Paulo Train Company (CPTM), and 16% of all bus trips require one or more transfers to be completed. Despite an existing 315 km rail-based network (see Annex 1 for information on the Metro and CPTM rail systems), the lack of full physical and tariff integration between the bus, metro and the suburban trains has over the years discouraged low-income users from using rail. This has led to an over-reliance on less efficient and less environmentally-friendly road-based modes, including buses and automobiles, and contributes to the heavy congestion experienced in the SPMR. Low-income urban households, as the main users of public transport, bear the brunt of the low-quality of the service and consequently suffer from: (i) extreme overcrowding of trains (more than 8 passengers/square meter) due to shortage of capacity at peak hours; (ii) long work journeys (2.5 hours/day from the metropolitan periphery to the urban centers) with often more than two modal transfers; and (c) high costs for transport resulting in the need to spend as much as 20% of income towards fares, particularly for informal workers who do not receive a transport subsidy.

3. **The over-reliance on road-based modes in SPMR also has a negative impact on air quality, resource consumption, and road safety.** There are over 5 million road vehicles currently registered in the SPMR. Air quality is degraded by the presence of excessive levels of carbon monoxide, ozone and particulate matter. During 2006, health warnings due to air pollution from carbon monoxide were issued for a total of 250 days, ozone for 108 days, and particulate for 54 days. Vehicles account for 73% to 94% of most air pollutants in the SPMR, and contribute to 31% of particulate matter. To combat this, most new vehicles in Brazil already meet the equivalent of Euro IV standards and São Paulo has been a pioneer in implementing policies that restrict the

¹ Brazil São Paulo: Inputs for a Sustainable Competitive City Strategy, World Bank, 2007

cars and trucks in the expanded city center by time of day and day of week. Vehicular air pollution has also been somewhat mitigated by the widespread use of sugar cane-based ethanol in lieu of gasoline, but greenhouse gas emissions and energy use from urban transport continue to increase with rapidly growing private vehicle ownership and use. Vehicular accidents also continue to increase and pose added health risks. In 2006, there were about 150,000 road accidents in SPM which accounted for 35,000 injuries and about 1,500 deaths, with a cost conservatively estimated at US\$1.5 million per day. According to the SPM's Traffic Engineering Department, congestion has been increasing at a rate of 20 percent per year and the economic cost of time and fuel lost due to traffic congestion has been estimated at US\$6 million per day.

4. Evolution of the Metropolitan Transport System of the State of São Paulo: The foundation for the partnership between the State of São Paulo and the Bank in the urban transport sector was cast about 15 years ago when the Federal Government of Brazil initiated the decentralization of the federally-owned and operated suburban rail system (known as CBTU). This decentralization was mandated by the 1988 Constitution which assigned the responsibility of urban and metropolitan transport to the local State and Municipalities authorities. At that time, the State received from the Federal Government the CBTU-SP rail network spread throughout the entire SPMR and faced major challenges in integrating that system with the other public transport modes already existing in the metropolitan region. As part of this process, the State prepared with Bank support a long-term metropolitan transport strategy, anchored in four pillars: a) establishment of a regional transport coordination commission with the municipalities, operators and users; b) implementation of an integrated land use, urban transport and air quality strategy; c) financing mechanisms which would guarantee the long-term sustainability of SPMR's urban transport system; and d) the progressive participation of the private sector in the investment and operational management of the systems. The Bank-supported São Paulo Metropolitan Transport Decentralization Project (Ln. 3457-BR) played an important role in allowing for the decentralization and modernization of CBTU to the State and laid the foundation for metropolitan coordination and the implementation of the long-term strategy (see Table 1).

5. Upon the successful completion of the decentralization of the federal system in the late 1990's, the State requested Bank support to link the CBTU-SP to its existing suburban railway system (FEPASA) as a means to better physically integrate the systems and improve the key transfer stations for passenger use. During the initial discussions, the intention was that the same Bank operation would finance a new subway line (Metro Line 4) to connect the expanding suburban rail system with the existing, small, subway network. However, due to fiscal constraints in the State this request was split into two projects. The first Bank loan (Ln. 4312-BR) was approved in 1998 and contributed to the financing of the São Paulo Integrated Urban Transport Project (the Barra Funda-Roosevelt link). The Project was completed successfully and resulted in connecting the two suburban railway networks (which together make up the present CPTM network) and improving the Luz and Brás stations, which are key for intermodal transfers. The second loan, approved in early 2002, is the ongoing Metro Line 4 Project (Ln.4646-Br). The main objective of this Project, expected to be begin operating at least two stations by April 2010, is to improve the quality and long-term sustainability of urban transport in SPMR by interconnecting the existing subway, commuter rail and bus networks through the construction of Metro Line 4. In addition, it introduces, for the first time, a Build-Operate-Transfer type scheme, partially financed by the private sector. Finally, in November 2006, the Government successfully awarded a 30-year

concession for system operation. This was a landmark event and the first public-private partnership (PPP) signed by any public sector agency in Brazil since the passage of the PPP legislation (see Annex 1 for more details on the Line 4 Project and milestones).

6. The proposed Phase 2 of Line 4 had been planned since the approval of Phase 1 in 2002. At that time, the State of São Paulo (SSP) did not have the debt capacity required by the Federative Republic of Brazil (guarantor) to undertake Line 4 with all the stations initially envisaged. As such, the Project was divided in two phases, Phase 1 in which only 6 of the 11 stations would be fully completed, and Phase 2 in which the remaining stations would be finalized and a new station would be built. Phase 1 of the Line 4 Project benefited from a Bank loan (Ln. 4646-Br, US\$209 million) and was co-financed by the Japanese Bank for International Cooperation (JBIC) in the same amount, by the State of São Paulo (US\$332 million) and by the private sector (US\$183 million). In 2008, the Bank and JBIC approved an Additional Financing loan (US\$95 million each) to cover the devaluation of the US Dollar in relation to the Brazilian Real. For Phase 2, in addition to the proposed US\$130 million IBRD loan, COFIEX has also authorized the State of São Paulo to obtain financing from JBIC for an amount of US\$130 million, in addition to the counterpart funds that the State and private sector concessionaire will provide.

7. **State Strategy for the Sector.** Ongoing system integration is improving the accessibility of the low-income population, in particular to employment opportunities as well as to health and education facilities. With these projects and other investments, the State is successfully achieving the interconnection of its entire rail-based transport network and facilitating the integration with buses and other transport modes. The State has, therefore, been able to vastly expand the reach of the relatively small subway network of 60 km in a cost-efficient way by integrating it with an existing 275 km suburban rail network and associated bus routes.

8. At the same time that physical improvements in infrastructure are being made, the State has progressed in the more challenging institutional aspects of the strategy. Of special importance is the operationalization of the regional transport coordination commission with the Municipality of São Paulo. This group is now called Integrated Transport Coordination Committee (*Comitê Diretor de Transporte Integrado - CDTI*) and has been responsible for the introduction of an integrated tariff (*Bilhete-Único Integrado-BUI*), which allows users to buy a single ticket that can be used across transport modes during a two-hour period. The integrated tariff is less expensive than the sum of individual tickets, and has a particularly positive impact on the poor, who tend to travel longer distances and make more transfers.

9. An important consequence of the improvements in the metropolitan transport system has been the dramatic increase in user demand for rail-based systems (more than 12% in one year). This significant growth in demand has led to the urgent need for increasing the carrying capacity and frequency of trains, especially at peak hours, in order to maintain an acceptable level-of-service that ensures passenger safety while minimizing waiting time at stations. In addition, the continuation in the improvement of the carrying capacity of the system is expected to further attract additional users from road to rail, thereby containing or reducing congestion while also contributing to positive environment impacts and the climate change agenda.

Table 1: Sequencing of Reforms and Investments in SPMR

<i>Year</i>	<i>Institutional Milestone</i>	<i>Physical Investment</i>	<i>Related World Bank Operation</i>
1992	<ul style="list-style-type: none"> Federal Government decides to transfer CBTU-SP to the State State agrees and draws Long-Term Strategy with Bank support 	<ul style="list-style-type: none"> Modernization of plant and rolling stock of CBTU-SP 	São Paulo Metropolitan Transport Decentralization Project (Ln. 3457-Br) with Federal Government (US\$126M) approved in 1992.
1996-98	<ul style="list-style-type: none"> State assumes CBTU-SP and merges it with State commuter railway (FEPASA) creating CPTM State creates the Regional Transport Coordination Commission under the name of <i>Câmara Temática</i> 	<ul style="list-style-type: none"> State starts further modernization of CPTM with own funds 	São Paulo Metropolitan Transport Decentralization Project closed in 1998.
1999-00	<ul style="list-style-type: none"> State decides to physically integrate the suburban rail networks of CBTU and FEPASA and to improve some CPTM corridors to facilitate free access between them 	<ul style="list-style-type: none"> The old CBTU-SP network is linked to FEPASA network through Barra Funda –Roosevelt link Dramatic improvements to key transfer stations such as Luz and Brás 	São Paulo Integrated Urban Transport Project, the Barra Funda –Roosevelt link (Ln. 4312-Br) to the State (US\$45M) approved in 1998.
2001-02	<ul style="list-style-type: none"> State decides to continue the physical integration between Metro and CPTM and introduces free transfer between the two systems 	<ul style="list-style-type: none"> São Paulo Metro Line 4 planned to link Metro and CPTM networks State decides Line 4 would have major private sector participation through a concession or PPP 	São Paulo Metro Line 4 Project (Ln. 4646-Br.) to the State (US\$209M) approved 2002.
2004-06	<ul style="list-style-type: none"> São Paulo Municipality introduces free transfer between buses State creates the CDTI, the successor to the <i>Câmara Temática</i> State and Municipality introduce the <i>Bilhete Unico Integrado</i> 	<ul style="list-style-type: none"> Integration investments including BUI. 	São Paulo Integrated Urban Transport Project, the Barra Funda –Roosevelt link, closed in 2004.
2006-07	<ul style="list-style-type: none"> Demand for rail increases dramatically Line 4 PPP (the first in Brazil) is signed 	<ul style="list-style-type: none"> Determination of need to increase carrying capacity and peak hour frequencies 	State requests financing for São Paulo Trains and Signaling Project (US\$550M) and additional financing for Phase 1 of Line 4 (US\$95M).
2008-09	<ul style="list-style-type: none"> Intermunicipal buses to be included in the BUI as State and Municipality sign an agreement to have a common smart card for all buses and rail based systems 	<ul style="list-style-type: none"> State to continue to increase carrying capacity 	Trains and Signaling (Ln.7506-BR) and additional financing for Phase 1 of Line 4 (Ln.7536-BR), both approved in 2008. State requests financing for Phase 2 of Line 4.
2009	<ul style="list-style-type: none"> State requests Bank financing for additional 9 trains for CPTM State requests Bank financing for extension of Metro Line 5 	<ul style="list-style-type: none"> State to continue to upgrade CPTM's carrying capacity and extending Metro 	World Bank preparing a Brazil-GEF (\$8.5M Grant) for Sustainable Transport to include studies in São Paulo
2010	<ul style="list-style-type: none"> Line 4 (Phase 1) to enter in operation Modal integration to continue 	<ul style="list-style-type: none"> Construction of Phase 2 of Line 4 to start around March 2010 	São Paulo Metro Line 4 Project (Phase 1) closing June 2010;
2012	<ul style="list-style-type: none"> Increased private sector participation planned 	<ul style="list-style-type: none"> Completion of Phase 2 of Line 4 in late 2013 and full operations by early 2014 	Trains and Signaling Project closing June 2013.

10. Key Development issues: The Line 4 Project is a priority undertaking within the Integrated Urban Transportation Plan (PITU) for the SPMR (see map in Annex 15). The Project will (i) serve as a “bridge” between Metro’s Line 5 and CPTM’s West commuter line to the Metro network, (ii) interconnect all three existing Metro lines to provide a grid flexibility to the Metro network which does not exist with the present radial configuration, and (iii) interconnect two CPTM commuter rail lines. At the end of the Project, the whole metrorail network will be interconnected thereby facilitating access to most of the sectors of the SPMR. The Project will provide an increase in the number of transfer nodes in the Metro network to facilitate modal integration and therefore decrease the length of trips by road-based modes. The completion of Phase 2 stations is expected to reduce the number of vehicle-kms by road-based modes, and especially bus-kms with the rationalization of routes to feed the rail stations. This reduction in vehicle-kms will have a positive impact on vehicle emissions.

11. In view of this, the key development issues to be addressed are:

a) **Improvement of quality-of-life of low-income users:** Low-income users are the most affected by poor public transport services because they have few options. Their chances to access better employment, health and education facilities are higher if accessibility, availability, acceptability and affordability of public transport services are improved by extending the metro and user accessibility to stations.

b) **Metropolitan Coordination:** Strengthening the coordination between the State and municipalities of the SPMR through the consolidation of the efforts started with the CDTI is key to the success of the strategy adopted by the State.

c) **Congestion, road accidents reduction and reduced emissions:** the shift to rail-based transport is likely to reduce and/or contain congestion and road accidents and improve air quality by decreasing the number of bus-kms traveled once municipal and inter-municipal bus routes are rationalized.

d) **Cost-Recovery, Financial Management and Funding Issues:** The increase in ridership through better integration of the public transport network, more private sector participation in activities of the sector, and oversight of the use of the BUI are other issues that will be addressed by the Project through the technical assistance and policy component in order to improve cost-recovery, financial management and funding of the urban transport systems.

B. Rationale for Bank Involvement

12. The Bank's strategy in Brazil is to support policies and investments that will encourage economic growth and social development in a context of macroeconomic stability. The emphasis is on efficient resource allocation, increased efficiency in the public sector and the appropriate targeting and delivery of support systems to the poor. The proposed Project is consistent with the World Bank Group’s Country Partnership Strategy (CPS) for 2008-2011 discussed by the Executive Directors on May 1, 2008 (Report 42677-BR). This CPS will continue to support the same four main pillars namely equity, sustainability, competitiveness and sound macro-economic management endorsed in the previous country strategy. The proposed Project objectives are in line with the Bank’s Transport Sector objectives, namely: (i) to promote financial viability of public enterprises and their reform, including decentralization to various levels; (ii) to contribute to poverty alleviation; and (iii) to reduce Government subsidies through better tariff policies and

improved financial management. Through its involvement, the Bank has already helped in the decentralization process of the metro from Federal to State and is now assisting the State in the consolidation of its rail-based systems and in the tariff and modal integration process.

13. As described in Table 1, the proposed Project is also a follow-up to the efforts started with: a) the São Paulo Metropolitan Transport Decentralization Project (Ln. 3457-BR) approved in 1992, which succeeded in the decentralization and modernization of the federally-owned CBTU to the State and laid the foundations for metropolitan coordination and a long-term strategy; b) the Barra Funda-Roosevelt Project (Ln. 4312-BR) approved in 2000 which allowed the physical interconnection of the ex-CBTU and ex-Fepasa (state owned) systems with the creation of CPTM and a considerable improvement in the Luz and Brás stations; c) the ongoing first phase of the São Paulo Metro Line 4 Project (Ln. 4646-Br) approved in 2002 and the additional financing loan approved in 2008 to cover for US\$ devaluation; and d) the São Paulo Trains and Signaling Project (Ln.7506-BR) which was approved in 2008 to finance trains and signaling systems for both rail-based systems of the SPMR.

14. The State has adopted a strategy of (i) improving metropolitan coordination; (ii) designing, updating and implementing an urban transport, land use and air quality strategy (PITU); (iii) looking for financing mechanisms other than government budgets; and (iv) progressively promoting the participation of the private sector in operations and investment in the sector. The main beneficiaries of the above projects have been primarily the low-income users who make up more than 50% of the rail-based system users. The State has shown commitment and has given priority to Bank-financed urban transport projects even in times of budget restrictions.

C. Higher level objectives to which the project contributes

15. Affordable and accessible urban transport services contribute to higher equity and poverty reduction by allowing all segments of society, and particularly those with low-income, to be able to reach employment areas, health, education and leisure facilities, thereby contributing to an improvement of quality of life. This Project seeks to improve the rail-based urban transport system to the benefit of the low-income population and will also make a potentially important contribution to reduce vehicle emissions and improve air quality. As such, Line 4 can be considered a part of the State's climate change agenda and was discussed with the Metro in the context of developing a greenhouse gas emissions reduction plan.

II. PROJECT DESCRIPTION

A. Lending instrument

16. The Project will be implemented as a Specific Investment Loan (SIL) to be disbursed over FY 2011-2014.

B. Proposed Project Development Objectives and Key Indicators

17. The Project Development Objectives (PDO) are (a) to improve the quality of service provided to the urban transport users in the area of influence of the new Line 4 stations (*São Paulo-Morumbi, Fradique Coutinho, Oscar Freire, Higienópolis-Mackenzie and Vila Sônia*), and (b) to facilitate the integration between metro and bus at those stations. The PDO is in line with those approved for the São Paulo Metro Line 4 Project (Phase 1), namely: a) to improve the quality and long-term sustainability of urban transport in the São Paulo Metropolitan Region (SPMR) by interconnecting the existing subway, commuter rail and bus networks through the construction of Metro Line 4; b) to improve the accessibility of the low-income population of the areas served by Line 4 to employment centers and health and education facilities; c) to seek private sector participation in the development of Line 4.

18. The PDO will be achieved by reducing travel times between origins and destinations within the area of influence of those stations and by guaranteeing a smooth integration between metro and other modes, particularly bus, in all of them. To enable this improvement in quality of service to the urban transport users, the Project will be completing the civil works and equipment for access and operation of the five stations and providing the rolling stock required to carry the additional demand generated by those stations. The key indicators will include the change in travel times between select stations, the percentage of bus routes integrated with the new Line 4 stations, and the number of annual passengers boarding and alighting at those stations.

C. Project components

19. The Project comprises two components:

Part A: Infrastructure and Equipment

Provision of financing for: (i) completion of the works of the four stations of Line 4 initiated during the Line 4 Phase 1 Project; (ii) construction of one new station (*Vila Sônia*) and its access tunnel of about 1.5km extension; (iii) construction of additional facilities at the *Vila Sônia* yard; and (iv) acquisition and installation of escalators, platform doors, and signaling and telecommunication systems necessary to operate the stations referred to in (i) and (ii) above. This component represents approximately US\$120 million in IBRD financing or about 92% of the loan.

Part B: Technical Assistance

Provision of technical assistance for: (i) the management oversight and supervision of the carrying out of Part A of the Project; (ii) the carrying out of specific studies or assessments required during the execution the Project, including, inter alia, a study for estimating carbon emissions reduction due to the implementation of Line 4. This component represents approximately US\$10 million in IBRD financing or about 8% of the loan.

20. In addition, the trains for Line 4 Phase 2 will be provided by the private sector concessionaire (Via Quatro), which has already ordered the trains for Phase 1 with an option for 15 more trains for Phase 2. The additional 15 trains and systems will be compatible with those provided in Phase 1.

D. Lessons learned and reflected in the project design

21. Although Phase 1 of the São Paulo Metro Line 4 Project will only close on June 30, 2010, the major lessons learned from this and other Bank-financed rail projects in São Paulo and others in the urban transport sector are:

- The service order for civil works should only be signed once there is a firm date for expropriations to be completed to avoid paying penalties for delays. Therefore, the funds for expropriation must also be made available by the State very quickly and the process of valuation of properties and court decisions about the value of the expropriation be advanced and expedited.
- Bidding of major civil works projects quite often leads to litigation, and therefore advanced procurement, even before the loan is approved, is recommended to minimize delays.
- Tunneling and construction of station shafts are very complicated works which may cause accidents. Proper design and strict supervision is required and safety procedures, including emergency evacuation from the site, must be ensured.
- Environmental impacts of the construction must be monitored very carefully, particularly those impacting the surrounding housing and buildings.
- The coordination between the different levels of Government (State, Municipalities) in urban transport is fundamental for medium and long term planning and for the implementation of a truly integrated system, both modal and tariff-wise.
- The policy for the sector must be strengthened to minimize distortions resulting from inefficient physical and financial coordination between modes and to promote multimodal integration.
- The tariff levels should allow for significant cost recovery of working costs and must be complemented by financing mechanisms which cover the shortfall.
- Demand forecasts include inherent uncertainty and therefore should be carefully scrutinized in the economic and sensitivity analyses.
- Availability of counterpart funds and of fiscal space for the project must be assured to avoid costly construction delays.

22. In addition, recommendations emerging from the Independent Evaluation Group review of the transport sector (*A Decade of Action in Transport: An Evaluation of World Bank Assistance to the Transport Sector, 1995-2005*) have been taken into account in terms of building up the sector's monitoring and evaluation efforts and aligning them with the new strategy, which emphasizes urban transport and multimodal transport. This is being achieved through the use of relevant intermediate indicators that can be readily measured and are applicable to a broad range of projects.

E. Alternatives considered and reasons for rejection

23. At the time Line 4 was designed, alternative project scenarios were analyzed to assess whether the projected demand between the proposed stations could be adequately served by bus

corridors. Once the metro rail option was selected, there was additional analysis to prioritize the construction of the stations in the event of insufficient budget. This led to the selection of the first 6 stations to be built under Phase 1 and the other stations to be left as shells to be completed in Phase 2. Finally, a station at Vila Sônia (adjacent to the planned Vila Sônia yard), was also added to integrate all the inter-municipal bus lines coming from Taboão da Serra and other areas west of the city.

III. IMPLEMENTATION

A. Partnership arrangements

24. The Project is jointly co-financed in equal amount (US\$130 million) by the Japan Bank of International Cooperation (JBIC). As was the case with the ongoing São Paulo Metro Line 4 Project, JBIC will sign a co-lender's agreement delegating to the Bank the supervision of the Project. JBIC follows Bank procurement guidelines and safeguard policies, and its financing is untied. The partnership with JBIC has been very productive in the ongoing Metro Line 4 Project.

B. Institutional and implementation arrangements

25. The Secretary of Metropolitan Transport of the State of São Paulo (STMSP) is the main Government agency responsible for the Project. The São Paulo Metro Company (Metro) reports to the STMSP. The Borrower is the State of São Paulo who will delegate the Project implementation to Metro. Overall project oversight will be the responsibility of STMSP on behalf of the State through an established Project Coordination Unit (PCU) that will oversee the implementation of this Project and other ongoing projects, including Line 4 (Phase 1). In addition, Metro will continue to have a Project Management Unit (PMU) which will be in charge of the implementation of its respective components. The PMU is headed by a Project Coordinator who reports directly to the Director in charge of the implementation of the Project. The PMU is staffed with regular staff from Metro and supported by Project Management Oversight Consultants (PMOC) in charge of providing technical support in areas such as engineering, procurement, environment and financial management. Metro has considerable experience with this PMU unit, acquired in ongoing and/or previous Bank-financed projects.

C. Monitoring and evaluation of outcomes/results

26. Project Progress Reports will be prepared by the PMU on a semi-annual basis, and submitted to the Bank for review. These project reports should indicate the progress made under the different components of the Project and measure the performance against the indicators established in the results framework (see Annex 3). In addition, project reports will include the following: (i) disbursement performance over the period covered by the report and updated disbursement schedule; (ii) updated procurement plan for activities under each of the Project's components; (iii) a description of progress achieved in the implementation of environmental and social aspects of the Project; (iv) a section describing potential developments that could affect project implementation, which could consist of a review of the main risks and the impact of mitigation measures suggested at appraisal (see Section on risks). For the infrastructure and equipment component, particularly the station and tunnel, implementation progress will be

measured against physical progress in their construction and installation (see intermediate outcome indicators in Annex 3).

27. Through their vast experience in the sector and many other similar projects, the STMSP and Metro have ample institutional capacity to carry out the monitoring and evaluation as part of the normal business activities. As required in Line 4 Phase 1, Metro, with the help of consultants, is undertaking an impact evaluation of the Project on low-income focus groups. The travel patterns and generalized travel costs of those users were mapped out before Line 4 was built and will be again measured after one year of operation of Phase 1; this will already be done during the implementation of the Phase 2 Project. In addition, the impact evaluation of Line 4 on surrounding real estate has also been started by Metro and its consultants and will be continued during Phase 2. A review of the impact on the mobility of the low-income population due to the introduction of the *Bilhete-Único Integrado* (BUI) and the most recent State investments on rolling stock and infrastructure is available in the Project File. The percentage of low-income users has steadily increased both in Metro and CPTM from 2001 to 2008 and the percentage of household income spent by users who make a bus/metro/bus trip with an integrated fare has dropped.

D. Sustainability

28. The sustainability of the Project results will depend on: (i) continued ownership and priority given to the urban transport sector by the State administration; (ii) timely implementation and funding of rehabilitation and maintenance interventions to keep the infrastructure and equipment in good condition; and (iii) maintenance of integrated tariffs such as the BUI, which benefits primarily the low-income segments of the population. The State has demonstrated its ownership of the Project and support to the sector in the last 8 years by giving priority to investments in this area. The timely implementation and funding for infrastructure and equipment suffered during the periods of fiscal space restriction, but even then the State provided the funds necessary to maintain the infrastructure and rolling stock or has sought mechanisms to provide the funds. The BUI is likely to continue because both the State and Municipalities have understood how important it is for the low-income segments of the population. The State is in charge of capital investments and Line 4 will be operated and run through a public-private partnership by a concessionaire at a tariff agreed in the contract. São Paulo Metro, as a whole, only receives compensation for special fares or tariffs (e.g. elderly, students) imposed by the State and there is a guarantee in the event the State fails to pay its dues. Therefore, the financial and overall sustainability of the Project and institutions is likely.

