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Report No: ICR2623

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(IBRD-72310 IBRD-74570 IBRD-77390)

ON A

LOAN

IN THE AMOUNT OF USD 757 MILLION TO THE
REPUBLIC OF COLOMBIA
FOR THE
INTEGRATED MASS TRANSIT SYSTEMS PROJECT

June 11, 2013

Sustainable Development Department
Colombia and Mexico Country Management Unit
Latin America and Caribbean Region

CURRENCY EQUIVALENTS
(Exchange Rate Effective January 1, 2013)

Currency Unit = Colombian Peso (COP)
COP 1 = USD 0.0006
US$ 1= COP 1,768.2

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

BRT	Bus Rapid Transit
CAF	Andean Development Corporation (*Corporación Andina de Fomento*)
CGR	General Comptroller's Office (*Contraloria General de la Republica*)
CPS	Country Partnership Strategy
CONFIS	National Fiscal Council (*Consejo Superior de Política Fiscal*)
CONPES	National Economic and Social Council (*Consejo Nacional de Política Económica y Social*)
DNP	National Planning Department (*Departamento Nacional de Planeación*)
EMP	Environmental Management Plan
FM	Financial Management
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GoC	Government of the Republic of Colombia
IADB	Inter-American Development Bank
IBRD	International Bank for Reconstruction and Development
IMTS	Integrated Mass Transit System
IRR	Internal Rate of Return
ISR	Implementation Status and Results Report
MA	Metropolitan Areas
MHCP	Ministry of Finance & Public Credit (*Ministerio de Hacienda y Crédito Público)*
MOT	Ministry of Transport (*Ministerio de Transporte*)
NPV	Net Present Value
NQS	North Quito South Line of the Bogotá Transmilenio BRT System
NUTP	National Urban Transport Program
PAD	Project Appraisal Document
PCU	Project Coordination Unit
PDO	Project Development Objective
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
SIL	Specific Investment Loan
SETP	Strategic Public Transit System *(Sistema Estrategico de Transporte Publico)*

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COLOMBIA

Integrated Mass Transit Systems Project

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DATA SHEET

A. Basic Information			
Country:	Colombia	Project Name:	CO Integrated Mass Transit Systems
Project ID:	P082466	L/C/TF Number(s):	IBRD-72310,IBRD-74570,IBRD-77390
ICR Date:	06/11/2013	ICR Type:	Core ICR
Lending Instrument:	SIL	Borrower:	REPUBLIC OF COLOMBIA
Original Total Commitment:	USD 250.00M	Disbursed Amount:	USD 752.98M
Revised Amount:	USD 756.76M		
Environmental Category: B			
Implementing Agencies: Ministry of Transport			
Cofinanciers and Other External Partners: N.A.			

B. Key Dates				
Process	**Date**	**Process**	**Original Date**	**Revised / Actual Date(s)**
Concept Review:	09/04/2003	Effectiveness:	01/20/2005	01/20/2005
Appraisal:	03/23/2004	Restructuring(s):		03/11/2011 12/06/2011 03/08/2012 04/18/2012
Approval:	06/10/2004	Mid-term Review:	10/20/2006	10/20/2006
		Closing:	03/31/2009	12/31/2012

C. Ratings Summary	
C.1 Performance Rating by ICR	
Outcomes:	Satisfactory
Risk to Development Outcome:	Moderate
Bank Performance:	Moderately Satisfactory
Borrower Performance:	Moderately Satisfactory

C.2 Detailed Ratings of Bank and Borrower Performance (by ICR)			
Bank	**Ratings**	**Borrower**	**Ratings**
Quality at Entry:	Satisfactory	Government:	Satisfactory

Quality of Supervision:	Moderately Satisfactory	Implementing Agency/Agencies:	Moderately Satisfactory
Overall Bank Performance:	Moderately Satisfactory	**Overall Borrower Performance:**	Moderately Satisfactory

C.3 Quality at Entry and Implementation Performance Indicators			
Implementation Performance	**Indicators**	**QAG Assessments (if any)**	**Rating**
Potential Problem Project at any time (Yes/No):	No	Quality at Entry (QEA):	None
Problem Project at any time (Yes/No):	No	Quality of Supervision (QSA):	None
DO rating before Closing/Inactive status:	Satisfactory		

D. Sector and Theme Codes		
	Original	**Actual**
Sector Code (as % of total Bank financing)		
Central government administration	5	5
Sub-national government administration	5	5
Urban Transport	90	90
Theme Code (as % of total Bank financing)		
City-wide Infrastructure and Service Delivery	13	13
Infrastructure services for private sector development	25	25
Municipal governance and institution building	24	24
Pollution management and environmental health	13	13
Urban services and housing for the poor	25	25