E. Critical risks and possible controversial aspects

29. The overall level of risk associated with the implementation of this Project is assessed as Moderate. However, a Substantial risk rating has been assigned to construction accidents in view of the type of construction involved (tunneling), which by its nature entails higher risks than other types of civil works. Despite the excellent construction safety procedures put in place and the lessons learned with the Pinheiros station accident during the implementation of Phase 1, there is always the unlikely risk of a serious accident with this type of construction. The main risks involved are listed in Table 2.

Table 2: Critical risks and possible controversial aspects

Potential Risks	Risk Minimization Measure	Level of Risk After Mitigation
<i>Delays in effectiveness due to slow approval by Federal Senate:</i> This has been a major reason for project delays and subsequent extensions	State is submitting the negotiated legal agreements to the <i>Comissão de Avaliação Econômica do Senado</i> (CAE) to speed up approval. This process was used in the São Paulo Trains and Signaling loan (Ln.7506-BR) and was successful in shortening the time required for effectiveness.	Low
<i>Prolonged litigation in the award of construction contracts and systems:</i> It is not uncommon in Brazil that the second ranked proponent would try to go to court to stop the signing of the contract	The Bank experience has been that the Borrower must have a very good legal team on call to respond to any injunction (<i>liminar</i>) and avoid that its judgment drags through the courts. Metro has an experienced legal team. This also requires that the bidding documents and process respect all the guidelines.	Moderate
<i>Delays in Resettlement/Expropriation</i>	Experience shows that delays in expropriation can negatively impact the costs once the contract is signed because the contractor can request compensation if the works cannot start. Therefore all expropriation which might delay works should be completed before the civil works contract or specific service order is signed.	Moderate
<i>Delays in the actual completion of the works:</i> It is not uncommon to have delays in the completion of works due to the litigation and often because expropriation in the area of works is not completed	This should be mitigated by very close supervision of the Project, completion of the expropriation (if any) before the signing of the service order. In addition, bidding for the main civil works contracts should be either completed or well advanced by effectiveness.	Moderate
<i>Construction Accidents:</i> Although most of the shells of the proposed stations are completed, accidents are possible given the type of construction involved if precautionary measures are not taken and good safety construction practices are not employed	Enforcement of strict construction safety measures not only in the worksites but also in the areas above the shafts, particularly during the use of the shield machine or the application of the NATM (New Austrian Tunneling Method). Lessons learned from the Pinheiros station accident in 2007 will be taken into account.	Substantial
<i>Operational Safety</i>	São Paulo Metro has a remarkable operational safety record with no accidents in 40 years	Low
<i>Higher than appraised costs in works</i>	Cost overruns can be mitigated by having a detailed engineering design for each station, very strict supervision, by avoiding amendments to the contract, and timely counterpart fund payments. Metro has prepared very detailed engineering design documents.	Substantial
<i>Timely availability of counterpart funds and budget priority:</i> State Government elections in 2010 and a deepening global economic crisis may alter current priorities.	The State was asked at negotiations to undertake its best efforts to exempt counterpart funds for this Bank loan from budgetary restrictions, that is, to give priority to the investments financed by the Bank in case of fiscal restrictions.	Moderate
Overall Risk		Moderate

F. Loan/credit conditions and covenants

Loan Covenants:

30. The São Paulo State Secretariat for Metropolitan Transport must maintain throughout the Project a Project Coordination Unit responsible for the overall coordination of the Project and to implement the studies in the institutional component related to the sector policy strengthening.

31. São Paulo Metro must maintain throughout the duration of the Project a Project Management Unit in charge of managing their respective components of the Project and tracking its physical and financial progress.

32. No withdrawals shall be made for payments made prior to the date of the Loan Agreement except withdrawals up to an aggregate amount not to exceed \$26,000,000 equivalent for payments made within one year prior to this date but on or after February 28, 2009, for Eligible Expenditures as defined in the Loan Agreement.

33. The Borrower will, within the limits of its authority, commit to preserve the CDTI and the *Bilhete-Único Integrado* (BUI) at all times during execution and until completion of the Project, in the present or other format as long as it continues to enhance the mobility and affordability of metropolitan transport users, particularly those of low-income. In addition, the Borrower shall undertake its best efforts to extend the BUI to other modes of transportation and expand the CDTI to include other municipalities of the SPMR.

34. The Borrower, through STMSM, shall enter into an agreement (Subsidiary Agreement) with SP Metro, under terms and conditions approved by the Bank, which shall include, inter alia: (i) SP Metro's undertaking to comply with the safeguards, fiduciary and technical requirements applicable to the Project in accordance with the provisions of this agreement; (ii) SP Metro's undertaking to carry out the Project in accordance with the provisions of the Anti-Corruption Guidelines; and (iii) the Borrower's undertaking to make the necessary proceeds of the Loan available to SP Metro to carry out the Project.

35. The Borrower shall take all necessary measures in a timely manner to ensure the operation of Line 4 to achieve the Indicators agreed with the Bank.

36. The Borrower shall cause the Project to be carried out in accordance with the provisions of the Operational Manual, which shall detail the procedures and guidelines for the execution, monitoring and evaluation of the Project, including, inter alia the procedures for the carrying out, monitoring and evaluation of the Project (including disbursement, financial management and auditing).

37. The Borrower shall monitor and evaluate the progress of the Project and prepare Project Reports in accordance with the Loan Agreement and on the basis of the Indicators agreed with the Bank.

Conditions of Effectiveness:

38. As conditions of effectiveness, the Project must be registered at the Central Bank and the subsidiary agreement between the State and the São Paulo Metro must be signed.

IV. APPRAISAL SUMMARY

A. Economic and financial analyses

39. Economic evaluation of Line 4 as a whole (Phase 1 and Phase 2) and Phase 2 alone were undertaken by Metro, reviewed by the Bank, and compared the situation with and without the Project. For that purpose, Metro estimated through demand modeling the passenger hours and passenger-kms with and without the Project and converted them into time savings and operating cost savings. An estimate for the reduction of accidents and road-based vehicle emissions was made using the same data and compared to the investment costs (see Annex 9 for detailed description of economic and financial analysis). The results of the cost-benefit analysis are a net present value (NPV, discounted at 10%) of US\$824.7 million and an internal economic rate of return (IERR) of 15.6%. For the IERR to be below 10% the investment costs would have to increase by about 89%, which is unlikely. IERR would be below 10% if the travel time savings are reduced by more than 40%.

40. A Project financial analysis was performed by comparing total investments versus savings due to lower operating, maintenance, and management costs, and higher revenues as a result of the Project. No travel time savings or indirect benefits were considered, which explains the difference from the economic evaluation. The results of financial analysis indicate a financial internal rate of return (FIRR) of 11.6%. Financial projections prepared for Metro for the 2010-2036 period show that the working ratio of the operating agency will be equal or less than one, and operating costs will therefore be below operating revenues.

Fiscal impact

41. The Brazil Secretary of the Treasury (STN) does an exhaustive and highly-professional analysis of state debt capacity. It is on the basis of such analysis that the State is allowed to borrow with a guarantee from the Federative Republic of Brazil. The Bank undertook its own analysis of the State debt capacity and the fiscal impact of the proposed loans. The fiscal impact of the Project on the State finances was evaluated and the assessment can be found in the Project File. The debt assumed by the State for this Project and other loans approved at the same time for preparation was part of the debt renegotiations with the Federal Government. The Project itself and the other loans under preparation would have a minor impact on the State's finances. Counterpart financing would equal 5.9% of projected capital spending during the implementation period. Annual interest on the two loans (Bank and JBIC) in nominal terms would total about US\$37 million once they are fully disbursed, or less than 0.12% of net current revenues.

B. Technical

42. As mentioned above, when Line 4 was designed, an analysis of the alignment was undertaken and the completion of the proposed stations was phased due to budget restrictions. Once the decision was made on the alignment, additional technical evaluations were undertaken to examine alternatives to the proposed design. Bank specialized consultants reviewed the proposed design for the new station, the tunnel, and to complete the stations started in Phase 1. They discussed alternatives with Metro and suggested some changes, which were taken into

account by Metro designers. Line 4 stations will include modern accessibility features for pedestrians and bicycles (where appropriate), bus terminals and/or bus bays for easy modal integration, and associated car parking. The stations will be equipped with elevators and will comply with all Brazilian regulations for universal access for the disabled as mandated by law. These assessments are available in the Project File. In addition, the 15 trains and associated systems for Line 4 Phase 2 to be provided by the private sector concessionaire (Via Quatro) will be compatible with those provided for Phase 1.

43. In view of the Pinheiros station accident in 2007, a review of the construction safety procedures in place was undertaken by the Project Management Oversight Consultant and also by the Institute of Applied Research (IPT) at the request of the State. Metro has implemented the recommendations of these two reports and the Bank is satisfied with Metro's compliance. Finally, all trains which will run in Line 4 have regenerative braking which lowers the consumption of energy and reduces carbon dioxide emissions.

C. Fiduciary

44. Metro has extensive experience with Bank fiduciary requirements and a successful history of financial management in recent loans with the Bank. Phase 1 of Metro Line 4 Project is still ongoing and its financial management reporting and auditing is satisfactory. Metro has experienced staff working in their accounting departments to ensure that financial management will be carried out according to Bank guidelines. Auditing is carried out by independent consultants selected on a competitive basis according to Bank procurement guidelines. Retroactive financing up to 20% of the proposed loan is proposed. See Annex 7 for a complete discussion of financial management and disbursements.

45. Procurement for the proposed Project would be carried out in accordance with the World Bank "Guidelines: Procurement Under IBRD Loans and IDA Credits" dated May 2004 (revised in October 2006), "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" dated May 2004 (revised in October 2006), and the provisions stipulated in the Legal Agreement. Annex 8 provides a complete discussion of procurement arrangements. The State will ensure that the Project is implemented in accordance with the Guidelines on "Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants" dated October 15, 2006.

D. Social

46. The Project will have a positive impact on the quality of life of the population who use the Metro network. The Project will increase the quality and availability of mass transport within the SPMR and provide the commuting public with alternatives to private automobiles, buses and vans. Direct impacts of the new stations include increasing the accessibility of public transport to employment centers, health, education, and leisure facilities. Improving metrorail services in general increases the access of the low-income population to employment centers and facilitates and their transfer between rail, municipal and inter-municipal bus networks. Aside from possible temporary traffic disruptions and short-term delays at the proposed station locations and tunnel alignment during construction, no adverse social impacts are expected from the proposed Project and the benefits will be overwhelmingly positive. In addition, increased use of public transport

will help reduce traffic congestion and air pollution, thereby contributing to overall improvements in the quality of life in the Metropolitan Region.

E. Environment

47. Overall and in the long-term, the proposed Project is expected to have a positive impact on the environment. Congestion and air pollution are currently some of the main environmental problems that the metropolitan region is facing. Providing a high quality and safe transport alternative, especially for long trips, will help contain the rapid increase in motorized trips and related environmental impacts. The Project will help quantify these long-term environmental impacts in terms of modal ‘retention’ or shift and the associated emission benefits. Since the Bank had already requested an enhancement of the environmental monitoring of the Project in the context of the approval of the Additional Financing, Metro has been providing the Bank with periodic reports on vibration, dust, noise, wastewater and other aspects described in detail in the Project File.

F. Safeguard policies

Safeguard Policies Triggered by the Project	Yes	No
<u>Environmental Assessment (OP/BP 4.01)</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Natural Habitats (<u>OP/BP 4.04</u>)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Pest Management (<u>OP 4.09</u>)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Physical Cultural Resources (<u>OP/BP 4.11</u>)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Involuntary Resettlement (<u>OP/BP 4.12</u>)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Indigenous Peoples (<u>OP/BP 4.10</u>)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Forests (<u>OP/BP 4.36</u>)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Safety of Dams (<u>OP/BP 4.37</u>)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Projects in Disputed Areas (<u>OP/BP 7.60</u>)*	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Projects on International Waterways (<u>OP/BP 7.50</u>)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

48. **Environmental Assessment.** The proposed Metro Line 4 Phase 2 Project has received an Environmental Category “A” rating and the planned interventions triggered OP 4.01 (Environmental Assessment), as was the case with the Line 4 Phase 1 Project. The Line 4 Environmental Impact Assessment (EIA) and Environmental Management Plan for Phase 1 also apply to the Phase 2 Project and an Addendum to the EIA was required for a new 1.5-km tunnel and the new Vila Sônia station not included in Phase 1. Metro’s staff prepared the Addendum for Phase 2 including an Environmental Report (*Relatório Ambiental Preliminar*) that was reviewed by the relevant State environmental agencies (*Secretaria do Meio Ambiente* and *CETESB*) and received a “preliminary license” (*Licença Prévia*) on February 25, 2009. The Bank and independent consultants reviewed the full set of environmental documentation prepared by Metro for this Project and disclosed it in Infoshop on July 1, 2009.² The documents

* By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas

² The Addendum to the EIA (*Relatório Ambiental Preliminar –Prolongamento Vila Sônia*) was disclosed in country on or before July 1, 2009 and is available at: <http://www.metro.sp.gov.br/expansao/sumario/sumario.shtml>

were found to be satisfactory and the Bank will supervise the proper implementation of the proposed actions by Metro. The Executive Summary of the Environmental Assessment documents was submitted to the Board on July 16, 2009.

49. The Line 4 Phase 1 Project has been successful in preventing and mitigating direct environmental and social impacts. The procedures and supervision given to the Project during Phase 1 are adequate. The environmental impacts of the January 12, 2007 accident at Pinheiros station during the implementation of Phase 1 were minor and are detailed in Annex 10. Subsequent to this accident and as a prerequisite for the Additional Financing (loan 7536-BR), the Bank required a detailed social assessment, periodic monitoring of those affected by the accident, and an environmental assessment of the accident. All documents were disclosed in Infoshop. Metro also prepared an Addendum to the Line 4 Environmental Management Plan, which incorporates the Bank's recommendations following the accident and strengthens the following aspects:

- *Data quality control for effluent monitoring:* Metro is hiring an independent laboratory to implement quality control measures to ensure the accuracy and precision of water quality monitoring undertaken by CVA (*Consórcio Via Amarela*, the construction consortium).
- *Improved noise management plan:* Metro and CVA evaluated the noise and vibration management program and presented a new plan that will include more sampling times, more sampling points and more detailed description of activities during sampling.
- *Environmental data presentation.* All environmental data presented in the reports was compared to actual environmental quality standards, norms, or benchmarks to allow for qualitative control by Metro and environmental agencies and clear identification of non-compliance issues.
- *Enforcement actions for non-compliance:* Metro agreed to strengthen the enforcement systems and ensure that CVA and other companies involved in project implementation are required to address shortcomings raised during inspection.

50. Although no direct impact on physical cultural resources were identified in the EIA, the applicable legislation and procedures for handling chance finds of historical artifacts apply. As is standard procedure, the contractors on the Project will be required to agree to special conditions regarding the possibility of chance finds of archaeological materials and Brazil has regulations that are compatible with the Bank's requirements. The implementing agency is aware of the requirements to deal with chance find issues that may arise in the course of construction. If such materials are found, the local authorities responsible for historical preservation (National Institute for Historical and Artistic Heritage, IPHAN) will be notified and work will be suspended until such findings can be investigated by experts and a determination can be made regarding how to manage such finds.

51. **Involuntary Resettlement.** The proposed Line 4 Phase 2 Project will require expropriation of 47 properties (16 residential and 31 non-residential), the vast majority of which were identified in Phase 1. Metro has ensured that the number of expropriation has been minimized in accordance with World Bank resettlement policies. The Borrower has had experience during Phase 1 with managing a Category "A" project that triggered the Bank's policies on involuntary resettlement. An Abbreviated Resettlement Plan for Phase 2 was prepared by the Borrower,

reviewed by the Bank and disclosed in country and in Infoshop on January 1, 2009.³ Metro has held numerous public and individual meetings with the population expected to be affected by the Phase 2 Project. The most recent meeting was held on March 11, 2009 near the Vila Sônia station. Any other economic or physical displacement not yet explicitly identified, but that may become apparent during implementation, will be addressed using the same principles as those defined in this resettlement plan and consistent with World Bank safeguard policies.

52. Following the 2007 construction accident at the Pinheiros station that caused seven deaths, additional involuntary resettlement due to damage to some homes and evacuation of other dwellings and businesses were carried out so their safety could be assured. The Bank reviewed the design and implementation of the accident-related resettlement and found it to be satisfactory. The resettlement and compensation of affected parties is now virtually complete, with only very few cases pending where the parties have decided to litigate. Following the accident, the Bank requested that the Borrower submit additional information in monthly reports (detailed in Annex 10). The Borrower has submitted these monthly reports since June 22, 2007 and has now reduced the frequency to semester reports now that nearly all pending cases of resettlement have been resolved. The Borrower has also committed to an independent ex-post-evaluation of livelihood restoration actions to be carried out by an entity with no affiliation with the Project or the construction consortium, CVA.

G. Policy Exceptions and Readiness

53. The Project does not warrant any exceptions to Bank policies and is deemed to be ready for implementation with the two main construction-related bidding documents expected to be reviewed by the Bank by June 30, 2010. Land expropriation is expected to be quite advanced at the time the construction bids are awarded.

³ The Abbreviated Resettlement Plan was disclosed in country on or before January 1, 2009 and is available at: <http://www.metro.sp.gov.br/expansao/sumario/sumario.shtml>

Annex 1: Country and Sector or Program Background
BRAZIL: São Paulo Metro Line 4 (Phase 2) Project

A. São Paulo State Government's Urban Transport Sector Strategy

1. The State of São Paulo urban transport strategy for the São Paulo Metropolitan Region is anchored in 4 pillars: a) to establish with the municipalities, operators and users a regional transport coordination commission (RTCC); b) to develop and update on a periodic basis, an integrated land use, urban transport and air quality strategy; c) to introduce financing mechanisms which will guarantee the long-term sustainability of the urban transport systems; and d) to promote progressive private sector participation in the investment and operations management of those systems. SSP has shown a remarkable progress towards the above objectives. First, there is an RTCC (named CDTI) functioning which functions as a forum for discussion of metropolitan policies for prices and subsidies as well for discussion of common issues such as multimodal tickets and major investment projects. Second, SSP has refined an integrated land use, urban transport and air quality strategy using sketch planning techniques (PITU), which is now a major planning tool and continuously updated. This strategy has been used for decision-makers and stakeholders to discuss proposed projects. SSP has explored several financing mechanisms for the urban transport sector other than government budgets. It has accelerated the rental of station spaces, in-vehicle and off-board advertising, has created partnerships for shopping centers close to metro stations, and sells space in the right-of-way for cable services in an effort to increase non-operating revenues. Last, conscious of the scarcity of resources it faces, SSP has sought a progressive participation of the private sector in the operation of its systems: the São Mateus-Jabaquara busway was successfully concessioned out to the private sector for 20 years, and the PPP for Line 4 of the Metro was signed. Several activities of the Metro and CPTM were outsourced to the private sector and they attempt to reduce costs or generating non-operating revenues. The construction of Line 4 under a public-private partnership is a pioneering project because it starts a trend towards investment of the private sector in the construction of new infrastructure and equipment.

2. SSP's strategy is therefore to integrate the existing systems, to offer an acceptable level of service to the user and to reduce operating subsidies. But it is also a State goal to improve rail-based urban transport in low-income areas to facilitate the access to employment centers, health, education and leisure facilities. Finally, the State has clearly decided that a major improvement of the rail-based network, particularly the CPTM network, is a cost-efficient priority, upgrading it to surface metro like operation.

3. A number of key issues must be addressed in order to improve the supply of urban transport services and to guarantee their orderly development and sustainability in the long term for the SPMR. They are:

- *Institutional Issues.* The most critical institutional issues are: (a) the fine-tuning of relations between state and municipal Governments and a clear definition of their respective roles in the financing, planning and operation of urban transport services in accordance with the 1988 Constitution; and (b) A clear definition of the funding mechanisms of the sector at the metropolitan level through an agreement between State and

Municipalities of the region. The Government's strategy was to create a regional coordination entity empowered by the SPMR for planning, coordinating and setting priorities for new investments and modal integration. This entity (CDTI) meets frequently and is primarily a forum for discussion of metropolitan transport policies and projects. Its first product was the introduction of the Bilhete-Único.

- *Cost Recovery, Financial Management and Funding Issues.* The need to address cost recovery from a more commercially-oriented standpoint by: (a) setting tariffs which, when added to subsidies, cover at least the long-run variable costs (defined as out-of-pocket costs plus depreciation of equipment and cost of capital) of the service provided; (b) controlling fare evasion; (c) appropriate peak and off-peak pricing; (d) improving the financial management of the systems through wide-ranging cost cutting measures and generating more non-operating revenues through advertising, station space rentals and use of the right-of-way; and (e) revamping the funding mechanisms in order to guarantee adequate financing for the implementation of new mass transit systems and the sustainability of the existing systems. Since 1992, to help achieve these goals, the São Paulo State Government has embarked on an aggressive campaign to promote private sector participation in the urban transport sector, to reduce fare evasion, to cut costs and to generate more non-operating revenues. But much more needs to be done and, in the proposed Project, the institutional and policy development component includes studies to assist the State in this area.

- *Environmental Issues.* Air pollution, noise, traffic congestion, and road accidents are major environmental issues to be addressed in the SPMR. The reduction of the environmental impacts of urban congestion and noise pollution in the urban area could be done through: (a) the allocation of responsibilities across government levels for the enforcement of the law and definition of tougher standards; (b) the use of cleaner and quieter systems; (c) where appropriate, the use of non-motorized transport; (d) improved traffic management and control; and (e) the strengthening of traffic safety education and the enforcement of traffic regulations. Construction of Line 4 and the proposed improvements on Metro and CPTM will most likely reduce the number of bus-kms in the corridors where they are happening and consequently will reduce vehicle emissions. The existing municipal legislation, by which vehicles with plates ending with a certain number cannot circulate during peak periods of one day of the week (rodízio) continue with some success. This has reduced the number of vehicles per day by 600,000 during those peak periods providing some reduction in congestion and emissions. Both Metro and CPTM are now preparing plans to reduce their carbon dioxide emissions using trains with regenerative braking, changing the type of lights they use at stations, control centers and workshops.

- *Transport Planning Issues.* The need to continue to strengthen SPMR's transportation planning, traffic data base, traffic management, and economic and financial evaluation of new investments was emphasized during the preparation of the Project and was addressed by the SPMR. STMSM is equipped with a battery of sketch planning, demand and supply models which will test different land use, air quality, and urban transport scenarios. Furthermore, an integrated land use, urban transport, and air-quality strategy (PITU) exists and should continue to be fine-tuned with more attention to the land use and environmental aspects.

B. Brief Look at the *Companhia do Metropolitano de São Paulo* (Metro)

4. The basic network of the São Paulo Metro is comprised of four lines in operation (a map is provided in Annex 15): Line 1 (Blue) linking Jabaquara to Tucuruvi; Line 2 (Green) from Alto do Ipiranga to Vila Madalena; Line 3 (Red) from Barra Funda to Corinthians-Itaquera, and Line 5 (Violet) from Capão Redondo to Largo Treze, in a total length of 61.3 km and 55 stations. In addition, it is integrated with several transport modes (metropolitan train, urban bus, intermunicipal bus, inter-state bus and cars).

5. In 2006, the Metro accounted for 13.8% of the total motorized trips made by public transport in the São Paulo Metropolitan Region. Figure 1-1 presents the number of passengers carried by each metro line in 2009. Figure 1-2 is a summary of the network characteristics and operations. Figure 1-3 shows a slight increasing trend in total passengers carried and passenger-kms over a decade and the breakdown by line.

Figure 1-1: São Paulo Metro (CMSP): Average Demand by Line in 2009

DEMAND	Line 1-Blue	Line 2-Green	Line 3-Red	Line 5-Violet	Total
Number of Passengers entries					
Total (thousands)	270,199	76,963	319,716	38,929	705,806
Average Working Day	914,778	275,530	1,078,332	131,816	2,40,456
Average Saturday	513,233	108,669	610,072	75,898	1,307,871
Average Sunday	294,699	59,774	359,233	39,148	752,853
Maximum reached per day	1,032,545	322,619	1,193,986	159,972	2,683,989

Figure 1-2: Metro Network Characteristics and Operating Summary in 2009

Line	Blue	Green	Red	Violet	Total
Start of commercial operation	1974	1991	1979	2002	-
Present length of lines (km)	20.2	11.7	22.0	8.4	62.3
Stations (1)	23	12	18	6	56
Transfer stations	3	2	1	-	3
Stations connecting with the railway (2)	1	2	4	1	8
Stations with urban bus terminals	6	1	10	5	22
Stations with inter-city bus terminals	2	-	1	-	3
Number of cars of the fleet (3)	306	132	282	48	768
Number of cars used at peak hours	246	90	252	30	618
Minimum headway (seconds)	109	145	101	307	-
Maximum speed (km/h)	100	100	100	80	-
Commercial speed (km/h)	33	36	42	40	-
Passenger entry (million)	917	273	1077	133	2400
Passenger entry/km of line (million)	45.39	23.33	48.95	15.83	38.52

Note: (1) The transfer stations were stated in both lines they serve - Sé (L1 and L3), Ana Rosa (L1 and L2), and Paraisópolis (L1 and L2) - but only once in the entire network; (2) Includes connection carried out by Orca Shuttle, and, (3) One train comprises 6 Cars.