E. Bank Staff		
Positions	**At ICR**	**At Approval**
Vice President:	Hasan A. Tuluy	David de Ferranti
Country Director:	Gloria M. Grandolini	Isabel M. Guerrero
Sector Manager:	Aurelio Menendez	Jose Luis Irigoyen
Project Team Leader:	Mauricio Cuellar	Mauricio Cuellar
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F. Results Framework Analysis

Project Development Objectives (from Project Appraisal Document)

The development objectives of the Project are to: (i) develop quality and sustainable BRT systems in selected medium and large cities to improve mobility along the most strategic mass transit corridors; (ii) improve accessibility for the poor through feeder services and fare integration; (iii) build greater institutional capacity at the national level in order to formulate integrated urban transport policies, and at the local level in order to improve urban transport planning and traffic management

Revised Project Development Objectives (as approved by original approving authority)

The First and Second Additional Loans did not introduce any changes to the PDO, as they only increased the geographical and physical scope of the original project. The Original Loan supported the implementation of the NUTP in the cities of Bogota, Cartagena and Pereira MA and contemplated the inclusion of additional cities after they met minimum conditions. The First Additional Loan allowed for the financing of works in additional cities that achieved compliance with eligibility requirements, including Barranquilla, Bucaramanga and Medellin-Valle de Aburra; and covered a financing gap of USD 100 million in the financing of Bogota's NQS BRT corridor. The Second Additional Loan funded a scale-up in the NUTP's physical scope (in Barranquilla, Bucaramanga, Cartagena and Medellin-Valle de Aburra), including the expansion of trunk corridors and feeder routes to meet increased demand and the improvement of associated infrastructure.

(a) PDO Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	1.a. Reduction in generalized door-to-door travel cost (fare, time) to users			
Value quantitative or Qualitative)	Bogota: 0.99 / Barranquilla: 1.09 / Cartagena: 1.04 / Medellin-Valle de Aburra: 0.91 / Pereira-Dos Quebradas: 0.83			Bogotá: 1.70 / Barranquilla: N.A. / Bucaramanga: 1.53/ Medellin-Valle de Aburra: N.A./ Pereira-Dos Quebradas: 0.61
Date achieved	12/31/2003	12/31/2004		12/31/2010
Comments (incl. % achievement)	**Substantially achieved:** Generalized Transport Cost (GTC) has declined in Pereira, but increased in Bogota, mostly as a result of increased transfer times. Ex-post cost-benefit analyses show that reductions in travel time are an important source of economic benefits in Pereira and Bogota. GTC statistics are not available for other systems.			
Indicator 2 :	1.b. Percentage of people rating the system as better than the previous system (%)			
Value quantitative or	Not Applicable	90% approval		Bogota: 73.8%/ Barranquilla:

Qualitative)				71.0%/ Bucaramanga: 86%%/ Medellin-Valle de Aburra: N.A./ Pereira-Dos Quebradas: 82.3%
Date achieved	12/31/2004	12/31/2004		
Comments (incl. % achievement)	**Substantially achieved:** At the launch of BRT systems in Bogota, Pereira and Barranquilla, users rated the service favorably relative to the traditional bus system (between 74 and 83 percent according to SISETU and independent survey statistics). Nonetheless, in these cities, service quality perception has decreased as the novelty factor disappears and systems' occupation increases. The perception of the service in Bucaramanga is not as favorable as in other systems, reflecting the limited coverage of the system in the early stages of operation. It is expected that user perception will improve as the system consolidates its operations and is implemented fully.			
Indicator 3 :	2.a. Percentage of system users that belong the poorest segments of the population: Income strata 1 and 2 (%)*			
Value quantitative or Qualitative)	Bogota: 3.34% / Barranquilla Metropolitan Area: 22.75 / Bucaramanga Metropolitan Area: 6.87%(Bucaramanga only)/ Cartagena: 40.5% / Medellin-Valle de Aburra: 32% / Pereira-Dos Quebradas: 24.6%	Compare urban transport as a whole with system to verify increase.		Bogota: 39% / Barranquilla Metropolitan Area: 71% / Bucaramanga Metropolitan Area: 61%/ Cartagena: N.A./ Medellin-Valle de Aburra: N.A. / Pereira-Dos Quebradas: 61%
Date achieved	12/31/2004	12/31/2004		12/31/2009
Comments (incl. % achievement)	**Substantially achieved:** The majority of users in Barranquilla (more than 70 percent) and Pereira (more than 60 percent) are poor. The proportion of poor users is about a third in Bogota and Bucaramanga. The percentage of users in the lowest income strata (strata 1 and 2) compares well relatively to proxy baselines in the cities for which this information is available. The proxy baseline corresponds to the percentage of public transport users that belong to these strata (Included for comparison purposes).			
Indicator 4 :	3.a. At the local level, system occupation per square meter is below a given threshold while maintaining no subsidies			
Value quantitative or Qualitative)	Not Applicable	Occupation per square meter below 7		Bogota: 6.91 / Barranquilla Metropolitan Area: 4.65 / Bucaramanga Metropolitan Area: N.A./ Cartagena: N.A./ Medellin-Valle de Aburra: N.A. / Pereira-Dos Quebradas: 4.36

Date achieved	12/31/2004	12/31/2004		12/31/2010
Comments (incl. % achievement)	**Substantially achieved:** The occupation per square meter indicator, where available, shows that the more mature systems (Bogota, Pereira and Barranquilla) are operating in a satisfactory manner. This indicator is not available for most of the cities. Another indicator that can be used to measure performance in operations planning is the Passenger per Kilometer Index (IPK). Although this Index depends on the characteristic and operating conditions in each city, it can be used to corroborate that the most mature systems (Bogota, Pereira and Barranquilla) are operating within the range set at appraisal, while Bucaramanga and Medellin are outside those boundaries.			
Indicator 5 :	3.b. At the national level, at least six BRT systems are operating successfully in participating cities and the GoC systematically monitoring program performance and its impact, in line with the requirements of National Urban Transport Program.			
Value quantitative or Qualitative)	0	3	6	5
Date achieved	05/14/2004	12/31/2004	07/09/2009	12/31/2012
Comments (incl. % achievement)	**Substantially achieved:** The Project financed the development of six BRT systems: five currently in operation (Barranquilla, Bucaramanga, Bogota-NQS, Pereira-Dos Quebradas, Medellin-Valle de Aburra) and one that is still under construction (Cartagena) and should enter into operation by 2014 (96 percent of trunk corridors contracted had been completed). Therefore, the Project is one system short of reaching the outcome target of having six systems in operation. Nonetheless, a sixth system in the city of Cali, financed by the IADB, but also part of the NUTP and thus receiving technical support from the PCU is also in operation.			

(b) Intermediate Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Segregated trunk-lines constructed (kilometers)*			
Value (quantitative or Qualitative)	N.A.	Bogotá-NQS TRASMILENIO: 20.00/ Barranquilla: 15.60/ Bucaramanga: 8.90/ Cartagena: 15.10/ Medellin: 12.50/ Pereira: 16.15/ Total: 88.3	Bogotá-NQS TRASMILENIO: 20.00/ Barranquilla: 13.40/ Bucaramanga: 8.90/ Cartagena: 10.3/ Medellin: 12.50/ Pereira: 16.15/ Total: 81.3	Bogotá-NQS TRASMILENIO: 20.00/ Barranquilla: 13.40/ Bucaramanga: 8.80/ Cartagena: 11.32/ Medellin: 12.50/ Pereira: 15.46/ Total: 81.5
Date achieved	12/31/2004	12/31/2009	12/31/2009	12/31/2012