Figure 1-3: Evolution of Passengers Carried and Passenger/km (000's)

Paying passengers / line	Lines	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
	1	211,796	206,221	195,153	190,468	189,890	189,369	181,053	177,407	172,003	184,548	193,969	212,222
2	38,037	37,685	40,058	41,050	42,382	43,545	42,985	43,328	42,548	49,336	56,684	66,737	
3	213,449	205,040	196,708	191,307	185,700	186,760	178,630	173,162	170,783	189,504	204,112	226,761	
5	-	-	-	-	-	76	1,798	3,402	9,638	12,888	17,037	23,374	
TOTAL	463,282	448,946	431,919	422,825	417,972	419,750	404,466	397,299	394,972	436,276	471,802	529,094	
Passengers transported	689,535	673,997	658,603	688,681	714,810	731,935	711,546	699,708	710,484	774,641	844,548	945,772	
Passenger-kms (millions)	4,381	4,276	4,174	4,757	4,945	5,096	4,947	4,846	4,947	4,983	5,808	6,482	

Further information can be found at www.metro.sp.gov.br

C. Summary Information on the São Paulo Metro Line 4 (Phase 1) Project

Figure 1-4: Account Withdrawals through December 2009

SOURCE	REVENUE US\$ million	WITHDRAWALS US\$ million	%
BIRD	304.0	249.9	82.20
JBIC	304.0	249.1	81.94
TOTAL	608.0	499.0	82.07

Considers US\$ 190.0 million in additional revenue for Line 4 (Phase 1)

Figure 1-5: Disbursements through December 2009

SOURCE	INVESTMENT US\$ million	DISBURSEMENTS US\$ million	%
BIRD	662.5	527.7	79.65
JBIC	644.9	515.7	79.97
GESP	1,872.8	1,294.0	69.09
TOTAL	3,180.2	2,377.4	73.50

Considers US\$ 190.0 million in additional revenue for Line 4 (Phase 1)

Figure 1-6: Physical Progress as of December 2009

Phases	BASE			Accomplished in the year						Cumulative from 2004 to Dec/2009	Estimated for the year 2010
	2001	2002	2003	2004	2005	2006	2007	2008	2009		
% of concluded infrastructure	0	0	0	1	13	16	19	28	19	96	4
% of concluded stations	0	0	0	1	14	38	5	11	21	90	10
% of concluded systems	0	0	0	1	8	5	0*	23	47	84	16
% of rolling material delivered	0	0	0	0	0	0	0	0	0	0	100

NB: 1) The turnkey contracts were signed on 01/10/2003 and after litigation received authorization to initiate works on 29/03/2004 for Lots 1 and 2, and on 29/04/2004 for Lot 3.

2) *The physical progress methodology was changed, which explains this result in 2007.

3) The planned percentages were recalculated according to the revised 2008 work plan.

Figure 1-7: PPP Milestones Dates

The main milestone dates of the Line 4 PPP process until today are as follows:

2000	Preliminary Viability Study for the Line 4 concession and private initiative prepared by Metrô
2004	Viability Study prepared by Unibanco
Sep. 2005	Technical Note (NT) and other documents prepared by the Finance Secretary (STM), Planning Secretary (CPP), Metrô and Unibanco
28/09/2005	Concession Model approved by State Public-Private Partnership Governing Council (CGPEPPP)
19/10/2005	Public Audience
03/11/2005	Public Consultation, with issue of Tender Documents
02/12/2005	Presentation of PMOC commentary on the Concession Tender Documents
22/12/2005	Tender Documents Published
14/01/2006	1st Reti-Ratification (Reti-Rati I) Published
22/02/2006	2nd Reti-Ratification (Reti-Rati II) Published
13/03/2006	3rd Reti-Ratification (Reti-Rati III) Published
24/03/2006	Planned date for delivery and opening of proposals
22/03/2006	Tendering process suspended by the São Paulo State Auditing Tribunal
19/03/2006	Tender Document Re-published
04/07/2006	New date for delivery and opening of proposals
03/07/2006 4/7/06	Suspension of the session for receipt of documents and proposal planned for
09/08/2006	Receipt of documents and proposals and opening of envelopes. Two proposals were presented: Consórcio Integravias, led by OAS and Consórcio MetrôQuatro, led by CCR. The best proposal was presented by Consórcio MetrôQuatro. MetrôQuatro is formed by the following companies: CCR - Companhia de Concessões Rodoviárias, Montgomery Participações S.A., Benito Roggio Transportes S.A. (concessionary of metro Buenos Aires) and RATP Développement S.A (Metro of Paris)
29/11/2006	Concession Contract signed between the Conceding Power and the São Paulo Metro, Line 4 Concession, having as endorsers and assenters: <ul style="list-style-type: none"> • Companhia do Metropolitano de São Paulo – Metrô, • Companhia Paulista de Trens Metropolitanos – CPTM • Empresa Metropolitana de Transportes Urbanos – EMTU • SPE Shareholders
30/11/2007	Phase 1 Design Service Order
30/5/2008	Phase 1 Fabrication Service Order
30/4/2010	Line 4 Phase 1 operation between Paulista and Faria Lima stations to start

Annex 2: Major Related Projects Financed by the Bank and/or other Agencies

BRAZIL: São Paulo Metro Line 4 (Phase 2) Project

Sector Issue	Project	IEG rating	Latest ISR Ratings	
			Implementation Progress (IP)	Development Objective (DO)
<u>Bank-financed</u>				
Decentralization of rail services from federal to state government with system rehabilitation/modernization. Borrower was Federal Government	Sao Paulo Metropolitan Transport Decentralization (Ln. 3457-BR)	S	NA	NA
Decentralization of rail services from federal to state government with system rehabilitation/modernization. Borrower was Federal Government	Rio de Janeiro Metropolitan Transport Decentralization (Ln. 3633-BR)	S	NA	NA
Decentralization of rail services from federal to state government with system rehabilitation and extension. Borrower was Federal Government	Recife Metropolitan Transport Decentralization (Ln. 3915-BR)	S	NA	NA
Decentralization of rail services from federal to state government with system extension. Borrower was Federal Government	Belo Horizonte Metropolitan Transport Decentralization (Ln. 3916-BR)	S	NA	NA
Decentralization of rail services from federal to state government with system extension. Borrower was Federal Government	Salvador Urban Transport Project (Ln.4494-Br)	NA	MS	MS
Decentralization of rail services from federal to state government with system extension. Borrower was Federal Government	Fortaleza Metropolitan Transport Project (Ln. 7083-Br)	NA	MS	MS
Consolidation of the system and its concession to the private sector. Borrower was the State of Rio de Janeiro	Rio de Janeiro Mass Transit Project(Ln. 4291-Br)	NA	S	S

Table continues on following page...

Table continues from previous page...

Connection between the ex-federally owned CBTU system and the State-owned Fepasa system to create CPTM and modernization of major integration stations. Borrower was the State of São Paulo	São Paulo Integrated Urban Transport Project (the Barra Funda-Roosevelt link) (Ln.4312-Br)	HS			
Construction of Line 4 of São Paulo Metro under a PPP project. Borrower was the State of São Paulo	São Paulo Metro Line 4 Project (Ln. 4646-BR)	NA	S		S
Provision of trains, signaling and telecom systems for São Paulo Metro and CPTM	São Paulo Trains and Signaling (Ln. 7506-BR)	NA	S		S
Provision of trains and systems for State of Rio de Janeiro	Rio de Janeiro Mass Transit 2 (Ln.7719-BR)	NA	S		S

In general, all State financed projects have fared very well particularly those in São Paulo State and Rio de Janeiro. The federally-financed projects such as Salvador and Fortaleza were highly affected by the fiscal restrictions from 2002-2005 which delayed implementation.

Annex 3: Results Framework and Monitoring
BRAZIL: São Paulo Metro Line 4 (Phase 2) Project

Results Framework

PDO	Project Outcome Indicators	Use of Project Outcome Information
To improve quality of service provided to the urban transport users in the area of influence of each of the following Line 4 new stations (São Paulo-Morumbi, Fradique Coutinho, Oscar Freire , Higienópolis-Mackenzie and Vila Sônia) and facilitate the integration between metro and bus at those stations	<p>a) Travel time plus waiting time between 2 pairs of stations (in minutes, at peak hour)*</p> <p>b) Percentage of five new stations integrated with bus lines (integration related objective)</p> <p>c) Number of passengers boarding in new stations</p>	<p>1. How level of service is improved between two points due to the introduction of new stations*</p> <p>2. How many stations have physical (in station) and tariff (Bilhete Unico) integration with bus lines</p> <p>3. Compare to projected ridership and degree of actual intermodal integration</p>
Intermediate Outcomes	Intermediate Outcome Indicators	Use of Intermediate Outcome Monitoring
Part A: Infrastructure and Equipment to help complete four stations for Line 4 initiated in Phase 1 (São Paulo-Morumbi, Fradique Coutinho, Oscar Freire and Higienópolis-Mackenzie), build one new station (Vila Sônia) and its access tunnel (1.5 km), and acquire and install the necessary equipment to operationalize these stations.	<p>a) % of the Infrastructure completed</p> <p>b) % of Stations completed</p> <p>c) % of System works completed</p>	<p>a) Progress in the tunneling works</p> <p>b) Progress in Vila Sônia station and finishing of other stations</p> <p>c) Progress in the installation of signaling, electrification, telecom and other auxiliary systems</p>
Part B: Technical Assistance	Completion of a climate change action plan and carbon emissions methodology	To assess the progress made in the preparation of the consulting contracts agreed

Notes:

* Since the proposed stations of Line 4 Phase 2 are not expected to be fully operational before 2013/2014, Metro will report annually on bus travel times plus wait times between the proposed station pairs for the purpose of monitoring and evaluation in the intermediate years.

Project beneficiaries

The main beneficiaries of this Project will be the users of the São Paulo Metro network, particularly the low-income population who live in the municipalities surrounding the Vila Sônia station and bus terminal which will have improved access to the expanded city center. Other direct and indirect beneficiaries include users of public transport system and the road network in the corridor of Line 4. Of all users it is expected that at least 50% will be women as reflected in the most recent surveys of other lines in operation of the São Paulo Metro network.

Arrangements for results monitoring

- Institutional issues: The PMU will be in charge of making sure that the periodic supervision reports include data on the project outcome indicators or/and the intermediate outcome indicators
- Data collection: Data collection will be undertaken by the operating divisions of each of the agencies and will be verified by the project management consultants. The low-income participation surveys will be undertaken every two years because they are costly.
- Capacity: Metro has the capability required to collect the data and prepare the progress reports. In case they cannot do it directly, they will be supported by the project management consultants.
- Project Schedule and Target Values: Based on the current project schedule, all stations of Line 4 Phase 2 Project will be operating on or before the fifth year of implementation. Assuming 2010 is the first year of implementation, the Project expects to meet the outcome indicators listed on the following page on or before the end of 2014.

Project Outcome Indicators	Target Values					Data Collection and Reporting			
	Baseline 2009	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Frequency and Reports	Data Collection Instruments	Responsibility for Data Collection
	<p>1. Quality of service objective: Travel time plus average waiting time between pairs of stations (in minutes, at peak hour)</p> <p>a. Vila Sônia – Luz</p> <p>b. Fradique Coutinho – Luz</p> <p>c. Higienópolis/Mackenzie - Luz</p> <p>2. Integration objective: Percentage of 5 new stations integrated with bus lines</p> <p>3. Accessibility objective: Total annual passenger boardings in new stations (both directions, in millions)</p> <p>a. Vila Sônia</p> <p>b. Morumbi</p> <p>c. Fradique Coutinho</p> <p>d. Oscar Freire</p> <p>e. Higienópolis/Mackenzie</p>	55	-	-	-	-	20	Bi-annual		METRÔ
	26	-	-	-	-	10			
	13	-	-	-	-	5			
	0%	-	-	-	-	100%	Bi-annual	Operational Reports / Accounting	METRÔ
	0	-	-	-	-	47.0			
	0	-	-	-	-	17.1	Bi-annual		METRÔ
	0	-	-	-	-	10.6			
	0	-	-	-	-	10.8			
	0	-	-	-	-	11.3			
Intermediate Output Indicators									
% of completion of Vila Sônia Tunnel	-	5	40	45	10	-	Annual		METRÔ
% of completion of Vila Sônia Station	-	5	40	45	10	-	Annual	Operational Reports	METRÔ
% of completion of Vila Sônia yard	-	5	40	45	10	-	Annual		METRÔ
% of completion of existing stations (finalization)	-	5	40	45	10	-	Annual		METRÔ
% of completion of systems	-	0	35	50	15	-	Annual		METRÔ

Annex 4: Detailed Project Description
BRAZIL: São Paulo Metro Line 4 (Phase 2) Project

1. The proposed Project comprises the following components:

Part A: Infrastructure and Equipment Investment

Provision of financing for: (i) completion of the works of the four stations of Line 4 initiated during the Line 4 Phase 1 Project; (ii) construction of one new station (*Vila Sônia*) and its access tunnel of about 1.5km extension; (iii) construction of additional facilities at the *Vila Sônia* yard; and (iv) acquisition and installation of escalators, platform doors, and signaling and telecommunication systems necessary to operate the stations referred to in (i) and (ii) above.

Part B: Technical Assistance

Provision of technical assistance for: (i) the management oversight and supervision of the carrying out of Part A of the Project; (ii) the carrying out of specific studies or assessments required during the execution the Project, including, inter alia, a study for estimating carbon emissions reduction due to the implementation of Line 4.

2. In addition, the trains will be provided by the private sector concessionaire (Via Quatro), which has already ordered the trains for Phase 1 with an option for 15 more trains for Phase 2. The additional 15 trains and systems will be compatible with those provided in Phase 1.

3. A more detailed description follows:

Civil Works

Metro Line 4 Phase 2 consists of a 1.541 km extension, access tunnel to the rail yard, completion of the stations and maintenance yard from Phase 1, and implementation of one new station and one bus terminal. The line section will consist of:

- i. Construction to extend the running way in tunnel segments including 218 m using “cut and cover” (VCA) method and the remaining 1,323 m of double-track using New Austrian Tunneling Method (NATM);
- ii. Construction of a 500 m single-track tunnel to access Vila Sônia yard in parallel to the double-track tunnel;
- iii. Construction of an underground station at Vila Sônia and connecting tunnels using NATM, and access pits using VCA;
- iv. Construction of a two-level bus terminal at Vila Sônia (on land already expropriated) with operational access for the Metro, at grade and tunnel access for buses and other vehicles, and access for pedestrians coming from the Vila Sônia Station and the surrounding streets;
- v. Two ventilation and emergency exit shafts using VCA and one circular pit;
- vi. Completion of the Fradique Coutinho Station including finishing works for the Pinheiros access tunnel, building of technical and ventilation equipment rooms, and the

- construction of the internal structures and finishing works for the access tunnel to Fradique Coutinho;
- vii. Completion of the Oscar Freire Station including the construction of three access pits for the implementation of the vertical circulation systems (escalators, stairs, and elevators), ventilation ducts and cable shafts, internal structures for the pits and station mezzanine, and all finishing works;
- viii. Completion of the Higienópolis-Mackenzie station for passenger access (including the widening of the existing pit used for excavation and spoil removal during phase 1), widening the intermediate tunnel constructed for phase 1 to accommodate the exhaust ducts and equipment, civil works for the Ouro Preto access tunnel, and all finishing works;
- ix. Completion of the São Paulo-Morumbi Station (currently a shell with one pit executed under phase 1) including the internal station structures and steel-framed mezzanine, pit at Morumbi Norte, connecting access tunnels, technical rooms and VCA at Acesso Norte, Terminal Urbano, and finishing works;
- x. Construction of a two-level maintenance facility on Rua Pinheiros with the lower level containing the workshops, Metro employee restrooms, changing rooms, lunch rooms for the employees and contractors, and storage for construction materials, and the upper level containing the electronics shop, support units for the workers, and Metro vehicle parking;
- xi. Completion of the Vila Sônia yard with added parking for ten more trains in addition to the fifteen trains under phase 1 and execution of all support facilities to maintain twenty-five trains.

Systems:

Line 4 Phase 2 is composed of the following sub-systems:

- i. Medium Voltage (22kV) for all stations of the Project alignment except Fradique Coutinho;
- ii. Low Voltage (460/220/110 VAC), diesel group generator and 125 VDC in all locations;
- iii. Overhead lines of 1500VDC in Vila Sônia Station and Yard; (iv) Pumps, fire detection, HVAC, and operations supervision rooms in all locations;
- iv. Escalators in all stations;
- v. Elevators for passengers with mobility impairments in all stations;
- vi. Main ventilation in all stations;
- vii. Electronic monitoring in all locations;
- viii. Multi-media in all locations;
- ix. Communications equipment in all locations; and
- x. Control systems in all locations.
- xi. Other systems

Annex 5: Project Costs

BRAZIL: São Paulo Metro Line 4 (Phase 2) Project

Project Cost By Component and/or Activity	Foreign US \$ million	Local US \$ million	Total US \$ million
Infrastructure and Equipment Component - Part A			
Expropriations	-	11.481	11.481
Systems Supplementary	-	11.764	11.764
<u>Civil Works</u>	<u>174.979</u>	<u>156.919</u>	<u>331.898</u>
- Yard and Stations Finishing and Vila Sônia Terminal Bus Station	46.449	41.653	88.102
- Vila Sônia Station and Extension	128.530	115.265	243.796
Systems	26.121	88.370	114.491
Borehole Characterization Test and Special Geotechnical Test	0.228	0.281	0.509
Instrumentation	0.581	0.715	1.296
Technical Assistance - Part B			
Civil Works Executive Design	9.531	7.090	16.621
Technical Assistance - Analysis of Civil Works Design	0.622	0.767	1.389
Technical Assistance - Concrete Technological Control	0.222	0.275	0.497
Technical Assistance - Analysis of Systems Design	1.305	4.528	5.833
Technical Assistance - Material Inspection and Assembly	0.705	2.447	3.152
Technical Assistance - Environmental Control	0.435	0.537	0.972
Project Management Oversight Consultant	1.881	2.320	4.201
Total Baseline Cost	216.610	287.494	504.104
Physical Contingencies	31.936	38.953	70.889
Price Contingencies	11.130	14.463	25.592
Total Project Costs	259.675	340.910	600.585
Front-end Fee IBRD (0.25%)	0.325	-	0.325
Total Financing Required	260.000	340.910	600.910
PPP - Public Private Partnership *			
Concession		307.400	307.400
Rolling Stock		202.600	202.600
Systems		104.800	104.800
Total PROJECT	-	648.310	908.310

**These additional trains and systems were already ordered as an option in the PPP contract and, although not part of the Project description, are added here for completeness because when estimating the IERR they must be included.*

Project Cost By Component and/or Activity	IBRD	JBIC**	Local	Total
	US \$ million	US \$ million	US \$ million	US \$ million
Infrastructure and Equipment Component - Part A				
Expropriations	-	-	11.481	11.481
Systems Supplementary	-	-	11.764	11.764
<u>Civil Works</u>	<u>87.490</u>	<u>87.490</u>	<u>156.919</u>	<u>331.898</u>
- Yard and Stations Finishing and Vila Sônia Terminal Bus Station	23.225	23.225	41.653	88.102
- Vila Sônia Station and Extension	64.265	64.265	115.265	243.796
Systems	13.060	13.060	88.370	114.491
Borehole Characterization Test and Special Geotechnical Test	0.114	0.114	0.281	0.509
Instrumentation	0.290	0.290	0.715	1.296
Technical Assistance - Part B				
Civil Works Executive Design	4.765	4.765	7.090	16.621
Technical Assistance - Analysis of Civil Works Design	0.311	0.311	0.767	1.389
Technical Assistance - Concrete Technological Control	0.111	0.111	0.275	0.497
Technical Assistance - Analysis of Systems Design	0.653	0.653	4.528	5.833
Technical Assistance - Material Inspection and Assembly	0.353	0.353	2.447	3.152
Technical Assistance - Environmental Control	0.217	0.217	0.537	0.972
Project Management Oversight Consultant	0.940	0.940	2.320	4.201
Total Baseline Cost	108.305	108.305	287.494	504.104
Physical Contingencies	15.805	16.130	38.953	70.889
Price Contingencies	5.565	5.565	14.463	25.592
Total Project Costs	129.675	130.000	340.910	600.585
Front-end Fee IBRD (0.25%)	0.325	-	-	0.325
Total Financing Required	130.000	130.000	340.910	600.910
PPP - Public Private Partnership *				
Concession	-	-	307.400	307.400
Rolling Stock	-	-	202.600	202.600
Systems	-	-	104.800	104.800
Total PROJECT	-	-	648.310	908.310

**These additional trains and systems were already ordered as an option in the PPP contract and, although not part of the Project description, are added here for completeness because when estimating the IERR they must be included.*

*** JBIC is expected to jointly co-finance and disburse equally for Parts A and B of the Project.*

SCHEDULE OF ESTIMATED DISBURSEMENTS (INCLUDING CONTINGENCIES) USD millions

IBRD Fiscal Year Semester	Estimated Disbursements per Semester	Estimated Cumulative Disbursements	Estimated Cumulative as % of Total
Dec, 2010	0.865	0.865	0.67%
Jun, 2011	7.309	8.174	6.29%
Dec, 2011	17.325	25.498	19.61%
Jun, 2012	30.291	55.789	42.91%
Dec, 2012	37.028	92.817	71.40%
Jun, 2013	25.810	118.628	91.25%
Dec, 2013	10.877	129.504	99.62%
Jun, 2014	0.496	130.000	100.00%

ESTIMATED DISBURSEMENTS (INCLUDING CONTINGENCIES) USD millions

IBRD Fiscal Year	2011	2012	2013	2014
ANNUAL	8.2	47.6	62.8	11.4
CUMULATIVE	8.2	55.8	118.6	130.0

Annex 6: Implementation Arrangements
BRAZIL: São Paulo Metro Line 4 (Phase 2) Project

State Agency Responsible for the Project

1. The Secretary of Metropolitan Transport of the State of São Paulo (STMSP) is the main Government agency responsible for the Project and it will represent the State. To oversee the Project on behalf of the State of São Paulo, STMSP has established and maintained a Project Coordination Unit (PCU) headed by a Project Coordinator, to follow the implementation of the Project and oversee policy issues. This PCU already exists to oversee the São Paulo Metro Line 4 Project and its mandate has been extended to cover the proposed Project. The actual implementation of the Project will be done by Metro, which is under the jurisdiction of the Secretary of the STMSP. Metro has implemented Bank-financed projects and have the manpower capacity required to implement the respective subcomponents of the proposed Project. Studies related to the impact of the Line 4 Project on carbon emissions will be conducted by STMSP.

Project Implementation Agents

2. Metro will have the same Project Management Units (PMUs) used in the Line 4 (phase 1) Project which will be in charge of the implementation of all project components. The PMU is headed by a Project Coordinator which will continue to report directly to the Director in charge of the implementation of the Project. The PMU is staffed with regular staff from the agency and supported by project management and supervision consultants in charge of providing technical support in areas such as engineering, procurement, environment and financial management. Metro has considerable experience with its PMU unit in ongoing projects (São Paulo Metro Line 4 and São Paulo Trains and Signaling).
3. Given the importance of quick response to issues that might be faced during the Project, the Director to which the PMU reports is required to have sufficient autonomy to decide and, in extreme cases, have quick access to the President of Metro. Metro has strong technical, procurement, environmental and legal staff which will support the implementation of the Project.

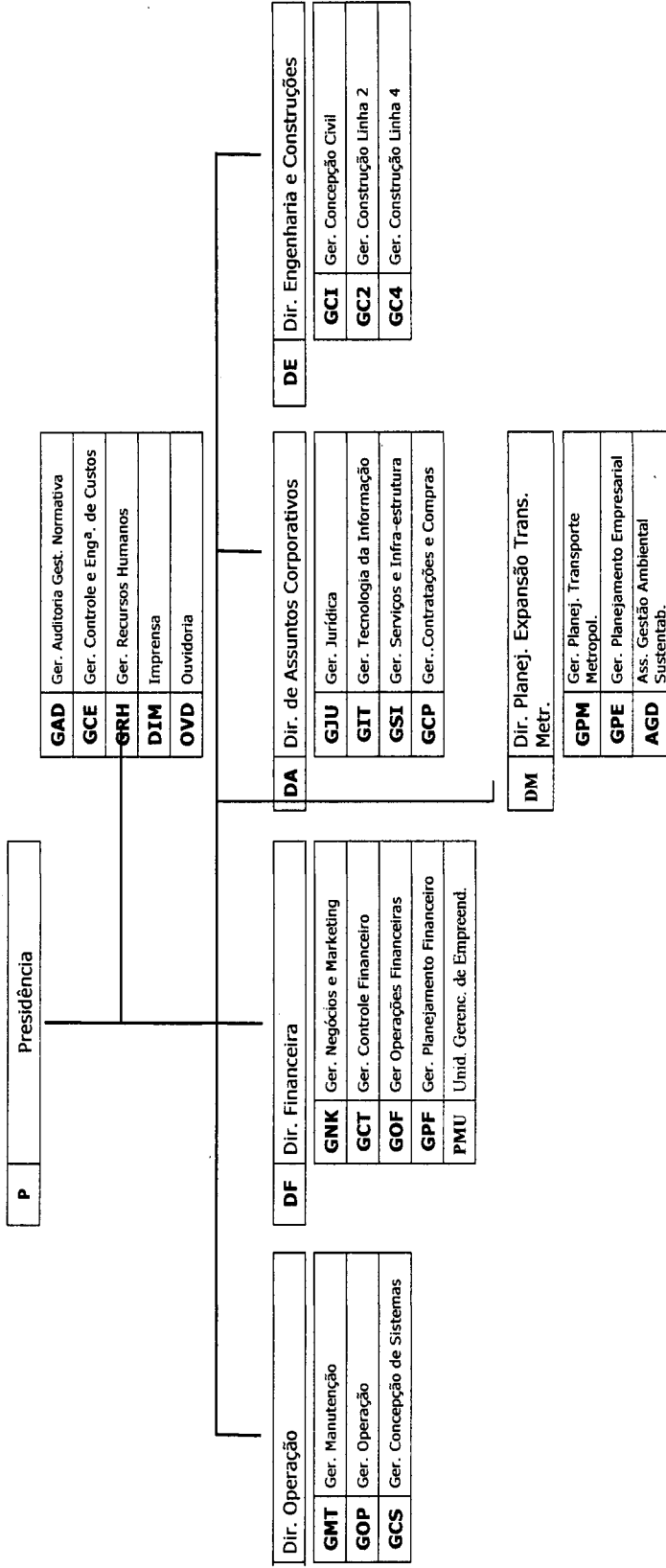
Assessment of Project Implementation Capacity

4. As mentioned above, Metro has considerable experience with its PMU unit in ongoing projects (São Paulo Metro Line 4). Their knowledge of procurement, financial, disbursement and safeguards procedures will be an asset for the project implementation. No special launch training is judged necessary. A Project Management Oversight Consultant will be supporting the PMU as in the phase 1 of the Line 4 Project.

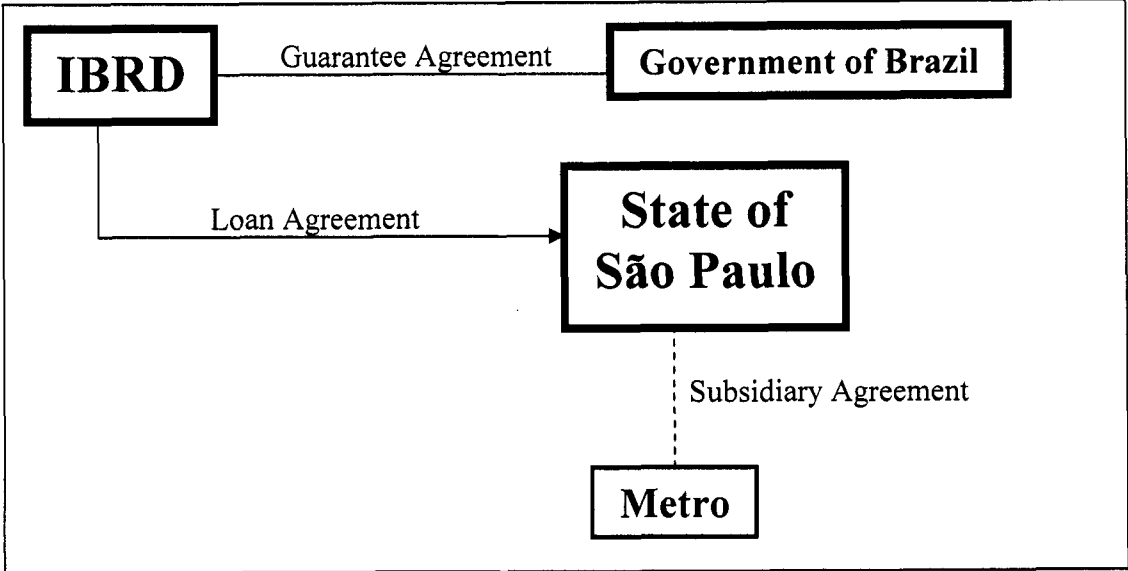
Legal Agreements

5. There will be a Guarantee agreement between the Federative Republic of Brazil and the Bank, a loan agreement between the State and the Bank, and a subsidiary agreement between the State and Metro.

METRO ORGANIZATION CHART



LEGAL AGREEMENTS



Annex 7: Financial Management and Disbursement Arrangements

BRAZIL: São Paulo Metro Line 4 (Phase 2) Project

1. This annex is also an update for the latest financial management assessment made for *Companhia do Metropolitano de São Paulo – METRÔ* upon supervision of loan 46460 and 75360 (P051696), implemented by the same PMU.

2. The main objective of the Line 4 (PHASE 2) Project is a continuation of the above mentioned loans activities which could not be included in the Phase 1 of the Project due to the debt limits imposed on the State of São Paulo by the Federal Ministry of Finance at the time it was launched. As such, when Phase 1 was approved, it had already been decided that a Phase 2 of the Project would be needed to complete the remaining stations as soon as the State was able to secure the necessary sovereign guarantees from the Republic of Brazil to obtain a loan for the construction of the remaining stations, which has been achieved. The main objectives which includes: a) to improve the quality and long-term sustainability of urban transport in the São Paulo Metropolitan Region (SPMR) by interconnecting the existing subway, commuter rail and bus networks through the construction of Metro Line 4; b) to improve the accessibility of the low-income population of the areas served by Line 4 to employment centers and health and education facilities; c) to seek private sector participation in the development of Line 4. Through phase 2 the loan will finance: (i) civil works and equipment required to complete the existing shells prepared in Phase I (for those stations and build a new station at Vila Sonia yard its access tunnel and (ii) project management oversight consultant and supervision consultants required to oversee and manage the works.

3. Conclusion: The conclusion is that the financial management arrangements as set out for this Project satisfy the Bank’s minimum requirements and that financial management systems in place can provide with reasonable assurance, accurate and timely information on the progress of Project implementation. As strengths for the Project, it can be mentioned: a) the commitment of the entity to the Project, b) strong public sector FM arrangements in place; c) a strong and supportive internal audit department, which checks all transactions. The overall financial management arrangements were considered SATISFACTORY and the associate risk as MODERATE, mainly due to dependence on external financing as Counterpart Funds and the high value of the bidding processes.

Table 7.1: Summary of Financial Management Arrangements

Borrower	State of São Paulo
Accounting	METRO follows SA accounting law no. 11.638 and STM (borrower) follows law 4.320
FM system	Accounting will be done through the Metro Corporate system
IFR	To be used for monitoring purposes.
Staffing	Professional staff with experience with Bank procedures.
Flow of funds	Designated account to be opened in USD and one Operational account in R\$ in Banco do Brasil
Internal Auditing	Internal audit also responsible for internal control mechanisms

Internal Control	Through segregation of functions: (i) above said internal auditing arrangements; (ii) use Metro FM system (iii) follow up of Operational Manual (OM) procedures
External Auditing	An independent audit firm to be hired to audit Project proceeds.
Disbursements	Component 1 and 2-Disbursements will be made through Summary Sheets and Records/ SOEs.

Table 7.1 A: Risk Rating – Metro

Risk	Risk Rating	Risk Issues/Measures
Inherent Risk		
Country Level	Low	
Entity/project specific	Moderate	
Control Risk		
Budget Preparation	Low	Budget will be clearly defined, reflected in an Annual Operational Plan (AOP) and approved by the Bank.
Funds Flow	Moderate	All funds will flow to a commercial Bank. Transaction based with high amount of contracts and payments.
Counterpart Funds	Moderate	Depends on JBIC.
Staffing	Low	Experienced, professional and trained staff.
Accounting procedures	Low	Accounting procedures are adequate.
External audits	Moderate	Independent auditors to be hired and TOR to be prepared.

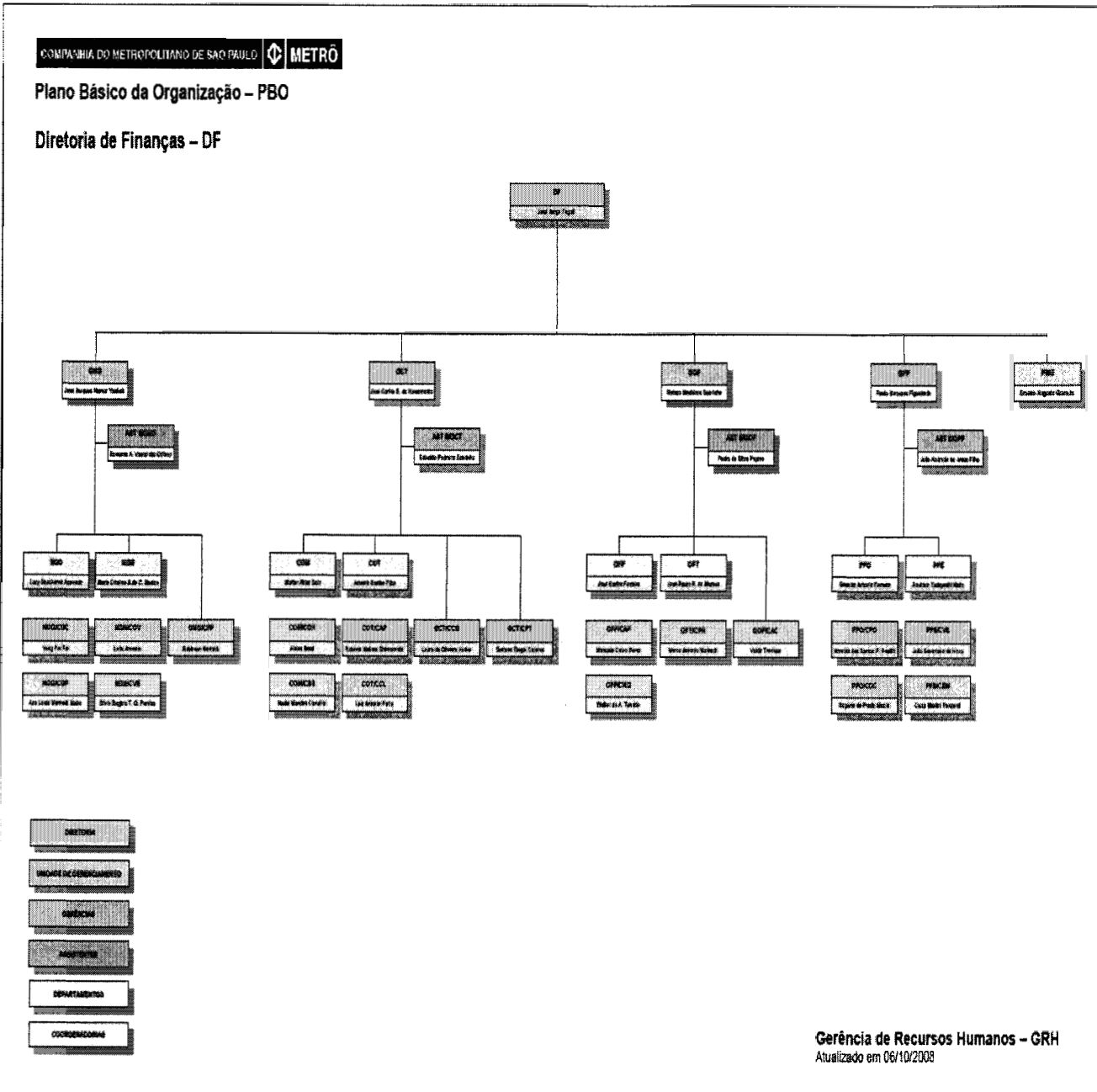
Supervision

4. Financial management supervision will take place at least once a year and will include, among others, the (i) review of quarterly IFRs; (ii) review of the auditors' reports and follow-up of issues raised by auditors in the management letter, as appropriate; and (iii) follow up on any financial reporting and disbursement issues.

Staffing and Institutional Arrangements:

5. Project Management Unit (PMU) is a constituted implementing agent at *Companhia do Metropolitano de São Paulo – Metrô* set up to implement Metro Line 4 Project. The unit's structure as well as the use of streamlined project implementation procedures revealed adequate to execute the Metrô Line 4 Project, and as such will be maintained for the execution of this Project. Also the PMU will be responsible for all FM and disbursement aspects.

6. The organizational structure of the UGP will comprise a General Coordinator and Technical Staff for Engineering, Accounting, Financial Management, and an assistant for administrative support, which daily tasks and routines will be updated on the Operational Manual, which includes carrying out with coordination and consolidation of accountancy, internal control, monitoring and reporting. Civil servants of Metrô are currently relocated to carry out the Project implementation and will be complemented with consultants as needed. Refreshment training in Bank financial management and disbursement procedures will be provided to PMU's staff to be involved in project financial management matters. The Organizational Structure is shown in the graphic below:



Internal Control

7. The PMU will also maintain all Project's records and financial statements, for disbursements and reporting, making sure that adequate charge codes are attributed to the upcoming expenses, permitting to identify the origin and use of the funds by category and by component. Currently the entity has an internal control department with operational internal audit functions in place. The internal auditors will perform ex-post controls for the Project. Currently, as part of the internal control procedures of the entity, all payments processes are checked by a financial analyst and reviewed by the financial coordinator. Retroactive financing up to 20% of the proposed loan is proposed.

Accounting Budgeting

8. The PMU will have the responsibility of the preparation the annual budgetary request for project funding. Metro follows the private accounting law 11.638 – which is an update to the private sector to adapt to the international accounting to the international accounting standards practices (IFRs), which will be mandatory by 2010. The financial statements have been issued following the new law, as approved by Metro's council. This is a good practice in line with the World Bank guidelines.

Financial Management System and Reporting

9. The Project will keep using the same financial management systems yet existent for the Phase 1 of the Project. The PMU will prepare quarterly IFRs for management purposes. The following IFRs will be issued:
 - IFR 1 – Source and application of funds by cost category as per Loan Agreement,
 - IFR 2 – Statement of Investments by Components and activities,
10. All IFRs will be in loan currency (US\$), and expenditures figures will be stated by quarter and accumulated for the Project. IFRs will be submitted to the Bank up to 60 days after the closing of each quarter. Project end IFRs will be used for external auditing purposes. In addition to IFRs the agent will be responsible in producing physical implementation progress, procurement and contracting reporting. The contents and the formats of the reports have been discussed and will be included in the operational manual.

External Auditing

11. External audit will follow Bank's audit policy and guidelines issued by the FMSB on June 30, 2003. Project's accounts and Financial Statements will be audited by an independent audit firm, selected among a pre approved short list of three to six candidates, and under Terms of Reference previously reviewed and approved by the Bank. It is recommended that the hiring process starts right after the signature of the Loan. Auditors report will express a single opinion on Projects' financial statements which would include the Designated Account, IFRs and SOEs, and a management letter identifying any internal control weaknesses and areas of improvement. Terms of reference of audit will also cover all retroactive financing, being the case. As mentioned above, the IFRs issued at the end of Project implementation period with cumulative figures will be used by the auditors to express their independent opinion. The auditors' report must be submitted to the World Bank no later than six months after the end of each calendar year.

Flow of Funds and Disbursements

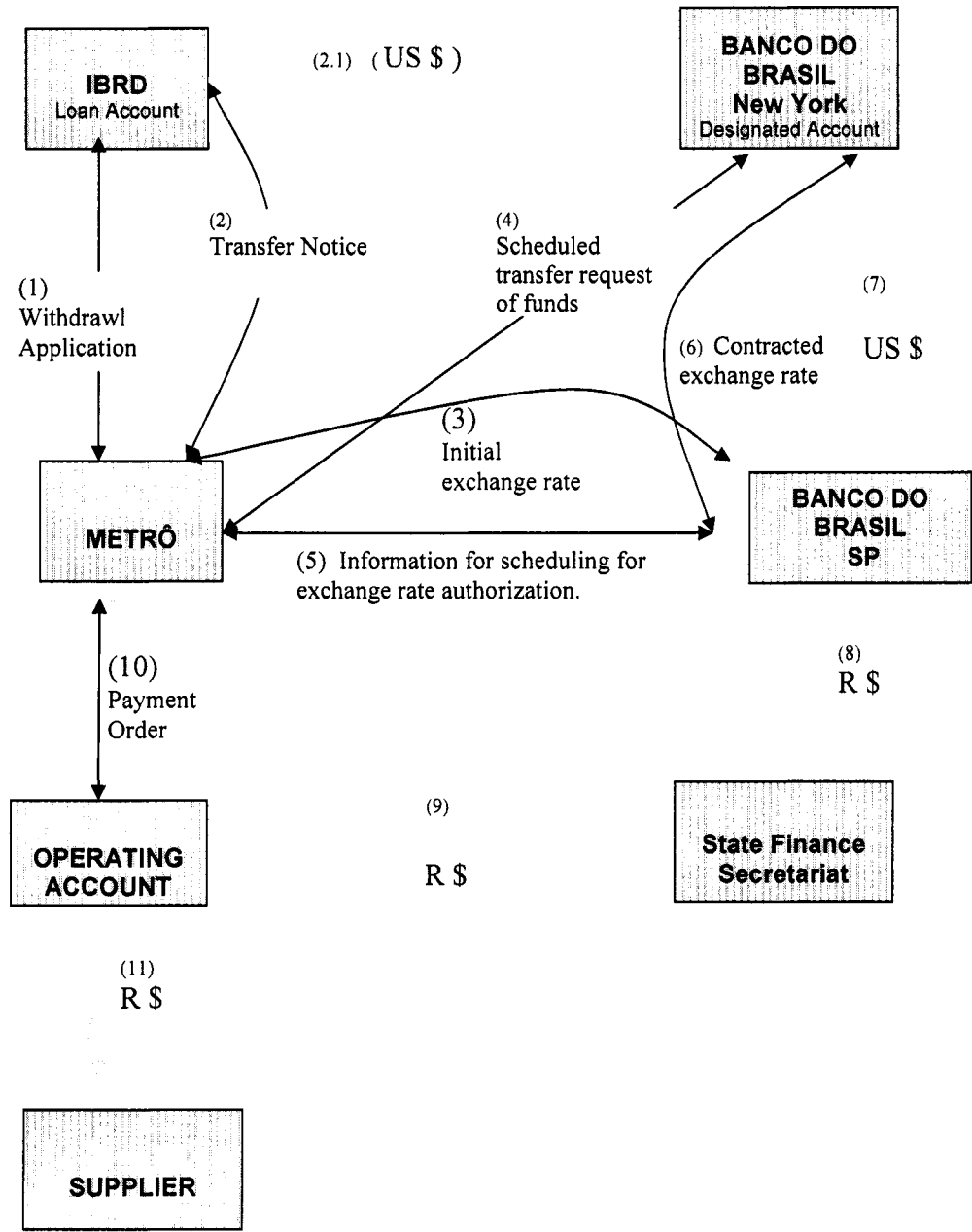
12. A designated account DA (US\$) will be opened at the *Banco do Brasil* in New York. A ceiling of USD 20.0 million will be established. The PMU's designated account will have a corresponding Project local currency account at the *Banco do Brasil S/A* in São Paulo for disbursements in *Reais*. Payments for works, goods and services will be made directly from this account. Counterpart funds will be disbursed from the state Treasury's single account to contractors and service providers through an operative account. A schedule of estimated IBRD disbursements and loan allocation table are provided below.

LOAN ALLOCATION

Category	Amount of the loan Allocated (expressed in USD)	Percentage of Expenditures to be financed inclusive of Taxes
(1) Works, Goods and Non-consultant services for Part A of the Project	121,942,000	100%
(2) Consultants' services for Part B of the Project	7,733,000	100%
(3) Front-end Fee	325,000	Amount payable pursuant to Section 2.03 of the Loan Agreement in accordance with Section 2.07 (b) of the General Conditions
(4) Premia for Interest Rate Caps and Interest Rate Collars	0	Amount payable pursuant to Section 2.07 (c) of the Loan Agreement
TOTAL AMOUNT	130,000,000	

13. The following disbursement methods will be used: Advance, Reimbursement and Direct Payment. The Minimum Application Size with respect to Direct Payments and Reimbursements (not Advances) will be US\$ 4,000,000. Applications documenting expenditure paid from the Designated Account should be submitted by the Borrower ideally once a month but not later than once every three months, and must include reconciled bank statements as well as other appropriate supporting documents.

14. Records, Summary Sheets and SOE's will be used to document eligible expenditures. Records must be provided to all payments for consultants, goods and works under contracts above the limits specified in the Disbursement Letter. Flow of funds will be according to the following flow chart, will be the same as for Phase 1:



Annex 8: Procurement Arrangements
BRAZIL: São Paulo Metro Line 4 (Phase 2) Project

A. General

1. Procurement for the proposed Project would be carried out in accordance with the World Bank's "Guidelines: Procurement Under IBRD Loans and IDA Credits" dated May 2004 (revised October 2006); and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" dated May 2004 (revised October 2006), and the provisions stipulated in the Legal Agreement. The State will ensure that the Project is implemented in accordance with the Guidelines on "Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants" dated October 15, 2006. The various items under different expenditure categories are described in general below. For each contract to be financed by the Loan/Credit, the different procurement methods or consultant selection methods, the need for pre-qualification, estimated costs, prior review requirements, and time frame are agreed between the Borrower and the Bank in the Procurement Plan. The Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

2. **Procurement of Works and Non-Consultant Services:** There are two major bids under the category works for the provision of civil works, which will be procured using ICB. The first bid, L42-01, will include finishing of the existing stations, yard facilities and a bus terminal at Vila Sônia. The second bid, L42-02, includes a 1.5 km tunnel and the Vila Sônia station. For these lots, the Standard Bidding Documents for works will be used. The Borrower has committed to send to the Bank the draft bidding documents for L42-01 and L42-02 for review before June 30, 2010.

3. There will be two bids under the category of non-consultant services to be procured under NCB. These bids are for geotechnical testing and surveying and instrumentation analysis.

4. **Procurement of Goods:** There is one bid for the procurement of goods, L42-03, for the supply and installation of systems in the new tunnel and stations. This bid will have three lots (signaling, electrification and telecommunications). The procurement of those signaling, telecommunications and electrification systems will be done using the Bank's Standard Bidding Documents for supply and installation. The Borrower has committed to send to the Bank the draft bidding documents for review before June 30, 2010.

5. **Selection of Consultants:** The Project includes the use of Consultants for (a) detailed engineering design; (b) geotechnical support; (c) support of Metro for review of detailed engineering plans, concrete technological control, systems design, materials inspection and assembly and environmental control; and (d) project management oversight consultants. Short lists of consultants for services estimated to cost less than US\$ 500,000 equivalent per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.

B. Assessment of the agency's capacity to implement procurement

6. Procurement activities will be carried out by Metro, which is staffed by a General Superintendent for procurement and contracts and administration of material who oversees, among other departments, the manager of the procurement department. The procurement department is staffed by a very competent group of procurement specialists (about 20) all with large experience of procurement including of complex Bank financed contract such as those financed under Ln. 4646-Br (Line 4).

7. An assessment of the capacity of Metro to implement procurement actions for the Project was carried out by the Bank on October 5, 2007 and it still considered adequate because the staff in charge of procurement is the same as for the ongoing Bank operations. The assessment reviewed the organizational structure for implementing the Project and the interaction between the Project's staff responsible for procurement and the relevant units for administration and finance. Both agencies are very familiar with Bank procedures and procurement guidelines since they had implemented Bank financed projects recently.

8. The overall Project risk for procurement is Average.

C. Procurement Plan

9. The Borrower, at appraisal, developed a procurement plan for project implementation which provides the basis for the procurement methods. This plan has been agreed between the Borrower and the Bank on March 10, 2010 and is available in the Project Files. It will also be available in the Project's database and in the Bank's external website. The Procurement Plan will be updated in agreement with the Bank annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

D. Frequency of Procurement Supervision

10. In addition to the prior review supervision to be carried out from Bank offices, the capacity assessment of the Implementing Agency has recommended supervision missions to visit the field to carry out post review of procurement actions every six months during the first year of project implementation and annual visits thereafter.

E. Details of the Procurement Arrangements Involving International Competition

11. Works and Consulting Services

(a) List of contract packages to be procured following ICB and direct contracting ^{a b}:

1	2	3	4	5	6	7
Ref. No.	Contract (Description)	Estimated Baseline Total Cost (US\$ Millions)	Procurement Method	P-Q	Domestic Preference (yes/no)	Review by Bank (Prior / Post)
1	Civil Works - Yard and Stations Finishing and Vila Sônia Terminal Bus Station	106.6	ICB	yes	no	yes

2	Civil Work - Vila Sônia Station and Extension	294.9	ICB	yes	no	yes
3	Systems	138.8	ICB	no	no	yes
4	Borehole, Characterization Test and Special Geotechnical Test	0.5	NCB	no	no	yes
5	Instrumentation	1.4	NCB	no	no	yes

(b) List of consulting services with short-list of international firms ^{a b}:

1	2	3	4	5
Ref. No.	Contract (Description)	Estimated Baseline Total Cost (US\$ Millions)	Selection Method	Review
6	Civil Works Executive Design	17.5	QCBS	prior
7	Technical Assistance - Analysis of Civil Works Design	1.5	QCBS	prior
8	Technical Assistance - Concrete Technological Control	0.5	QCBS	prior
9	Technical Assistance - Analysis of Systems Design	6.1	QCBS	prior
10	Technical Assistance - Material Inspection and Assembly	3.3	QCBS	prior
11	Technical Assistance - Environmental Control	1.0	QCBS	prior
12	Project Management Oversight Consultant	4.5	Contracted	prior

^a Include duties and taxes.

^b Total Cost - Include Physical and Prices Contingencies.

(c) The Procurement Plan will define which contracts will be subject to prior review by the Bank.

(d) Short lists composed entirely of national consultants: Short lists of consultants for services estimated to cost less than US\$500,000 (five hundred thousand US dollar) equivalent per contract, may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.

Table A: Thresholds for Procurement Methods and Prior Review

Description	Type of Procurement	Prior Review Limit	Contract Value
1. Works	ICB	All ICB	No threshold
2. Goods	ICB NCB	All ICB All NCB	No threshold No threshold
3. Non-consultant Services	NCB	All NCB	No threshold
4. Consulting Services Firms	QCBS	To be defined in the procurement plan	To be defined in the procurement plan

PROCUREMENT SCHEDULE OF MAJOR CONTRACTS (date: day/month/year) ^{a b}

Ref. N°	Component		Estimated Cost, US\$ millions	Type of Contract	Type of Bidding	Documents Ready	Bids Prop. Invited	Contract Signature	Delivery Goods	Initiation of Works	End of Works
	Contract										
Infrastructure and Equipment - Part A											
1	L42 - 01	Civil Works - Yard and Stations Finishing and Vila Sônia Terminal Bus Station	106.6	Works	ICB	01/06/10	01/07/10	01/02/11		02/02/11	31/01/14
2	L42 - 02	Civil Work - Vila Sônia Station and Extension	294.9	Works	ICB	01/05/10	01/07/10	01/02/11		02/02/11	31/01/14
3	L42 - 03	Systems	138.8	Supply	ICB	15/06/10	01/09/10	01/02/11	30/09/12	02/02/11	31/01/14
4	L42 - 04	Borehole, Characterization Test and Special Geotechnical Test	0.5	Non Consultant Services	NCB	01/03/10	01/04/10	01/07/10		02/07/10	30/04/12
5	L42 - 05	Instrumentation	1.4	Non Consultant Services	NCB	01/05/10	01/06/10	01/11/10		02/11/10	31/03/13
		Subtotal	542.2								
Institutional and Policy Development- Part B											
6	L42 - 06	Civil Works Executive Design	17.5	Services	QCBS	01/06/10	01/07/10	01/09/10		02/09/10	31/08/13
7	L42 - 07	Technical Assistance - Analysis of Civil Works Design	1.5	Services	QCBS	01/06/10	01/07/10	01/09/10		02/09/10	31/08/13
8	L42 - 08	Technical Assistance - Concrete Technological Control	0.5	Services	QCBS	01/05/10	01/06/10	01/11/10		02/11/10	31/10/13
9	L42 - 09	Technical Assistance - Analysis of Systems Design	6.1	Services	QCBS	01/07/10	01/09/10	01/03/11		02/03/11	28/02/14
10	L42 - 10	Technical Assistance - Material Inspection and Assembly	3.3	Services	QCBS	01/07/10	01/08/10	01/01/11		02/01/11	31/10/13
11	L42 - 11	Technical Assistance - Environmental Control	1.0	Services	QCBS	01/05/10	01/06/10	01/11/10		02/11/10	31/01/14
12	L4 17	Project Management Oversight Consultant	4.5	Services	Contracted						
		Subtotal	34.4								
		Total	576.6								

^a Costs include duties and taxes, and physical and prices contingencies
^b Metro has requested the Bank's Prior Review for all contracts.

Annex 9: Economic and Financial Analysis
BRAZIL: São Paulo Metro Line 4 (Phase 2) Project

A. Summary of Cost-Benefit Analysis

1. The main objective of the Metro Line 4 (Phase 2) Project is to build and put into operation five new stations to a line already under construction but not included in Phase 1 of the Project. In order to evaluate the feasibility of such a project, the costs and benefits of both an incremental investment in Phase 2 and for the comprehensive investment in Line 4 (Phases 1 and 2, taking into account modifications to the initial network configuration and location of passenger stations) were considered. Because the scope of investment for Phase 2 and the cost-benefit methodology, it was determined that a comprehensive analysis of Line 4 was a more appropriate economic assessment of the Project. This analysis is presented here and a detailed economic evaluation report can be found in the Project File. An incremental analysis of only the Phase 2 investment was also prepared and is available in the Project File.

2. The base scenario considered the demand for Line 4 (Yellow Line) Vila Sônia-Luz starting in 2013, including the Capão Redondo-Largo Treze segment of Line 5 (Lilac Line). The review of the transport demand and economics study involved the following activities: a) **Network simulation review** estimating 954,000 daily trips for the Line 4 with 11 passenger stations in the year 2013 and demand projection of the period 2010-2034; b) **Review of investment flows** including data collection of existing investments carried out since 2002 and assignment of future investments to the period 2008-2014 as reported by the PMU; c) **Calculation of the internal rate of return** considering updated unit costs and operational parameters of the transport system.

3. The methodology consisted of comparing the situation with and without Project and quantifying the benefits due to time savings for users of all public transport modes, operating cost savings for all modes, road maintenance cost savings, accident savings, air pollution savings against the investment and operating costs. The demand for each mode was determined using a demand model which estimated the passenger-hours and passenger-km saved by mode with the Project for without and with scenarios.

4. The main benefits considered were: a) **Operating cost savings** of operating all modes through estimates of passenger-km with and without the Project multiplied by the respective estimated unit cost; b) **Travel time savings** estimated by determining the passenger-hours saved, by type of trip (home-to-work, business or other) and multiplied by the value of time for each mode according to each scenario with and without Project; c) **Reduction in road maintenance costs** due to the reduction of bus-km with the Project assuming the rationalization of the bus routes (minor); d) **Reduction in the bus system management costs** due to the avoided costs of expanding the existing public management structure with the Project; e) **Reduction of air pollution costs** due to reduction in bus-km with Project (minor); f) **Reduction of accidents costs** as estimated by multiplying the average cost per accident by the passenger-km with and without Project as a function of the number of bus-km saved (minor).

5. The main costs considered were: a) **Investment costs** for the acquisition of civil works, expropriation, trains and signaling systems and b) **Operating costs** including personnel, consumption and maintenance of Metro infrastructure, fleet and systems.

6. The main beneficial impacts of the Project under evaluation are reduced congestion (mainly due to less buses on the street due to network rationalization), reduction in traffic-related accidents, reduced vehicular air pollution, reduced noise due to less buses on the street and economic savings from reduction of travel time. The principal beneficiaries of the Project will be existing users of the bus and rail system that will experience shorter travel times and improved service with the extension of Line 4 and the new stations. People with origins or destinations near the new stations (such as nearby residents and low-income workers from the outskirts of the city) will also benefit from increased connectivity to the public transport network. Secondary and tertiary beneficiaries may include all users of nearby streets and roads that experience less pollution, less accidents and higher operating speeds from fewer road vehicles circulating. The State and Municipal Governments may also accrue minor benefit from reduced road maintenance and bus system costs.

7. The above are all quantifiable and were used in the economic analysis. There are, however, a great number of **non-quantifiable** benefits which cannot be captured in a standard cost-benefit analysis but are worth noting:

- a) *Improvement of travel level of service*: Train occupancy rates are expected to decrease due to the expansion of the network and services within the metropolitan area. Comfort level improvements on Metro services are non-measurable benefits and will certainly lead to higher utility levels of travel consumption and associated benefits.
- b) *Accessibility and creation of new opportunities*: (i) Promotes the interconnection between residential and employment areas and social equipment (hospitals, schools) facilities; (ii) Strengthens existing sub-centers and corridors.
- c) *Land Use and Value*: (i) While increases in land values due to lower generalized travel costs are already captured, it influences land development patterns even without changes in the zoning law; (ii) It increases the dynamics of the real estate market which is reflected by the occupation of empty lots and the renewal of older building in the area of influence of the metro.
- d) *Employment Generation*: It will promote the creation of jobs with multiplier effects in several sectors of the economy.

B. Demand Analysis

8. Demand analysis was undertaken by a specialized team based on the data provided by a comprehensive 1997 Origin-Destination Survey which collected data in 389 zones, and interviewed 97,760 people representing some 26,065 households.

9. Traffic demand levels for the project life cycle were estimated by the technical staff of Metro through a demand simulation using EMME/2 based model, which tested progressive scenarios with different configurations of passenger stations for Phases 1 and 2. EMME/2 uses the 4-step transport planning and modeling approach, namely (1) Trip Generation, (2) Trips

Distribution, (3) Modal Split and (4) Traffic Assignment, and is one of the most commonly used traffic demand package in the Americas.

10. The *without project* scenario consisted of simulation of the present urban bus network with the Metro network without the Line 4 operation. It comprised the following configuration: (i) Metro Line 1: Tucuruvi – Jabaquara; (ii) Metro Line 2: Vila Madalena – Tamanduateí; (iii) Metro Line 3: Barra Funda – Itaquera; (iv) Metro Line 5: Capão Redondo-Largo 13; (v) Rail Line A: Francisco Morato-Luz; (vi) Rail Line B: Luz-Itapevi; (vii) Rail Line C: Osasco-Grajaú (viii) Rail Line D: Luz-Rio Grande da Serra; (ix) Rail Line East Express: Luz-Guaianazes; (x) Rail Line E: Guaianazes-Estudantes; (xi) Rail Line F: Brás-Calmon Viana. (xii) implantation of the Bilhete-Único, an integrated tariff which allows a user to buy a single ticket which costs less than the sum of individual tickets and can be used in several modes within a certain period of time.

11. The *with project* scenario in the year 2010 added Line 4 in the Metro network with 6 passenger stations considered for the Phase 1 of the Project: Butantã, Pinheiros, Faria Lima, Paulista, República and Luz. The *with project* scenario in the year 2013 added Line 4 in the Metro network with 11 stations considered for the Phase 2 of the Project: Vila Sônia, Morumbi, Butantã, Pinheiros, Faria Lima, Fradique Coutinho, Oscar Freire, Paulista, Higienópolis, República e Luz. As for the rail network in the year 2013, the *with project* scenario includes: (i) Rail Line 7: Francisco Morato-Luz; (ii) Rail Line 8: Luz-Itapevi; (iii) Rail Line 9: Osasco-Grajaú (iv) Rail Line 10: ABC Express: Luz-Mauá; (v) Rail Line 11 East Express: Luz-Guaianazes; (vi) Rail Line 11 Guaianazes-Estudantes; (vii) Rail Line 12: Brás-Calmon Viana; (viii) Rail Line 13: Trem Guarulhos: Parque CECAP-Brás.

12. In the year 2010, the daily traffic for the Line 4 was estimated to be 691,800 passengers (Phase 1 configuration), increasing to 954,320 (Phase 2 configuration) in the year 2013. In the year 2013 the daily traffic for Metro systems was estimated to be 3,323,804 passengers in the *do-nothing* scenario increasing to 4,759,441 in the *with project* scenario, an increase of 1,435,638 passengers. The train system expansion in the same period is estimated to add 580,117 passengers from a daily frequency of 2,112,054 *do-nothing* to 2,692,170 *with project*.

13. Metro and CPTM (Train System Operator) maintain an updated database of demand income surveys applied on each service line. The bus system demand is also monitored by SPTRANS. Value of time was calculated for each mode providing different wage/hour average rates of US\$ 1.72 to US\$ 11.84 for Metro, US\$ 0.86 to US\$ 5.92 for Rail and US\$1.30 to US\$ 9.00 for Bus, as shown in Table 9-1. It was assumed that home-to-work trips and other purposes were 33% of the average hourly income estimate and for business trips a 160% factor was used.

Table 9-1: Value of Time Distribution (US\$)

Travel Purpose	Metro	Bus	Rail
Home to Work	1.72	1.30	0.86
Business	11.84	9.00	5.92
Other	1.72	1.30	0.86

14. Trip distribution by purpose is derived for each transport system according to Origin-Destination data. Metro system presents a significant proportion of 60.6% commuting (home-to-

work) trips and the highest participation of business trips (i.e, during business hours) accounting for 15.3%. Bus system presents a significant share of other purpose trips with 31.9% which includes journey to school and access to other social urban activities. Table 9-2 presents the trip purpose distribution for each system.

Table 9-2: Travel Purpose Distribution (%)

Travel Purpose	Metro	Bus	Rail
Home to Work	60.6	52.9	74.1
Business	15.3	15.2	13.3
Other	24.1	31.9	12.7

15. According to the model results the main indicators for the peak hour simulation can be summarized as showed in the Table 9-3. Basically there was an increase of trips by metro and train and a decrease of bus trips which implied corresponding variations of pass-hour and pass-km for each transport modes. Operating speeds showed a positive change for metro, train and bus systems.

Table 9-3: Variation of Peak Hour Indicators for Tested Scenarios

Indicator	Metro	Bus	Rail
Passenger Trips			
• Without Project	432,787	4,104,127	275,007
• With Project	619,719	3,669,847	350,543
• Net change	186,932	-404,280	75,536
Pass-Km			
• Without Project	2,704,346	22,013,855	5,107,904
• With Project	3,778,390	20,008,842	6,039,768
• Net change	1,074,044	-2,005,614	931,864
Pass-Hour			
1. Without Project	64,817	1,143,577	125,975
2. With Project	88,801	1,020,498	142,499
3. Net change	23,984	-123,079	16,524
Speed (Km/h)			
4. Without Project	41.72	18.73	40.53
5. With Project	42.55	19.61	42.38
6. Net change	0.83	0.36	1.84

C. Metro Economic Costs

16. **Total Investment Costs** estimations resulted in a total of US\$2,964.039 million, as shown in Table 9-4, including the following components: (i) **Civil Works, Signaling and Control System Costs and Project design**: investment requirements amount to US\$ 2,436.086 million for the Metro system; (ii) **Fleet Acquisition Costs**: additional fleet required was estimated in US\$ 372.555 million; (iii) **Expropriation costs** amounting to US\$ 65.758 million; (iv) **Consulting costs** amounting to US\$ 81.318 million (v) **Taxes on Financial Operations** summing up US\$ 2.241 million. **Total Economic Costs** were estimated after applying a 94.6%

conversion factor that accounts for transfer payments due to Income, Financial Operations and other Taxes.

Table 9-4: Investment Components for Line 4

Year	Expropriation	Civil Works, Systems	Fleet	Consulting	Arrangement Fee	Financial Operations Tax	Total Investment	Economic Cost of Investment
2002					2,090		2,090	2,090
2003	367			533			900	876
2004	36,639	44,166		235	2,613	318	83,971	81,518
2005	8,292	83,491		1,457		354	93,594	89,268
2006	5,542	195,363		2,339		772	204,016	193,847
2007	1,520	199,407		8,862		797	210,586	199,862
2008	1,595	563,407	134,009	11,713	1,378		712,102	682,256
2009	9,484	630,684	37,029	21,601			698,798	669,680
2010	2,319	228,724	56,047	21,675			308,765	289,759
2011		362,105	107,685	6,869			476,659	435,493
2012		122,491	37,785	5,400			165,676	151,407
2013		6,248		634			6,882	6,545
2014								
Sum	65,758	2,436,086	372,555	81,318	6,081	2,241	2,964,039	2,802,601

Exchange Rate: R\$2.27/US\$ referred to August 1, 2006

17. Operational Costs: Metro provided an estimation of operating costs for the fleet and system during partial and full Project operation period from 2010 to 2036. The breakdown of operational costs basically involved two types of expenses: (i) **personnel expenses** involving resources for operating trains including wages and labor costs, and (ii) **general expenses** involving fleet maintenance, operating systems maintenance and electrical energy consumption costs. Costs were expected to grow from a yearly value of US\$ 26.847 million in 2010 to US\$ 100.170 million in 2014 and staying in the range between US\$ 92 million and US\$ 111 million from 2015 to 2036.

18. Salvage Value and Depreciation: Depreciation assumptions were made for investment of the components of rolling stock and systems amounting to US\$1.298 billion for Metro after a Project useful life of 25 years for Phase I and 22 years for Phase II. According to information received from Metro Civil works, Fleet and Systems have a full depreciation period of 40 years.

D. Public Transport Economic Benefits

19. Table 9-5 summarizes basic unit values which were adopted.

Table 9-5: Unit Cost Values Applied to Network Data (US\$)

Attribute	With/Without Project		
	metro	bus	rail
Operating Costs / Km	0.0558	0.0514	0.0404
Road Maintenance Costs /Km		0.00223	
Bus System Managing Savings /Km		0.00474	
Travel Time Costs / Hour			
7. Work	1.72	1.30	0.86
8. Business	11.84	9.00	5.92
9. Other	1.72	1.30	0.86
Accident Cost/Km		1.0530	
Pollutant Emissions/Km		0.01676	

Exchange Rate: R\$2.27/US\$ referred to August 1, 2006

20. Expansion factors of 7.68 and 13.68 were adopted to convert peak hour results to daily indicators of time and distance traveled. Daily results were multiplied by a constant of 310 working days to obtain yearly results. Basic estimators used for accident and pollution valuation for the São Paulo Metropolitan Area are presented in Table 9-6.

Table 9-6: Indirect Costs Estimates

Indirect Cost Items	Basic Estimators (US\$)
Accident Frequency (per event type)	
10. Property Damage Only	1,779.21
11. Injury	9,523.32
12. Fatal	78,620.88
13. Average	59,920.42
Pollutant Emissions (per ton)	
CO	318.74
HC	1,410.84
NO _x	1,630.80
SO _x	6,207.28
PM	8,341.05
CO ₂	51.23

Exchange Rate: R\$2.27/US\$ referred to August 1, 2006

E. Economic Cost-Benefit Analysis

21. Project Development and Growth Rationale: according to information based in sources from existing studies such as PITU 2020 (Metropolitan Transport Master Plan) and the internal estimates of the Planning Department of Metro a demand growth rate of 1% during the project period was assumed. The trend adopted was also consistent with official demographic and income projections carried out by federal and state level.

22. Civil works, expropriation, fleet and systems acquisition are considered non separable components for the purposes of this evaluation. Metro acquisitions were evaluated together *vis a vis* a stream of net benefits. Transfer payments such as taxes and subsidies were withdrawn from the project profile and the adopted value for the exchange rate was R\$2.27/US\$ as of August 1, 2006.

23. The Project flows are presented in the Table 9-7, discounted to present values at a rate of 10% per year for the basic alternative studied. As may be seen, the simulated scenario present positive net present value of US\$ 824.727 million and benefit/cost ratio of 1.493. The economic internal rate of return (EIRR) of 15.57% was obtained for the basic case considering both Phase 1 and Phase 2 of Line 4. As detailed in the Project Files, the cost-benefit analysis of the incremental project (Phase 2 alone) results in an EIRR of 7.57%. This difference is explained by the scope of the Phase 2 project, which adds 4 intermediate stations and one new terminal station to an operating Line 4, and the benefits evaluation approach that results in no travel time savings to existing users of Line 4. It is, therefore, not appropriate to evaluate the project based on Phase 2 alone, because a large share of its most significant benefit was already attributed to Phase 1 of the Project.

24. Travel time savings are the most significant benefits obtained, accounting for 81% of total benefit. Operating costs saved by the decrease of bus and train services showed a sufficient amount to compensate additional metro operating costs generated by the Line 4 and account for 4% of total benefits. Road maintenance and bus system managing avoided costs amounting to 10% and environmental benefits were estimated in 5% of total benefits.

F. Sensitivity Analysis

25. The general sensitivity analysis is shown in Tables 9-8 and 9-9 where effects on the performance indicators were tested from changes in the discount rate, costs and benefits of selected items referred to the base case. The base case accounts for a standard discount rate of 10%, and demand growth of 1% during the project life cycle.

26. Most significant variations were observed for change of value of time benefits and investment costs. The switching cases for benefits with a discount rate of 10% accounted for a 38.9% joint reduction of travel time and operating costs, a 40.8% reduction of travel and an increase of 89.2% of construction costs. Variation due to environmental benefits can be assumed negligible for the purposes of the present analysis.

G. Financial Analysis

27. A project financial analysis was performed by comparing total investments versus savings due to lower operating, maintenance, and management costs, and higher revenues as a result of the Project. No travel time savings or indirect benefits were considered, which explains the difference from the economic evaluation. The higher revenues are based on conservative assumptions of a 1% annual increase in the average fare (approximately US\$1 at Project opening) and an estimated 1% annual increase in ridership after the opening of Phase 2. The results of financial analysis indicate a financial internal rate of return (FIRR) of 11.6%. Financial projections prepared for Metro for the 2010-2036 period show that the working ratio of the operating agency will be equal or less than one, and operating costs will therefore be below operating revenues.

Table 9-7: Economic Evaluation (Base Case, in Thousands of US\$)

PROJECT YEAR	YEAR	DIRECT BENEFITS				INDIRECT BENEFITS			TOTAL BENEFIT (B)	OPERATING COSTS			TOTAL COSTS (C)	NET BENEFITS A: (B-C)
		TRAVEL TIME SAVINGS	OPERATING COST SAVINGS	MAINTENANCE COST SAVINGS	BUS MANAGING COST SAVINGS	ACCIDENT REDUCTION	AIR POLLUTION SAVINGS	TOTAL BENEFIT (B)		WAGES LABOR EXPENSES	OTHERS COST	TOTAL COSTS		
1	2002	0	0	0	0	0	0	0	2,090	0	0	0	2,090	-2,090
2	2003	0	0	0	0	0	0	0	876	0	0	0	876	-878
3	2004	0	0	0	0	0	0	0	81,518	0	0	0	81,518	-81,518
4	2005	0	0	0	0	0	0	0	89,268	0	0	0	89,268	-89,268
5	2006	0	0	0	0	0	0	0	193,847	0	0	0	193,847	-193,847
6	2007	0	0	0	0	0	0	0	199,862	0	0	0	199,862	-199,862
7	2008	0	0	0	0	0	0	0	682,255	0	0	0	682,255	-682,255
8	2009	0	0	0	0	0	0	0	669,678	0	0	0	669,678	-669,678
9	2010	345,557	16,698	13,768	29,229	7,383	14,618	427,253	289,810	12,147	14,696	26,843	316,653	110,600
10	2011	349,013	16,865	13,906	29,521	7,457	14,764	431,525	435,443	24,294	29,393	53,687	489,130	-67,605
11	2012	352,503	17,033	14,045	29,816	7,532	14,912	435,841	151,406	28,343	34,291	62,634	214,040	221,801
12	2013	476,687	23,034	18,993	40,320	10,185	20,165	589,384	6,545	28,343	34,431	62,774	69,319	520,065
13	2014	481,454	23,264	19,183	40,723	10,287	20,367	595,278	0	37,145	63,025	100,170	106,769	495,108
14	2015	486,268	23,497	19,375	41,130	10,390	20,570	601,231	0	36,669	55,707	92,376	92,376	508,855
15	2016	491,131	23,732	19,569	41,542	10,494	20,776	607,243	0	36,669	57,980	94,649	94,649	512,594
16	2017	496,042	23,969	19,764	41,957	10,599	20,984	613,315	0	36,669	56,062	92,731	92,731	520,584
17	2018	501,003	24,209	19,962	42,377	10,705	21,194	619,449	0	36,669	62,446	99,115	99,115	520,334
18	2019	506,013	24,451	20,161	42,800	10,812	21,406	625,643	0	36,669	64,982	101,651	101,651	523,992
19	2020	511,073	24,696	20,363	43,228	10,920	21,620	631,899	0	36,669	61,802	98,471	98,471	533,428
20	2021	516,184	24,943	20,567	43,661	11,029	21,836	638,218	0	36,669	60,920	97,589	97,589	540,629
21	2022	521,346	25,192	20,772	44,097	11,139	22,054	644,601	0	36,669	58,465	95,134	95,134	549,467
22	2023	526,559	25,444	20,980	44,538	11,251	22,275	651,047	0	36,669	65,973	102,642	102,642	548,405
23	2024	531,825	25,698	21,190	44,984	11,363	22,497	657,557	0	36,669	68,374	105,043	105,043	552,514

PROJECT YEAR	YEAR	DIRECT BENEFITS				INDIRECT BENEFITS		INVESTMENT AT 10% (B)	INVESTMENTS & OPERATING COSTS			TOTAL COSTS (B+C+D)	NET BENEFITS (A+C+D)
		TRAVEL TIME SAVINGS	OPERATING COST SAVINGS	MAINTENANCE COST SAVINGS	BUS MANAGING COST SAVINGS	ACCIDENT REDUCTION	AIR POLLUTION SAVINGS		TOTAL BENEFIT (A)	WAGES LABOR EXPENSES	OTHERS COST			TOTAL COST (C)
24	2025	537,143	25,955	21,402	45,434	11,477	22,722	664,133	0	36,669	60,146	96,815	567,318
25	2026	542,514	26,215	21,616	45,888	11,591	22,950	670,774	0	36,669	67,141	103,810	566,964
26	2027	547,939	26,477	21,832	46,347	11,707	23,179	677,482	0	36,669	60,169	96,838	580,644
27	2028	553,419	26,742	22,050	46,810	11,824	23,411	684,257	0	36,669	69,146	105,815	578,442
28	2029	558,953	27,009	22,271	47,278	11,943	23,645	691,099	0	36,669	61,846	98,515	592,584
29	2030	564,543	27,279	22,493	47,751	12,062	23,881	698,010	0	36,669	65,310	101,979	596,031
30	2031	570,188	27,552	22,718	48,229	12,183	24,120	704,990	0	36,669	66,773	103,442	601,548
31	2032	575,890	27,828	22,946	48,711	12,305	24,362	712,040	0	36,669	72,318	108,987	603,053
32	2033	581,649	28,106	23,175	49,198	12,428	24,605	719,160	0	36,669	74,285	110,954	608,206
33	2034	587,465	28,387	23,407	49,690	12,552	24,851	726,352	0	36,669	63,545	100,214	626,138
34	2035	587,465	28,387	23,407	49,690	12,552	24,851	726,352	0	36,669	67,504	104,173	622,179
35	2036	593,340	28,671	23,641	50,187	12,677	25,100	733,616	-1,282,203	36,669	63,576	100,245	1,915,574

Exchange Rate: R\$2.27/US\$ referred to August 1, 2006

IRR	15.57%
NPV	824,727
PV Benefits	2,499,180
PV Cost	1,687,972
B/C	1.493

Table 9-8: Variation of Costs and Benefits According to Discount Rate (US\$ 1000)

Rate of Discount	Present Value of Benefits	Present Value of Costs	Net Present Value	Benefit / Cost Ratio
8%	3,487,533	1,975,289	1,512,244	1.77
9%	2,943,985	1,816,629	1,127,357	1.62
10%	2,499,180	1,673,879	825,300	1.49
11%	2,132,901	1,545,269	587,632	1.38
12%	1,829,468	1,429,200	400,268	1.28
13%	1,576,647	1,324,247	252,400	1.19
14%	1,364,830	1,229,152	135,677	1.11
15%	1,186,430	1,142,808	43,622	1.04

Table 9-9: Sensitivity Analysis and Switching Values

SCENARIO	ATTRIBUTE TEST	ALTERNATIVE	EIRR %	NPV (US\$ Million)	B/C Ratio
BASE CASE	Discount Rate	10%	15.57	825.3	1.49
		12%		400.3	1.28
		15%		43.6	1.04
BENEFITS (Discount Rate = 10%)	Value of Time	10% increase	16.80	1,027.4	1.61
		10% reduction	14.30	623.2	1.37
		30% reduction	11.58	218.9	1.13
		50% reduction	8.58	(185.4)	.89
	Operating Costs	10% increase	15.63	835.1	1.49
		10% reduction	15.51	815.5	1.47
		50% reduction	15.27	776.5	1.45
COSTS (Discount Rate = 10%)	Construction Costs	50% increase	10.80	165.00	1.06
		100% increase	8.10	(495.0)	0.83
	Metro Operating Costs	100% increase	13.35	471.7	1.23
SWITCHING VALUES	Travel Time and Operating Costs	38.9% reduction	10.00	.2	1.00
	Travel Time Reduction	40.8% reduction	10.00	.6	1.00
	Construction Costs	89.2% increase	10.00	.9	1.00

H. FINANCIAL EVALUATION OF METRO (COMPANHIA DO METROPOLITANO DE SÃO PAULO)
BALANCE SHEET – PROJECTED 2009-2028

(In thousands of US\$)

DESCRIPTION	2008	2009	2010	2011	2012	2013	2014	2015	2020	2025	2028
ASSETS											
CURRENT ASSETS	354,151	349,259	315,201	346,399	370,090	396,105	423,469	450,257	584,641	720,532	800,763
NON-CURRENT ASSETS	4,947,229	6,241,084	7,669,370	9,479,547	10,197,716	10,469,156	10,503,896	10,416,104	9,993,269	9,596,018	9,369,250
LONG-TERM ASSETS	203,704	203,704	203,704	203,704	203,704	203,704	203,704	203,704	203,704	203,704	203,704
INVESTMENTS	40,328	40,328	40,328	40,328	40,328	40,328	40,328	40,328	40,328	40,328	40,328
NET FIXED ASSETS	4,440,606	5,734,461	7,162,747	8,972,924	9,691,093	9,952,533	9,997,273	9,909,481	9,486,646	9,089,394	8,862,627
FIXED ASSETS	3,982,502	4,136,636	4,450,297	5,480,754	5,961,725	8,455,792	9,821,104	9,951,723	9,951,723	9,951,723	9,951,723
(-) Cumulative Depreciation	(1,078,741)	(1,138,993)	(1,198,332)	(1,261,794)	(1,324,332)	(1,403,263)	(1,491,296)	(1,579,087)	(2,001,922)	(2,399,174)	(2,625,942)
CONSTRUCTION IN PROGRESS	1,536,846	2,736,817	3,910,783	4,753,963	5,053,700	2,900,004	1,667,465	1,536,846	1,536,846	1,536,846	1,536,846
OTHER NON-CURRENT ASSETS	262,591	262,591	262,591	262,591	262,591	262,591	262,591	262,591	262,591	262,591	262,591
TOTAL ASSETS	5,301,380	6,590,343	7,984,571	9,825,946	10,567,806	10,855,261	10,927,365	10,866,361	10,577,910	10,316,550	10,170,013
LIABILITIES & EQUITY											
CURRENT LIABILITIES	366,860	366,410	355,200	308,817	295,609	282,400	269,192	255,984	189,942	123,901	84,276
DOMESTIC ST LOANS	44,835	44,385	33,175	0	0	0	0	0	0	0	0
ACCOUNTS PAYABLE	169,889	169,889	169,889	163,285	156,680	150,076	143,472	136,868	103,847	70,827	51,014
OTHER	152,136	152,136	152,136	145,532	138,928	132,324	125,720	119,115	86,095	53,074	33,262
NON-CURRENT LIABILITIES	578,440	534,056	500,881	500,881	478,867	456,853	434,839	412,826	302,756	192,687	126,646
DOMESTIC ST LOANS	77,559	33,175									
OTHER	500,881	500,881	500,881	500,881	478,867	456,853	434,839	412,826	302,756	192,687	126,646
LIABILITIES	497,909	497,909	497,909	497,909	475,895	453,882	431,868	409,854	299,785	189,716	123,674
DEFERRED INCOME	2,972	2,972	2,972	2,972	2,972	2,972	2,972	2,972	2,972	2,972	2,972
SHAREHOLDER'S EQUITY	4,356,080	5,689,877	7,128,491	9,016,248	9,793,331	10,116,008	10,223,333	10,197,552	10,085,211	9,999,962	9,959,092
CAPITAL	6,466,361	7,874,608	9,412,162	11,320,318	12,101,025	12,441,396	12,574,169	12,574,169	12,574,169	12,574,169	12,574,169
ACCUMULATED LOSSES	(2,110,281)	(2,184,730)	(2,283,671)	(2,304,070)	(2,307,696)	(2,325,388)	(2,350,836)	(2,376,617)	(2,488,958)	(2,574,207)	(2,615,078)
TOTAL LIABILITIES	5,301,380	6,590,343	7,984,571	9,825,946	10,567,806	10,855,261	10,927,365	10,866,361	10,577,910	10,316,550	10,170,013

exchange rate : US\$1= 2,2713 Reais

COMPANHIA DO METROPOLITANO DE SÃO PAULO
INCOME STATEMENT – PROJECTED 2009-2028

DESCRIPTION	(In thousands of US\$)											
	2008	2009	2010	2011	2012	2013	2014	2015	2020	2025	2028	
OPERATING STATISTICS												
PASSENGER ENTRIES – MILLIONS	684,366	684,694	776,699	846,543	846,174	846,174	846,174	846,174	846,174	846,174	846,174	846,174
PAYING PASSENGERS – MILLIONS	529,095	519,741	589,581	642,598	642,318	642,318	642,318	642,318	642,318	642,318	642,318	642,318
OPERATING REVENUES												
FARE AND NON-FARE REVENUES	521,924	549,610	616,111	679,342	726,290	804,776	822,487	814,942	815,868	823,439	812,241	812,241
SUBSIDY FOR NON-PAYING PASSENGERS	77,178	96,042	116,579	121,992	129,651	144,064	147,234	145,883	146,049	147,405	145,400	145,400
TOTAL OPERATING REVENUE	599,102	645,653	732,690	801,334	855,941	948,840	969,721	960,825	961,917	970,844	957,641	957,641
DEDUCTIONS – COFINS/PASEP	(36,340)	(34,674)	(37,799)	(40,066)	(42,583)	(46,938)	(47,971)	(47,531)	(47,585)	(48,026)	(47,373)	(47,373)
NON-OPERATING REVENUE	468	23,584	21,395	21,395	21,395	20,074	20,516	20,328	20,351	20,540	20,261	20,261
TOTAL INCOME	563,231	634,562	716,286	782,662	834,753	921,976	942,266	933,622	934,684	943,358	930,529	930,529
OPERATING COSTS												
PERSONNEL	(398,373)	(418,856)	(418,856)	(409,237)	(422,268)	(451,829)	(461,772)	(457,536)	(458,057)	(462,307)	(456,020)	(456,020)
MATERIALS	(31,961)	(47,598)	(47,598)	(46,227)	(51,794)	(62,765)	(64,146)	(63,558)	(63,630)	(64,220)	(63,347)	(63,347)
OTHER (incl. Energy Contracts)	(209,120)	(283,890)	(283,890)	(282,792)	(301,778)	(346,145)	(353,763)	(350,517)	(350,916)	(354,173)	(349,356)	(349,356)
TOTAL WORKING COSTS	(599,568)	(639,454)	(750,344)	(738,256)	(775,840)	(860,739)	(879,681)	(871,611)	(872,602)	(880,700)	(868,723)	(868,723)
DEPRECIATION	-	(60,251)	(59,340)	(63,462)	(62,537)	(78,931)	(88,033)	(87,792)	(82,465)	(77,485)	(74,654)	(74,654)
TOTAL OPERATING COSTS	(599,568)	(699,705)	(809,684)	(801,718)	(838,378)	(939,670)	(967,714)	(959,403)	(955,068)	(958,185)	(943,377)	(943,377)
FINANCIAL CHARGES	-	(9,307)	(5,544)	(1,343)	-	-	-	-	-	-	-	-
TOTAL EXPENSES	(599,568)	(709,011)	(815,228)	(803,061)	(838,378)	(939,670)	(967,714)	(959,403)	(955,068)	(958,185)	(943,377)	(943,377)
FINANCIAL INCOME	(22,999)											
NET OPERATING INCOME	(466)	(54,052)	(76,994)	(384)	17,563	9,170	2,007	1,422	6,850	12,659	14,264	14,264
NET INCOME	(59,336)	(74,449)	(98,941)	(20,399)	(3,624)	(17,693)	(25,448)	(25,781)	(20,384)	(14,828)	(12,848)	(12,848)
WORKING RATIO	106.54%	99.04%	102.41%	92.13%	90.64%	90.71%	90.71%	90.71%	90.71%	90.71%	90.71%	90.71%
OPERATING RATIO	106.54%	108.37%	110.51%	100.05%	97.95%	99.03%	99.79%	99.85%	99.29%	98.70%	98.51%	98.51%
WORKING COST COVERAGE (%)	93.94%	99.2	95.5	106.0	107.6	107.1	107.1	107.1	107.1	107.1	107.1	107.1
PER TRIP STATISTICS (US\$)												
AVERAGE TARIFF	0.91	0.97	0.96	0.98	1.05	1.17	1.20	1.19	1.19	1.20	1.18	1.18
AVERAGE WORKING COST	1.13	1.23	1.27	1.15	1.21	1.34	1.37	1.36	1.36	1.37	1.35	1.35
AVERAGE OPERATING COST	1.13	1.35	1.37	1.25	1.31	1.46	1.51	1.49	1.49	1.49	1.47	1.47
TOTAL COST	1.13	1.36	1.38	1.25	1.31	1.46	1.51	1.49	1.49	1.49	1.47	1.47

exchange rate : US\$1= 2,2713 Reais

COMPANHIA DO METROPOLITANO DE SÃO PAULO
CASH FLOW STATEMENT – PROJECTED 2009-2028

(In thousands of US\$)

DESCRIPTION	2008	2009	2010	2011	2012	2013	2014	2015	2020	2025	2028
SOURCES											
INTERNAL CASH GENERATION	14,611	(14,198)	(39,602)	43,063	58,913	61,238	62,585	62,011	62,081	62,658	61,806
NET INCOME	(59,336)	(74,449)	(98,941)	(20,399)	(3,624)	(17,693)	(25,448)	(25,781)	(20,384)	(14,828)	(12,848)
DEPRECIATION	73,948	60,251	59,340	63,462	62,537	78,931	89,033	87,792	82,465	77,485	74,654
DOMESTIC ST LOANS	-	-	-	-	-	-	-	-	-	-	-
GOVERNMENT'S CONTRIBUTION FOR											
NEW INVESTMENT PROGRAMS	634,898	1,354,106	1,487,626	1,873,638	780,707	340,371	132,773	-	-	-	-
LINE 2 – ALTO IPIRANGA – VL PRUD	251,316	507,718	156,362	7,230	391	21	-	-	-	-	-
LINE 5 – LARGO 13 – CH KLABIN	33,065	209,968	710,694	1,052,525	189,847	-	-	-	-	-	-
LINE 4 – FASE I	245,542	449,925	177,549	-	-	-	-	-	-	-	-
LINE 4 – FASE II	-	9,377	107,433	386,830	100,693	512	-	-	-	-	-
OTHER PROJECTS	104,976	177,118	335,588	427,053	489,776	339,838	132,773	-	-	-	-
INTEREST PAYMENT SUPPORT	13,967	9,307	5,544	1,343	-	-	-	-	-	-	-
TOTAL SOURCES	663,477	1,349,214	1,453,568	1,918,044	839,620	401,608	195,359	62,011	62,081	62,658	61,806
APPLICATIONS											
INVESTMENTS	634,898	1,354,106	1,487,626	1,873,638	780,707	340,371	132,773	-	-	-	-
LINE 2 – ALTO IPIRANGA – VL PRUD	251,316	507,718	156,362	7,230	391	21	-	-	-	-	-
LINE 5 – LARGO 13 – CH KLABIN	33,065	209,968	710,694	1,052,525	189,847	-	-	-	-	-	-
LINE 4 – FASE I	245,542	449,925	177,549	-	-	-	-	-	-	-	-
LINE 4 – FASE II	-	9,377	107,433	386,830	100,693	512	-	-	-	-	-
OTHER PROJECTS	104,976	177,118	335,588	427,053	489,776	339,838	132,773	-	-	-	-
AMORTIZATION	43,894	44,835	44,385	33,175	-	-	-	-	-	-	-
CHANGE IN THE WORKING CAPITAL	(15,315)	(49,726)	(78,443)	11,232	58,913	61,238	62,585	62,011	62,081	62,658	61,806
TOTAL APPLICATIONS	663,477	1,349,214	1,453,568	1,918,044	839,620	401,608	195,359	62,011	62,081	62,658	61,806

exchange rate : US\$1= 2,2713 Reais

Annex 10: Safeguard Policy Issues
BRAZIL: São Paulo Metro Line 4 (Phase 2) Project

A. Social Safeguards

1. The proposed Project will require expropriation of 47 properties, thereby triggering the Bank's policy on Involuntary Resettlement (OP 4.12). Consequently, an Abbreviated Resettlement Plan for Phase 2 has been prepared by the Borrower, reviewed by the Bank, disclosed in country and in Infoshop on January 1, 2009. The areas affected by the construction of the Vila Sônia Extension (Line 4 Phase 2 Project) contain 16 residential and 31 non-residential properties. Subsequent to selecting an alignment, Metro has ensured that the Project design and implementation minimizes the number of expropriations in accordance with World Bank resettlement policies. The affected areas are needed for constructing the following: the 'David Matarazzo' ventilation shaft and emergency exit; the 'Villa Sonia' Metro Station road access and adjustment, the access to the Villa Sônia terminal; the 'Eliseu de Almeida' ventilation shaft and emergency exit, plus areas for traffic diversions. Metro has held numerous public and individual meetings with the population expected to be affected by the Phase 2 Project. The most recent meeting was held on March 11, 2009 near the Vila Sônia station. Any other economic or physical displacement not yet explicitly identified, but that may become apparent during implementation, will be addressed using the same principles as those defined in this resettlement plan and consistent with World Bank safeguard policies.

2. The affected polygons contain 14 residences and 28 non-residential properties for a total of 42 occupied properties. Five additional properties are vacant (2 residential and 3 non-residential). In order to determine the socio-economic profile of the population living in the polygon a socio-economic survey was carried out. This involved 33 of the 42 occupied properties, amounting to 79% of the total properties in the affected area. Nine owners or tenants refused to respond to interviewers. Of the 33 interviews, 27 concerned commercial properties and 6 related to residential properties, of which 4 were rented and 2 were owner-occupied.

3. The potential social impact of Line 4 on both the expropriated and remaining population includes heightened insecurity, ruptured neighborhood ties, and possible economic and other losses to residents of the areas, local commercial establishments, and workers directly affected by the expropriation and compulsory resettlement process. The resettlement plan calls for the compensation of the families and businesses that will be displaced by the works. Compensation will be based on professional appraisals of the market value of dwellings and businesses. Businesses may be eligible for additional compensation for foregone profits. Special assistance will be given to the poor and vulnerable families affected by the works. The plan includes a grievance procedure. These will be monitored during implementation and there will be an ex-post evaluation approximately one year after resettlement.

4. **Residential Properties:** Around 30 residents in 6 households within the area will be affected by expropriation. Most of these residents fall into an age bracket of 21-50 years, indicating that the affected population is mainly of working age. Of the 6 affected families, there are three male and three female heads of household. These people have been established in the area for a considerable length of time-- three families have been in the neighborhood over 20

years and the other three have lived in the same property for over 20 years. Regarding the occupational status of the residents, the majority of them are salary earners in the service sector in neighboring areas and travel to work either by public transport or individual modes of transport. Only one head of household is currently unemployed. Regarding educational levels, it was noted that the affected area contains people with a wide range of educational attainment: 38% of the residents claimed to have finished secondary schooling but had not completed 'higher' education, 15% were semi-literate, 23% had finished primary education but not secondary school, and 23% had completed higher-level studies.

5. The income profile of the population is as follows: a) three families have an income of between 4 and 7 minimum salaries; b) three families receive less than 4 minimum salaries, indicating a generally low income 'residential' population; and c) One of the properties was found to contain 9 persons belonging to socioeconomic class D, with low educational attainment levels. Based on the above data it can be seen that the *socio-economic profile* of the residents in the affected area is basically as follows: a) half of the 'residential' population lives in rented accommodation and has been very well established in the area (for over 20 years) and the majority is economically active and gainfully employed; b) the income profile is fairly well-balanced: two families belonging to class C, while two families are in social class B and the remaining two families belong to class D. A summarized definition table of the socioeconomic classes is provided below and further details are available in the Project Files:

Class A: High-Middle Income (89 or more essential household items*, equivalent to 6 and higher MS)
Class B: Middle Income (59-88 essential household items, equivalent to 4-6 MS)
Class C: Low-Middle Income (35-58 essential household items, equivalent to 3-4 MS)
Class D: Poor (20-34 essential household items, equivalent to 2-3 MS)
Class E: Very poor (0-19 essential household items, equivalent to 1-2 minimum salaries (MS))
* As defined by ABIPEME (Brazilian Market Research Association), based on ownership of essential household items by families

6. **Features of the non-residential properties:** Of the 27 non-residential properties approached 7 were owned and 20 rented. The main activities in the non-residential properties are: retail trade (52%), services (22%), wholesale trade (11%), mixed retail/service businesses (11%). One of the properties to be expropriated was a church which, from the appearance of the property, did not appear to be a formally constituted church. This building and its occupants will require special handling regarding relocation.

7. **Social Consequences of Tunnel Accident:** Following the construction accident at the Pinheiros station on January 12, 2007 during the implementation of Phase 1 of Line 4 that caused seven deaths, the Bank requested that the Borrower submit a monthly report on the accident containing the following information: a) a census survey of the displaced persons and valuation of assets; b) a description of compensation and other resettlement assistance provided to date; c) a description of initial and ongoing consultation processes with displaced people to define acceptable alternatives; d) institutional responsibilities for the implementation of the remedial resettlement action plan, including the period after available insurance resources are exhausted; e) a description of existing procedures for grievance redress; f) arrangements for ongoing monitoring (suggested to include monthly reports to the Bank until final resolution is reached with all affected individuals and households on settlement); and g) indication of the

timetable for the remaining assistance to be provided, as well as source of budget. The Borrower submitted these monthly reports since June 22, 2007 and has now reduced the frequency to semester reports now that nearly all pending cases of resettlement have been resolved. The Borrower has also committed to an independent ex-post-evaluation of livelihood restoration actions to be carried out by an entity with no affiliation with the Project or the construction consortium, *Consórcio Via Amarela* (CVA).

8. In the immediate aftermath of the accident, all the evacuated families were accommodated at five-star hotels at the expense of CVA. Gradually, as settlements were reached and civil defense allowed families to return to their homes in the neighborhood, the number of families temporarily housed in hotels declined to five as of August 30, 2008. Negotiations for settlements involved the claimants, CVA, Unibanco – AIG and Metro, with oversight by São Paulo Public Defender and the State Justice Department (*Secretaria de Justiça*) which ratified all decisions. Settlements included fair market value for lost assets, new appliances to replace those damaged during the power cuts, payments for pain and suffering (*danos morais*), lost profits for business owners, financial support for late rent payments, as well as significant levels of support for temporary housing, food, transportation, medications, and psychological counseling. While the monetary payments may not have fully compensated families for the psychological trauma and inconvenience they underwent, many families emerged from the crisis with increased assets. Several renter families were able to make down payments on new homes and some business persons invested in new or expanded businesses. The resettlement and restitution process is substantially complete except for two families who have filed suit to recover damages they claim to have suffered in excess of the payments already made to them.

B. Environmental Assessment

9. Overall and in the long-term, the Project is expected to have a positive impact on the environment. Congestion and air pollution are currently some of the most important environmental problems facing the metropolitan region. Providing a high quality and safe transport alternative, especially for long trips, will help contain the rapid increase in motorized trips and related environmental impacts. The Project will help quantify these long-term environmental impacts in terms of modal ‘retention’ or shift and the associated emission benefits.

10. The most substantial negative environmental impacts will occur during the construction phase and are temporary. They affect the local physical environment around 5 future underground stations and one new 1.5 km tunnel, in particular creating an increase in emissions, effluent, noise and vibration levels, and can also compromise buildings located in the immediately surrounding area. The disturbance caused by excavation and pumping works on the tunnels, shafts and underground station facilities could significantly impact neighboring buildings.

11. In the State of São Paulo, the environmental licensing occurs in the SMA (Secretariat of the Environment) by means of DAIA (Department of Environmental Impact Assessment), which analyzes the environmental studies of projects potentially or effectively causing significant environmental impact, subject to licensing with an environmental study, according to CONAMA Resolutions 01/86 and 237/97.

12. Following the Federal and State Legislation, São Paulo Metro is required to obtain the three different environmental licenses prior to operation:

- (i) Preliminary License (*Licença Prévia - LP*) is granted in the planning stage of the project and contains basic requirements for site selection, installation and operation;
- (ii) Installation License (*Licença de Instalação - LI*) authorizes the establishment of the business, according to the specifications of the approved executive project; and
- (iii) Operation License (*Licença de Operação - LO*) authorizes the start of the operation of each Line, as well as for the functioning of the required equipment after the environmental authorities verify the fulfillment of the requirements in the Installation License.

Compliance with World Bank environmental safeguard policy

13. The proposed Metro Line 4 Phase 2 Project has received an Environmental Category “A” rating, as was the case with the Phase 1 Project and in accordance with the corresponding safeguard policies of the World Bank. The interventions planned in the Project triggered the Bank’s policies for Environmental Assessment (OP 4.01). The Environmental Impact Assessment (EIA) and Environmental Management Plan for Phase 1 also apply to the Phase 2 Project and an Addendum to the EIA was required for a new 1.5-km tunnel and the new Vila Sônia station not included in Phase 1. Metro’s staff prepared the Addendum for Phase 2 including an Environmental Report (*Relatório Ambiental Preliminar*) that was reviewed by the relevant State environmental agencies (*Secretaria do Meio Ambiente* and *CETESB*) and received a “preliminary license” (*Licença Prévia*) in February 25, 2009. Metro has applied for and is expected to receive an installation license for Phase 2. The Bank and independent consultants reviewed the full set of environmental documentation prepared by Metro for this Project and disclosed it in Infoshop on July 1, 2009. The documents were found to be satisfactory and the Bank will supervise the proper implementation of the proposed actions by Metro. The Executive Summary of the Environmental Assessment documents was submitted to the Board on July 16, 2009.

Environmental Management System

14. A Project Management Unit already established by the Borrower for Phase 1 to supervise the Project and ensure compliance with Bank policies will continue in place for Phase 2. A social-environmental specialist provided by the PMOC is assigned to this unit and will help integrate environmental concerns into the daily activities of METRO, focusing on implementing Phase 2 activities to reduce and properly treat different waste streams, reduce energy use, better manage the risk associated with using hazardous chemicals, monitor vibrations and explosions and integrate environmental and worker safety and health requirements in daily operations. It will also allow monitoring and correction of any damage to neighboring structures

15. The Project will continue to help METRO in implementing a set of management tools and principles designed to guide the allocation of resources, assignment of responsibilities and ongoing evaluation of practices, procedures, and processes to integrate environmental concerns into its daily business practices, as well as outreach and improve user-satisfaction to address specific concerns and continuously improve environmental and social management practices.

C. Borrower’s Institutional Capacity for Safeguard Policies

16. The Borrower has had experience, during Phase 1, with a managing a Category “A” Project that required environmental assessment and involuntary resettlement. During project implementation in January 2007, an accident occurred that necessitated additional involuntary assessment due to damage to homes and to the need to evacuate other dwellings and businesses until their safety could be assured. Following the accident, the Bank reviewed the design and implementation of the required resettlement and found it to be satisfactory. The resettlement and compensation of affected parties is now virtually complete, with only a few cases pending where the parties have decided to litigate. Additionally, the Bank discussed the Borrower’s environmental monitoring system and made several recommendations for strengthening the use of monitoring data during implementation. The Bank’s recommendations have been followed and the Borrower’s performance was satisfactory.

17. To ensure compliance with OP 4.01, the full set of environmental documentation that apply to Phase 2, including assessed impacts and proposed measures, were disclosed to Infoshop in July 2009 as a single document. The Line 4 Phase 1 Project had a full environmental assessment, which was submitted to the Board prior to approval. Subsequent to an accident at Pinheiros station on January 12, 2007 that caused seven deaths and as a prerequisite for the Additional Financing loan, the Bank required a detailed social assessment and periodic monitoring of those affected by the accident, and also an environmental impact of the accident. Both were disclosed in Infoshop. The Phase 1 Project has been successful in preventing and mitigating direct environmental and social impacts. The environmental impacts of the accident were minor and are detailed in the Project Appraisal Document. The procedures and supervision given to the Project during Phase 1 were adequate, and several aspects were improvement as described above. Since the Bank had already requested an enhancement of the environmental monitoring of the Project in the context of the approval of the Additional Financing (loan 7536-BR), Metro has been providing the Bank with periodic reports on vibration, dust, noise, wastewater and other aspects described in detail in the Project File.

18. The environmental impacts of the January 12, 2007 accident were minor. Some minor impacts occurred due to fuel and oil leaks from the vehicles involved in the accident, but the impacts were not quantified. Other impacts were due to traffic detours and interruptions along Marginal Pinheiros, a major traffic artery, the redirection of public transport away from Rua Capri, and the removal of some compromised trees also to enable proper access for rescue squads. Some services were interrupted due to the accident, among them: gas, electric energy, water, sanitation and drainage. The debris and spoils as a result of the accident were transported following the usual routes to regular disposal sites. A total volume of 26,900 m³ of spoils were removed after the accident and transported to the Lagoa de Carapicuíba landfill. Construction debris (772m³) was disposed of at different sites and reusable materials (352 m³) were brought to the central construction site of Jaguaré and Villa Lobos Park. The Project has been successful in preventing and mitigating the direct environmental and social impacts. The procedures and supervision given to the Project are adequate, but some aspects can be improved and are summarized below.

19. Metro prepared an addendum to the existing Environmental Management Plan, which incorporates and strengthens the following aspects:

- *Data quality control for effluent monitoring:* Metro is hiring an independent laboratory to implement quality control measures to ensure the accuracy and precision of water quality monitoring undertaken by CVA. A preliminary plan to maintain quality in all aspects of

the environmental program, including: proper documentation of all procedures, data management and analysis, and frequent independent quality control of collected data was prepared and will be refined once the laboratory has been hired.

- *Improved noise management plan:* Metro and CVA evaluated the noise management program and presented a new plan that will include more sampling times, more sampling points and more detailed description of activities during sampling. In parallel, Metro will monitor daytime and nighttime noise levels at the work sites and compare the readings with samples taken by CVA. Metro and CVA also agreed to present environmental progress reports, the Vibration Reports with allowable levels based on Seismographic Reports.
- *Environmental data presentation.* Starting with the Environmental Report of August 2007, all environmental data presented in the reports was compared to actual environmental quality standard and norms, or overall (realistic) benchmarks to allow for qualitative control by Metro to environmental agencies and more clearly identify non-compliance.
- *Enforcement actions for non-compliance:* Metro agreed to strengthen the enforcement systems and ensure that CVA and other companies involved in project implementation are required to address shortcomings raised during inspection. The Environmental Reports will also include a special section summarizing non-compliances in a visual way.

20. As requested by the Bank, Metro and the *Consortium Via Amarela* provided detailed information regarding the solid waste generated and disposed at the Jaguaré site. The quantity (tons) and composition of the waste were reported and all environmental licenses were found to be in compliance. Finally, regarding blasting, the Consortium agreed to schedule blasts at times when they will be less disruptive. There should be a curfew on late-night blasting unless there is a demonstrated operational need to do blasting at that time. The Consortium and Metro will continue to provide public information for each construction site regarding the time and duration of blasting events. This would allow people to adjust more easily to any inconvenience.

D. Public Consultation

21. The environmental and resettlement plans call for a series of actions with the aim of providing information about the works and to clarify doubts for the different segments of the population involved in this process. Key stakeholders include the resettled families and businesses, the population living in the vicinity of the Project, the residents of the city, and future users of the system. The following is a list of actions aimed at providing information to and getting feedback from the population at different stages of Project preparation and implementation:

- a. Prior to commencement of works
 - A survey of the profile of the population (including preparation of a register) and economic activities in the area affected by the works;
 - Communication with the affected population and responding to queries from members of public;
 - Communication with the currently resident population and those engaged in economic activities in the area;
 - Communication with the population of the wider city.

- b. Construction phase (implementation and progress of works)
 - Campaigns directed to the city population;
 - Communication with commercial establishments affected negatively by the works;
 - Technical follow-up;
 - The “*Turma do Metro*” project;
 - Readjustment of public services;
- c. Final stage of works execution
 - Public and technical visits to the work sites
 - Organized train rides for affected groups and other potential metro users

Annex 11: Project Preparation and Supervision
BRAZIL: São Paulo Metro Line 4 (Phase 2) Project

	Planned	Actual
PCN review	10/07/2008	10/07/2008
Initial PID to PIC		10/23/2008
Initial ISDS to PIC		10/28/2008
Appraisal	07/13/2009	07/23/2009
Negotiations	3/10/2010	3/10/2010
Board/RVP approval	5/4/2010	
Planned date of effectiveness	7/1/2010	
Planned date of mid-term review	3/1/2012	
Planned closing date	6/30/2014	

Key institutions responsible for preparation of the Project: *Companhia do Metropolitano de São Paulo* (Metro), *Secretaria de Transportes Metropolitanos*, World Bank staff and consultants.

Bank staff and consultants who worked on the Project included:

Name	Title	Unit
Jorge Rebelo	TTL, Lead Transport Specialist	LCSTR
Georges Darido	Transport Specialist	LCSTR
Armando Ribeiro Araújo	Procurement Specialist	Consultant
Bernardo Alvim	Transport Economics and Demand Analysis	Consultant
Daniel Gross	Safeguards Specialist	Consultant
Paul Procee	Environmental Specialist	LCSEN
Luis Prada	Senior Procurement Specialist	LCSPT
Flavio Chaves	Operations Analyst	LCSTR
Maria Catalina Ochoa	Junior Professional Associate	LCSTR
Susana Amaral	FM Specialist	LCSFM
Catarina Portelo	Senior Counsel	LEGLA
Affonso Lobo Filho	Infrastructure Consultant	Consultant
Aurelio Menendez	Peer Reviewer, Lead Transport Specialist (until May 2009)	EASTE
Martha Lawrence	Peer Reviewer, Sr. Transport (Railway) Specialist	ECSSD
José Barbero	Peer Reviewer, Sr. Transport Specialist (consultant)	LCSTR
Juan Gaviria	Peer Reviewer, Sector Leader	AFTTR
Miguel Navarro-Martin	Sr. Financial Officer	BDM
Miguel-Santiago Oliveira	Finance Officer	LOAFC
Solange Van Veldhuizen	Language Program Assistant	LCSTR

Bank funds expended to date on Project preparation:

1. Bank resources: US\$203,000 (committed)
2. Trust funds:
3. Total: US\$203,000

Estimated Approval and Supervision costs:

1. Remaining costs to approval: US\$30,000
2. Estimated annual supervision cost: US\$100,000/year= US\$500,000

Annex 12: Documents in the Project File
BRAZIL: São Paulo Metro Line 4 (Phase 2) Project

1. Annex on the Impact of Metro and CPTM Projects on Low-Income Users in São Paulo, updated July 2009.
2. Abbreviated Resettlement Plan for Line 4 Phase 2 (Extension to Vila Sônia), June 2009, *Companhia do Metropolitano de São Paulo*.
3. Addendum Environmental Assessment for Line 4 Phase 2 (Extension to Vila Sônia), June 2008, *Companhia do Metropolitano de São Paulo*.
4. Economic Analysis Report for Line 4 (Vila Sônia-Luz, Phases 1 and 2), October 2008 (version 4), *Companhia do Metropolitano de São Paulo*.
5. Economic Analysis Report for Line 4 (Extension to Vila Sônia, Phase 2 only), June 2009 (version 1.a), *Companhia do Metropolitano de São Paulo*.
6. Environmental Assessment for Line 4: Volumes 1-6 (dated 2001), *Companhia do Metropolitano de São Paulo*.
7. Environmental Management Plan and Work Plan (Revised September 20, 2007), *Companhia do Metropolitano de São Paulo*.
8. Fiscal Analysis of São Paulo State Government, 2003-2008, July 2009.
9. Preliminary Environmental License (*Licença Ambiental Prévia 1353*), February 2008, *Secretaria de Estado de Meio Ambiente*.
10. Programa de Reestruturação e Ajuste Fiscal do Estado de São Paulo (PAF) 2009-2011, June 2009, *Estado de São Paulo*.
11. Project Implementation Plan of São Paulo Metro Line 4 (Phase 2), , Aide Memoire of Appraisal Mission (July 2009).
12. Relatório Final e Anexos da Consultoria do Metro Linha 4 Fase II, March 2009, Affonso de Vergueiro Lobo.
13. Relatório Final e Anexos Túnel Vila Sônia e Estação, March 2009, Affonso de Vergueiro Lobo.

Annex 13: Statement of Loans and Credits
BRAZIL: São Paulo Metro Line 4 (Phase 2) Project

Project ID	FY	Purpose	Original Amount in US\$ Millions				Cancel.	Undisb.	Difference between expected and actual disbursements	
			IBRD	IDA	SF	GEF			Orig.	Frm. Rev'd
P0117244	2010	BR – Fiscal Sust. Human Dev. Comp. RJ	485.00	0.00	0.00	0.00	0.00	485.00	485.00	0.00
P101508	2010	BR-RJ Sustainable Rural Development	39.50	0.00	0.00	0.00	0.00	39.50	1.17	0.00
P108654	2010	BR Pernambuco Sustainable Water	190.00	0.00	0.00	0.00	0.00	190.00	0.00	0.00
P099469	2010	BR (APL2) 2nd National Environmental	24.30	0.00	0.00	0.00	0.00	24.30	0.00	0.00
P103770	2010	BR ALAGOAS Fiscal & Public Mgmt Reform	195.45	0.00	0.00	0.00	0.00	74.96	-120.00	0.00
P106663	2010	BR Sao Paulo Feeder Roads Project	166.65	0.00	0.00	0.00	0.00	83.90	-82.34	0.00
P104995	2010	BR Municipal APL5: Santos	44.00	0.00	0.00	0.00	0.00	44.00	0.00	0.00
P006553	2010	BR SP APL Integrated Wtr Mgmt	104.00	0.00	0.00	0.00	0.00	104.00	1.89	0.00
P111996	2010	BR RJ Mass Transit II	211.70	0.00	0.00	0.00	0.00	211.17	0.00	0.00
P104752	2009	BR Paraiba 2nd Rural Pov Reduction	20.90	0.00	0.00	0.00	0.00	20.90	0.00	0.00
P099369	2009	BR Ceara Regional Development	46.00	0.00	0.00	0.00	0.00	46.00	0.03	0.00
P095205	2009	BR 1st Prog. DPL for Sust. Env Mgmt	1,300.00	0.00	0.00	0.00	0.00	1,300.00	1.30	0.00
P094315	2009	BR Municipal APL4: Sao Luis	35.64	0.00	0.00	0.00	0.00	33.49	-1.93	0.00
P106208	2009	BR Pernambuco Educ Results& Account.	154.00	0.00	0.00	0.00	0.00	97.84	-55.77	0.00
P106765	2009	BR Ceara Inclusive Growth (SWAp II)	240.00	0.00	0.00	0.00	0.00	137.05	27.04	0.00
P106767	2009	BR RGS Fiscal Sustainability DPL	1,100.00	0.00	0.00	0.00	0.00	450.00	0.00	0.00
P107146	2009	BR Acre Social Economic Inclusion Sust D	120.00	0.00	0.00	0.00	0.00	104.00	-1.95	0.00
P107843	2009	BR Fed District Multisector Manag. Proj.	130.00	0.00	0.00	0.00	0.00	129.68	25.57	0.00
P110614	2009	BR: Sergipe State Int. Proj.: Rural Pov	20.80	0.00	0.00	0.00	0.00	18.99	3.74	0.00
P088716	2009	BR Health Network Formation & Quality Im	235.00	0.00	0.00	0.00	0.00	235.00	3.23	0.00
P106038	2008	BR Sao Paulo Trains and Signalling	550.00	0.00	0.00	0.00	0.00	315.99	26.83	0.00
P083997	2008	BR Alto Solimoes Basic Services and Sust	24.25	0.00	0.00	0.00	0.00	21.59	4.51	0.00
P101324	2008	BR-Second Minas Gerais Dev't Partnership	976.00	0.00	0.00	0.00	0.00	235.40	-19.16	0.00
P095626	2008	BR (APL2)Family Health Extension 2nd APL	83.45	0.00	0.00	0.00	0.00	83.24	23.30	0.00
P088966	2008	BR Municipal APL3: Teresina	31.13	0.00	0.00	0.00	0.00	28.64	3.75	0.00
P089929	2008	BR RGN State Integrated Water Res Mgmt	35.90	0.00	0.00	0.00	0.00	32.78	21.63	0.00
P094199	2008	BR-(APL) RS (Pelotas) Integr. Mun. Dev.	54.38	0.00	0.00	0.00	0.00	39.36	4.27	0.00
P089013	2008	BR Municipal APL: Recife	32.76	0.00	0.00	0.00	0.00	32.68	13.12	0.00
P089793	2007	BR State Pension Reform TAL II	5.00	0.00	0.00	0.00	0.00	4.99	3.08	0.00
P089011	2007	BR Municipal APL1: Uberaba	17.27	0.00	0.00	0.00	0.00	13.21	9.31	0.00
P082651	2007	BR APL 1 Para Integrated Rural Dev	60.00	0.00	0.00	0.00	0.00	54.23	47.23	0.00
P095460	2007	BR-Bahia Integr. Hway Mngmt.	100.00	0.00	0.00	0.00	0.00	90.26	24.13	0.00
P089440	2006	BR-Brasilia Environmentally Sustainable	57.64	0.00	0.00	0.00	0.00	24.68	22.27	0.00
P093787	2006	BR Bahia State Integ Proj Rur Pov	84.35	0.00	0.00	0.00	0.00	30.72	-0.28	0.00
P081436	2006	BR-Bahia Poor Urban Areas Integrated Dev	49.30	0.00	0.00	0.00	0.00	42.66	42.66	0.00
P090041	2006	BR ENVIRONMENTAL SUST.	8.00	0.00	0.00	0.00	0.00	5.04	5.00	0.49

AGENDA TAL										
P050761	2006	BR-Housing Sector TAL	4.00	0.00	0.00	0.00	2.70	1.13	3.83	-0.13
P092990	2006	BR - Road Transport Project	501.25	0.00	0.00	0.00	0.00	228.70	205.45	0.00
P069934	2005	BR-PERNAMBUCO INTEG DEVT: EDUC QUAL IMPR	31.50	0.00	0.00	0.00	0.00	9.15	9.15	0.00
P087711	2005	BR Espirito Santo Wtr & Coastal Pollu	107.50	0.00	0.00	0.00	0.00	31.06	-40.26	-19.59
P076924	2005	BR- Amapa Sustainable Communities	4.80	0.00	0.00	0.00	0.23	2.35	2.58	1.86
P083533	2005	BR TA-Sustain. & Equit Growth	12.12	0.00	0.00	0.00	0.00	7.78	7.78	0.00
P060573	2004	BR Tocantins Sustainable Regional Dev	60.00	0.00	0.00	0.00	0.00	20.83	20.83	0.00
P076977	2003	BR-Energy Sector TA Project	12.12	0.00	0.00	0.00	0.00	5.63	5.63	0.00
P049265	2003	BR-RECIFE URBAN UPGRADING PROJECT	46.00	0.00	0.00	0.00	0.00	9.43	9.43	0.00
P066170	2002	BR-RGN Rural Poverty Reduction	45.00	0.00	0.00	0.00	0.00	17.96	-4.48	18.02
P060221	2002	BR FORTALEZA METROPOLITAN TRANSPORT PROJ	85.00	0.00	0.00	0.00	62.60	11.33	67.82	16.11
P051696	2002	BR SÃO PAULO METRO LINE 4 PROJECT	304.00	0.00	0.00	0.00	0.00	52.06	-42.70	52.30
P006449	2000	BR CEARA WTR MGT PROGERIRH SIM	239.00	0.00	0.00	0.00	0.00	102.74	0.00	5.00
Total:			8,484.66	0.00	0.00	0.00	65.53	5,385.40	278.69	74.06

BRAZIL
STATEMENT OF IFC's
Held and Disbursed Portfolio
In Millions of US Dollars

FY Approval	Company	Committed				Disbursed			
		IFC				IFC			
		Loan	Equity	Quasi	Partic.	Loan	Equity	Quasi	Partic.
2005	ABN AMRO REAL	98.00	0.00	0.00	0.00	15.77	0.00	0.00	0.00
2005	ABN AMRO REAL	98.00	0.00	0.00	0.00	15.77	0.00	0.00	0.00
2001	AG Concession	0.00	30.00	0.00	0.00	0.00	30.00	0.00	0.00
2002	Amaggi	17.14	0.00	0.00	0.00	17.14	0.00	0.00	0.00
2005	Amaggi	30.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00
2002	Andrade G. SA	22.00	0.00	10.00	12.12	22.00	0.00	10.00	12.12
2001	Apolo	6.04	0.00	0.00	0.00	3.54	0.00	0.00	0.00
1998	Arteb	20.00	0.00	0.00	18.33	20.00	0.00	0.00	18.33
2006	BBM	49.40	0.00	0.00	0.00	49.40	0.00	0.00	0.00
2001	Brazil CGFund	0.00	19.75	0.00	0.00	0.00	18.15	0.00	0.00
2004	CGTF	54.01	0.00	7.00	65.12	54.01	0.00	7.00	65.12
1994	CHAPECO	10.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
1996	CHAPECO	1.50	0.00	0.00	5.26	1.50	0.00	0.00	5.26
2003	CPFL Energia	0.00	40.00	0.00	0.00	0.00	40.00	0.00	0.00
1996	CTBC Telecom	3.00	8.00	0.00	0.00	3.00	8.00	0.00	0.00
1997	CTBC Telecom	0.00	6.54	0.00	0.00	0.00	6.54	0.00	0.00
1999	Cibrasec	0.00	3.27	0.00	0.00	0.00	3.27	0.00	0.00
2004	Comgas	11.90	0.00	0.00	11.54	11.90	0.00	0.00	11.54

2005	Cosan S.A.	50.00	5.00	15.00	0.00	50.00	5.00	15.00	0.00
	Coteminas	0.00	1.84	0.00	0.00	0.00	1.84	0.00	0.00
1997	Coteminas	1.85	1.25	0.00	0.00	1.85	1.25	0.00	0.00
2000	Coteminas	0.00	0.18	0.00	0.00	0.00	0.18	0.00	0.00
1980	DENPASA	0.00	0.52	0.00	0.00	0.00	0.48	0.00	0.00
1992	DENPASA	0.00	0.06	0.00	0.00	0.00	0.06	0.00	0.00
	Dixie Toga	0.00	0.34	0.00	0.00	0.00	0.34	0.00	0.00
1998	Dixie Toga	0.00	10.03	0.00	0.00	0.00	10.03	0.00	0.00
1997	Duratex	1.36	0.00	3.00	0.57	1.36	0.00	3.00	0.57
2005	EMBRAER	35.00	0.00	0.00	145.00	35.00	0.00	0.00	145.00
1999	Eliane	14.93	0.00	13.00	0.00	14.93	0.00	13.00	0.00
1998	Empesca	1.33	0.00	2.67	0.00	1.33	0.00	2.67	0.00
2006	Endesa Brasil	0.00	50.00	0.00	0.00	0.00	50.00	0.00	0.00
2006	Enerbrasil Ltda	0.00	5.50	0.00	0.00	0.00	0.00	0.00	0.00
2006	FEBR	12.00	0.00	0.00	0.00	12.00	0.00	0.00	0.00
2000	Fleury	0.00	0.00	6.00	0.00	0.00	0.00	6.00	0.00
1998	Fras-le	4.00	0.00	9.34	0.00	4.00	0.00	6.04	0.00
2006	GOL	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2005	GP Capital III	0.00	14.00	0.00	0.00	0.00	0.14	0.00	0.00
	GP Cptl Rstrctd	0.00	2.22	0.00	0.00	0.00	2.16	0.00	0.00
2001	GPC	0.00	0.00	9.00	0.00	0.00	0.00	9.00	0.00
	GTFP BIC Banco	44.91	0.00	0.00	0.00	44.91	0.00	0.00	0.00
	GTFP BM Brazil	4.22	0.00	0.00	0.00	4.22	0.00	0.00	0.00
	GTFP Indusval	5.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
1997	Guilman-Amorim	18.08	0.00	0.00	14.37	18.08	0.00	0.00	14.37
1998	Icatu Equity	0.00	5.46	0.00	0.00	0.00	4.16	0.00	0.00
1999	Innova SA	0.00	5.00	0.00	0.00	0.00	5.00	0.00	0.00
1980	Ipiranga	0.00	2.87	0.00	0.00	0.00	2.87	0.00	0.00
1987	Ipiranga	0.00	0.54	0.00	0.00	0.00	0.54	0.00	0.00
2006	Ipiranga	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2006	Itambe	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2000	Itau-BBA	12.86	0.00	0.00	0.00	12.86	0.00	0.00	0.00
2002	Itau-BBA	70.61	0.00	0.00	0.00	38.47	0.00	0.00	0.00
1999	JOSAPAR	7.57	0.00	7.00	0.00	2.57	0.00	7.00	0.00
2005	Lojas Americana	35.00	0.00	0.00	0.00	35.00	0.00	0.00	0.00
1992	MBR	0.00	0.00	10.00	0.00	0.00	0.00	10.00	0.00
2006	MRS	50.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00
2002	Microinvest	0.00	1.25	0.00	0.00	0.00	0.82	0.00	0.00
	Net Servicos	0.00	10.93	0.00	0.00	0.00	10.93	0.00	0.00
2002	Net Servicos	0.00	1.60	0.00	0.00	0.00	1.60	0.00	0.00
2005	Net Servicos	0.00	5.08	0.00	0.00	0.00	5.08	0.00	0.00
1994	Para Pigmentos	2.15	0.00	9.00	0.00	2.15	0.00	9.00	0.00
1994	Portobello	0.00	0.59	0.00	0.00	0.00	0.59	0.00	0.00
2000	Portobello	4.28	0.00	7.00	0.00	4.28	0.00	7.00	0.00
2002	Portobello	0.00	0.90	0.00	0.00	0.00	0.90	0.00	0.00
2000	Puras	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00
2003	Queiroz Galvao	26.67	0.00	10.00	0.00	26.67	0.00	10.00	0.00
2004	Queiroz Galvao	0.60	0.00	0.00	0.00	0.08	0.00	0.00	0.00
2006	RBSec	22.83	1.51	0.00	0.00	0.00	1.51	0.00	0.00

	Randon Impl Part	2.33	0.00	3.00	0.00	2.33	0.00	3.00	0.00
1997	Sadia	2.55	0.00	2.33	3.28	2.55	0.00	2.33	3.28
1997	Samarco	3.60	0.00	0.00	0.00	3.60	0.00	0.00	0.00
1998	Saraiva	0.00	1.24	0.00	0.00	0.00	1.24	0.00	0.00
2000	Sepetiba	26.24	0.00	5.00	0.00	11.24	0.00	5.00	0.00
2002	Suape ICT	6.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00
1999	Sudamerica	0.00	7.35	0.00	0.00	0.00	7.35	0.00	0.00
2006	Suzano petroq	50.00	0.00	10.00	140.00	39.50	0.00	10.00	110.50
2001	Synteko	11.57	0.00	0.00	0.00	11.57	0.00	0.00	0.00
2006	TAM	50.00	0.00	0.00	0.00	17.00	0.00	0.00	0.00
1998	Tecon Rio Grande	3.55	0.00	5.50	3.71	3.55	0.00	5.50	3.71
2004	Tecon Rio Grande.	7.87	0.00	0.00	7.76	7.59	0.00	0.00	7.48
2001	Tecon Salvador	2.95	1.00	0.00	3.10	2.95	0.77	0.00	3.10
2003	Tecon Salvador	0.00	0.55	0.00	0.00	0.00	0.55	0.00	0.00
2004	TriBanco	10.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
2006	TriBanco	0.35	0.00	0.00	0.00	0.35	0.00	0.00	0.00
2002	UP Offshore	9.01	9.51	0.00	23.29	0.00	2.51	0.00	0.00
2002	Unibanco	16.89	0.00	0.00	0.00	16.89	0.00	0.00	0.00
Total portfolio:		1,164.15	253.88	144.84	503.45	703.91	223.86	141.54	400.38

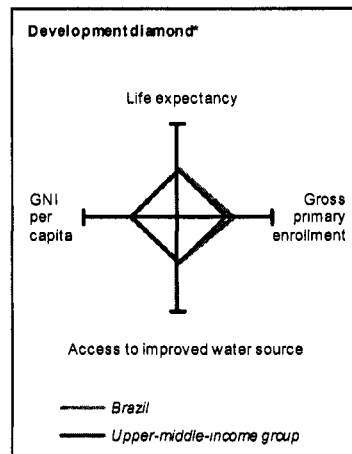
FY Approval	Company	Approvals Pending Commitment			
		Loan	Equity	Quasi	Partic.
2000	BBA	0.01	0.00	0.00	0.00
1999	Cibrasec	0.00	0.00	0.00	0.00
2006	Ipiranga II	0.00	0.00	0.00	0.10
2002	Banco Itau-BBA	0.00	0.00	0.00	0.10
Total pending commitment:		0.01	0.00	0.00	0.20

Annex 14: Country at a Glance

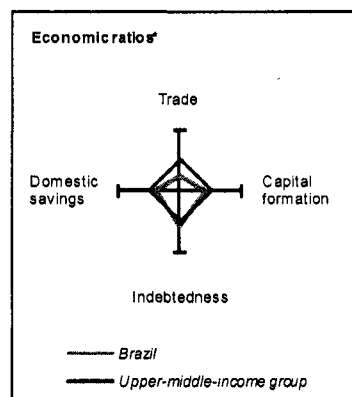
BRAZIL: São Paulo Metro Line 4 (Phase 2) Project Brazil at a glance

11/19/09

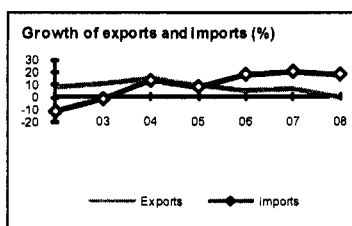
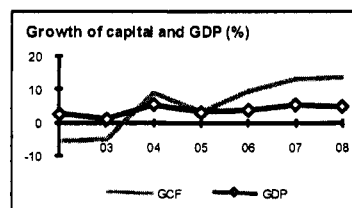
	Brazil	Latin America & Carib.	Upper-middle-income
POVERTY and SOCIAL			
2008			
Population, mid-year (millions)	192.0	561	824
GNI per capita (Atlas method, US\$)	7,300	5,801	7,107
GNI (Atlas method, US\$ billions)	14013	3,252	5,854
Average annual growth, 2002-08			
Population (%)	12	13	0.7
Labor force (%)	2.2	2.3	14
Most recent estimate (latest year available, 2002-08)			
Poverty (% of population below national poverty line)	22	..	..
Urban population (% of total population)	86	78	75
Life expectancy at birth (years)	73	73	71
Infant mortality (per 1,000 live births)	20	22	21
Child malnutrition (% of children under 5)	2	4	..
Access to an improved water source (% of population)	91	91	95
Literacy (% of population age 15+)	86	91	94
Gross primary enrollment (% of school-age population)	130	118	111
Male	134	120	112
Female	125	116	109



	1988	1998	2007	2008	
KEY ECONOMIC RATIOS and LONG-TERM TRENDS					
GDP (US\$ billions)	330.4	843.8	1333.3	1575.2	
Gross capital formation/GDP	22.7	17.0	17.7	18.9	
Exports of goods and services/GDP	10.9	6.9	13.7	14.3	
Gross domestic savings/GDP	27.9	15.0	19.3	19.1	
Gross national savings/GDP	..	..	17.5	16.9
Current account balance/GDP	13	-4.0	0.1	-18	
Interest payments/GDP	19	17	11	10	
Total debt/GDP	30.7	26.6	17.3	18.2	
Total debt service/exports	25.9	75.8	27.2	22.8	
Present value of debt/GDP	..	..	19.6	15.6
Present value of debt/exports	..	..	1319	1011
(average annual growth)					
GDP	2.3	3.3	5.7	5.1	3.3
GDP per capita	0.7	2.0	4.6	4.1	2.5
Exports of goods and services	5.4	9.1	6.7	-0.6	14.2



	1988	1998	2007	2008
STRUCTURE of the ECONOMY				
(% of GDP)				
Agriculture	10.1	5.5	6.0	6.7
Industry	43.6	25.7	28.1	28.0
Manufacturing	31.0	15.7	17.4	16.0
Services	46.2	68.8	66.0	65.3
Household final consumption expenditure	59.5	64.3	60.8	60.7
General gov't final consumption expenditure	12.6	20.6	19.9	20.2
Imports of goods and services	5.7	8.9	12.1	14.2
(average annual growth)				
Agriculture	2.5	4.4	5.9	5.8
Industry	15	2.8	4.8	4.3
Manufacturing	2.6	3.0	4.7	3.2
Services	3.3	4.0	6.0	5.3
Household final consumption expenditure	3.9	3.0	8.8	6.9
General gov't final consumption expenditure	0.7	2.9	4.7	5.6
Gross capital formation	2.6	2.8	13.5	13.8
Imports of goods and services	14.6	5.5	20.8	18.5

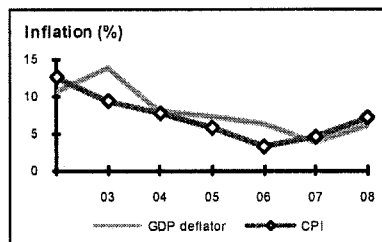


Note: 2008 data are preliminary estimates.

* The diamonds show four indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

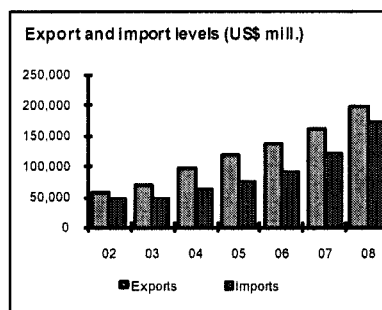
PRICES and GOVERNMENT FINANCE

	1988	1998	2007	2008
Domestic prices				
<i>(% change)</i>				
Consumer prices	980.2	17	4.5	7.1
Implicit GDP deflator	6511	4.2	3.7	5.9
Government finance				
<i>(% of GDP, includes current grants)</i>				
Current revenue	10.8	0.0	23.9	24.8
Current budget balance	-2.0	0.0	2.3	3.0
Overall surplus/deficit	4.0	-0.8	-2.3	-1.6



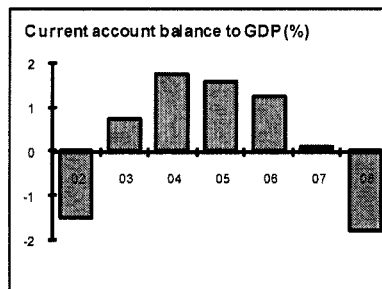
TRADE

	1988	1998	2007	2008
<i>(US\$ millions)</i>				
Total exports (fob)	32,809	50,736	160,649	197,942
Coffee	2,091	3,253	10,558	16,539
Soybeans	3,175	2,178	6,709	10,952
Manufactures	18,389	29,387	83,943	92,683
Total imports (cif)	14,605	57,714	120,622	173,107
Food	376	2,514	2,082	2,812
Fuel and energy	4,104	4,100	20,085	31,463
Capital goods	4,195	16,102	25,125	35,929
Export price index (2000=100)	88	99	114	128
Import price index (2000=100)	44	104	94	100
Terms of trade (2000=100)	199	95	121	127



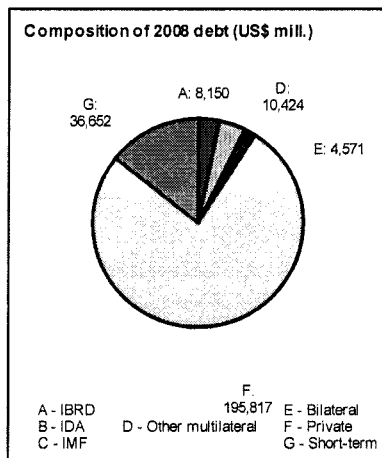
BALANCE of PAYMENTS

	1988	1998	2007	2008
<i>(US\$ millions)</i>				
Exports of goods and services	35,650	59,037	184,603	228,393
Imports of goods and services	17,500	75,722	157,795	220,247
Resource balance	18,150	-16,685	26,808	8,146
Net income	-13,776	-18,188	-29,291	-40,562
Net current transfers	-20	1,458	4,029	4,224
Current account balance	4,180	-33,416	1,551	-28,192
Financing items (net)	-2,931	25,446	85,933	31,161
Changes in net reserves	-1,249	7,970	-87,484	-2,969
Memo:				
Reserves including gold (US\$ millions)	9,140	44,556	180,334	206,806
Conversion rate (DEC, local/US\$)	9.53E-8	12	19	18



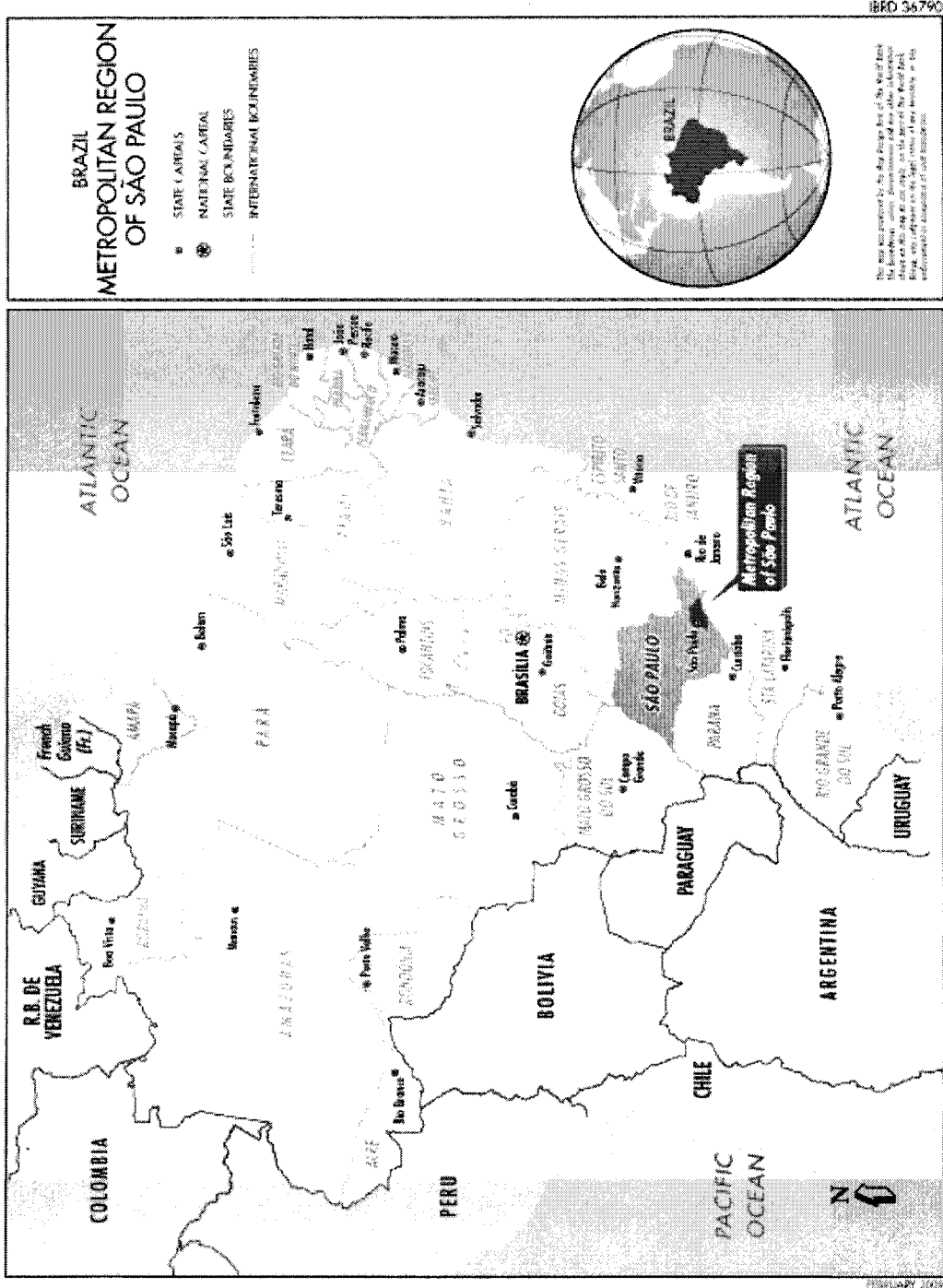
EXTERNAL DEBT and RESOURCE FLOWS

	1988	1998	2007	2008
<i>(US\$ millions)</i>				
Total debt outstanding and disbursed	101,295	224,632	231,032	255,614
IBRD	1,824	171	6,704	8,150
IDA	..	..	..	..
Total debt service	9,448	48,465	53,941	55,420
IBRD	429	77	480	481
IDA	0	0	0	0
Composition of net resource flows				
Official grants	46	103	155	..
Official creditors	-340	3,632	-754	2,076
Private creditors	3,194	15,728	19,105	27,188
Foreign direct investment (net inflows)	2,804	31,913	34,585	45,058
Portfolio equity (net inflows)	189	-1,768	26,217	-7,565
World Bank program				
Commitments	0	0	0	0
Disbursements	0	0	374	1,606
Principal repayments	268	61	115	146
Net flows	-268	-61	258	1,459
Interest payments	161	15	364	335
Net transfers	-429	-77	-106	1,125



Annex 15: Maps

BRAZIL: São Paulo Metro Line 4 (Phase 2) Project



Map of the São Paulo Metropolitan Transport System

Mapa do Transporte Metropolitano

Região Metropolitana de São Paulo

OTM
Operadora do Transporte Metropolitano

Linha A
 Linha B
 Linha C
 Linha D
 Expresso ABC (em projeto)
 Linha E
 Linha E - Expresso Leste
 Linha E - Expresso Oeste (em projeto)
 Linha F (em projeto)

Estações em construção
 Estações Operacionais
 Term de Quilômetros (em projeto)
 Estações de Transferência (em projeto)

Estações de Transferência
 Estações de Transferência
 Estações de Transferência

Informações: 0800 835 9722
 www.otm.sp.gov.br

METRO

Linha 1 - Azul
 Linha 2 - Verde
 Linha 2 - Verde (em operação)
 Linha 3 - Vermelha
 Linha 4 - Amarela (em construção)
 Linha 5 - Lila
 Linha 5 - Lila (em projeto)

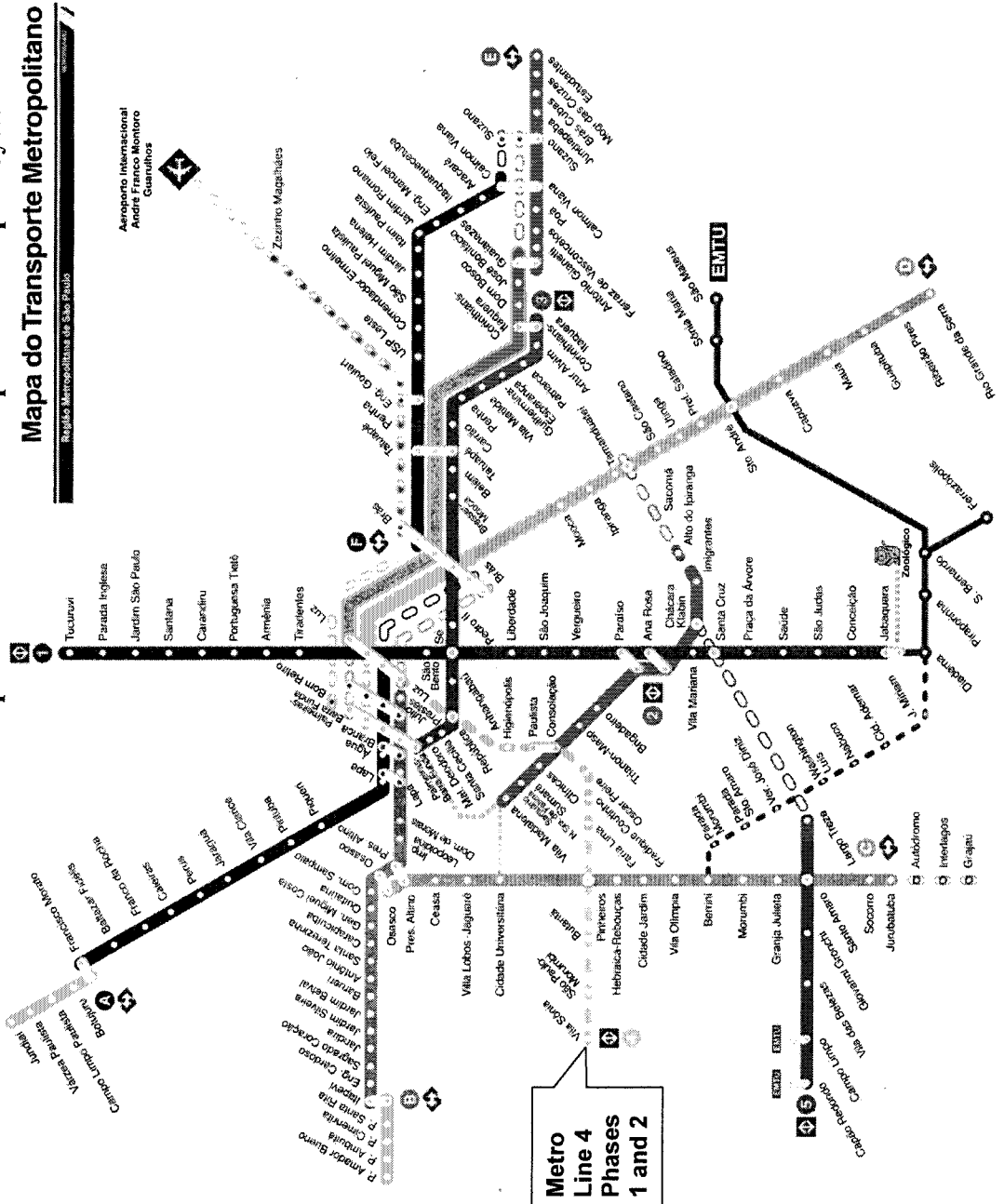
Informações: 0800 770 7722
 www.metro.sp.gov.br

EMTU

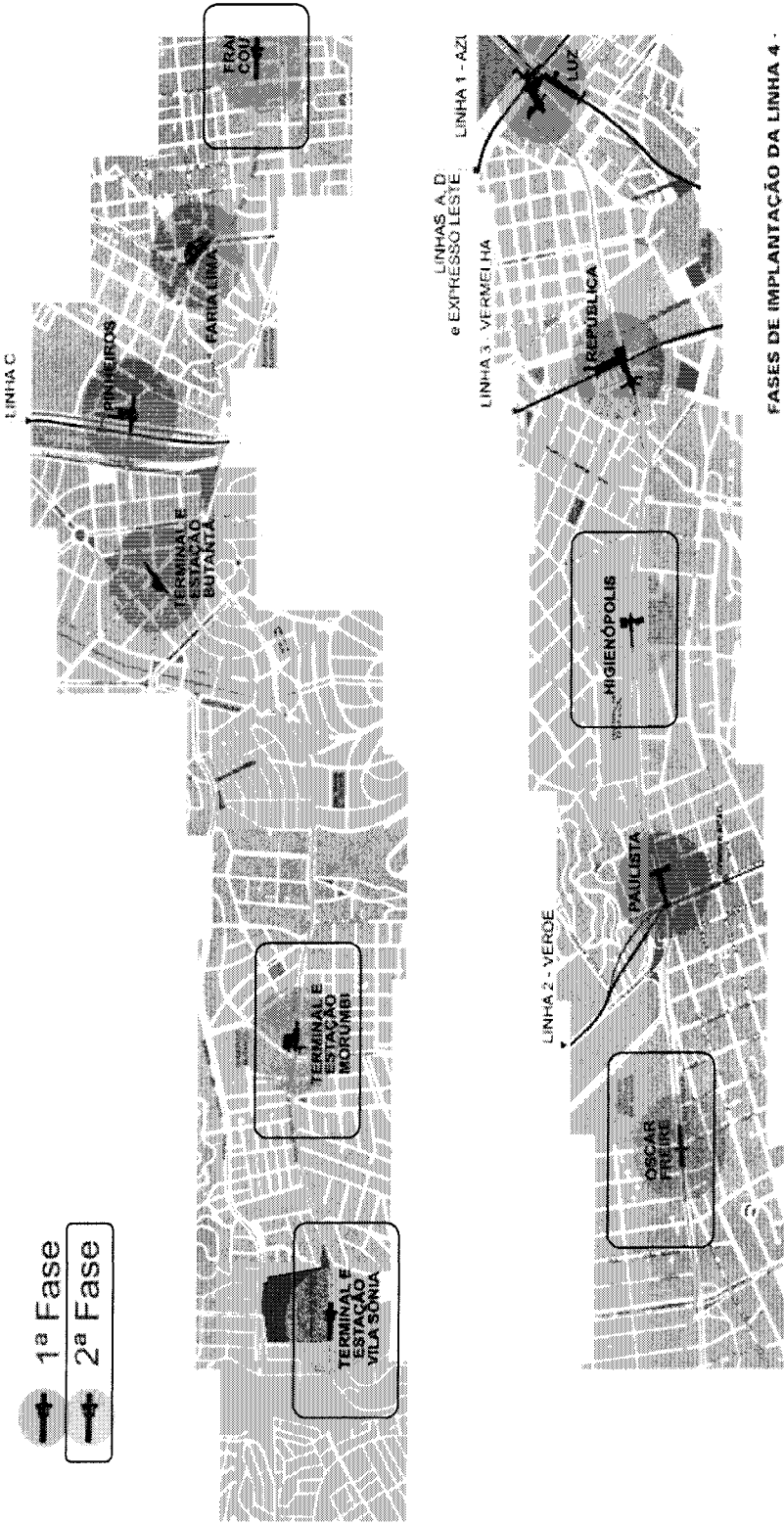
Corredor de Ônibus
 Corredor de Ônibus (em obra)
 Informações: 0800 189 825
 www.emtu.sp.gov.br

BRANSA Integradas
 Parque ORCA Zoo
 Parque ORCA
 Estação de Integração

Sem Escala



Alignment and Stations by Implementation Phase for Metro Line 4



FASES DE IMPLANTAÇÃO DA LINHA 4



LINHA 4 - AMARELA
 Metrô de São Paulo
 Traçado Vila Sônia Luz