Comments (incl. % achievement)	-92% achieved with respect to original target -99.3% achieved with respect to revised target -100%achieved with respect to kilometers contracted			
Indicator 2 :	Pre-trunk and feeder lines constructed (Kilometers)*			
Value (quantitative or Qualitative)	N.A.	Bogotá-NQS TRASMILENIO: 0/ Barranquilla: 61.95/ Bucaramanga: 105.30/ Cartagena: 67.90/ Medellin: 18.50/ Pereira: 2.00/ Total: 255.6	Bogotá-NQS TRASMILENIO: 0/ Barranquilla: 61.95/ Bucaramanga: 14.10/ Cartagena: 25.90/ Medellin: 18.50/ Pereira: 4.00/ Total: 124.4	Bogotá-NQS TRASMILENIO: 0/ Barranquilla: 50.21/ Bucaramanga: 9.5/ Cartagena: 25.9/ Medellin: 5.9/ Pereira: 4/ Total: 95.5
Date achieved	12/31/2004	12/31/2009	12/31/2009	12/31/2012
Comments (incl. % achievement)	-37% achieved relative to original target -77% achieved relative to revised target -84% achieved relative to kilometers contracted			
Indicator 3 :	Terminals / Garages constructed (Number)*			
Value (quantitative or Qualitative)	N.A.	Bogotá-NQS TRASMILENIO: 1/ Barranquilla: 3/ Bucaramanga: 4/ Cartagena: 2/ Medellin: 0/ Pereira: 2/ Total: 12	Bogotá-NQS TRASMILENIO: 1/ Barranquilla: 2/ Bucaramanga: 4/ Cartagena: 2/ Medellin: 0/ Pereira: 2/ Total: 11	Bogotá-NQS TRASMILENIO: 1/ Barranquilla: 1/ Bucaramanga: 0/ Cartagena: 0/ Medellin: 0/ Pereira: 2/ Total: 4
Date achieved	12/31/2004	12/31/2009	12/31/2009	12/31/2012
Comments (incl. % achievement)	-33% of original target achieved -36% of revised target achieved -57% of target achieved with respect to contracted terminals/garages			
Indicator 4 :	Stations constructed (Number)*			
Value (quantitative or Qualitative)	N.A.	Bogotá-NQS TRASMILENIO: 23/ Barranquilla: 16/ Bucaramanga: 76/ Cartagena: 23/ Medellin: 52/ Pereira: 38/ Total: 228	Bogotá-NQS TRASMILENIO: 23/ Barranquilla: 16/ Bucaramanga: 27/ Cartagena: 18/ Medellin: 52/ Pereira: 38/ Total: 174	Bogotá-NQS TRASMILENIO: 21/ Barranquilla: 16/ Bucaramanga: 14/ Cartagena: 16/ Medellin: 20/ Pereira: 38/ Total: 125
Date achieved	12/31/2004	12/31/2009	12/31/2009	12/31/2012

Comments (incl. % achievement)	-55% of original target achieved -72% of revised target achieved

G. Ratings of Project Performance in ISRs

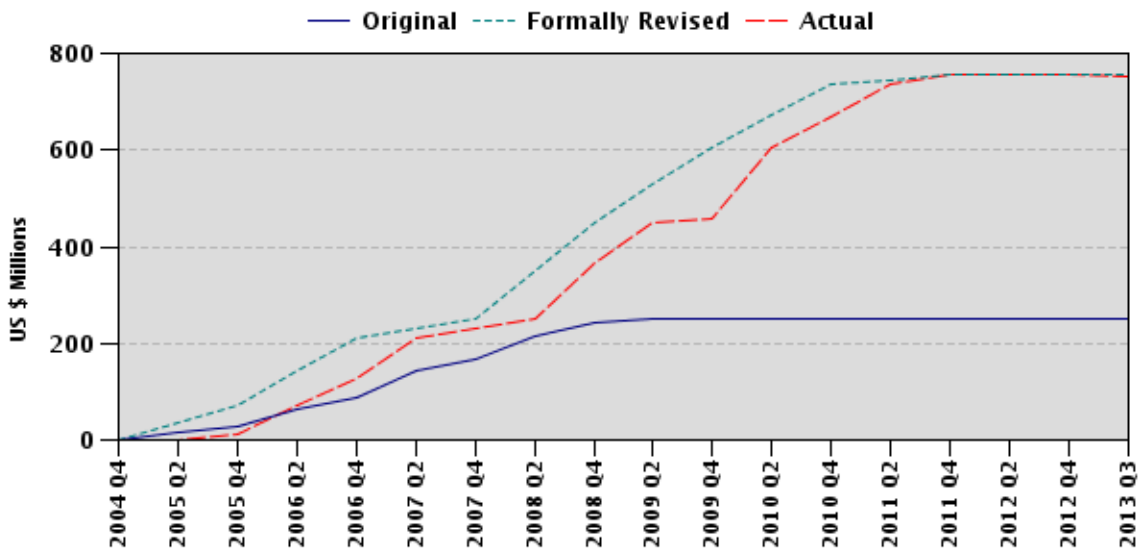
No.	Date ISR Archived	DO	IP	Actual Disbursements (USD millions)
1	11/19/2004	Satisfactory	Satisfactory	0.00
2	05/09/2005	Satisfactory	Satisfactory	13.00
3	12/17/2005	Satisfactory	Satisfactory	52.92
4	06/12/2006	Satisfactory	Satisfactory	111.12
5	12/10/2006	Satisfactory	Satisfactory	187.39
6	06/26/2007	Satisfactory	Satisfactory	232.60
7	12/20/2007	Satisfactory	Satisfactory	250.00
8	06/26/2008	Satisfactory	Satisfactory	366.19
9	09/19/2008	Satisfactory	Satisfactory	421.19
10	01/30/2009	Highly Satisfactory	Satisfactory	448.36
11	10/30/2009	Highly Satisfactory	Satisfactory	456.94
12	05/22/2010	Highly Satisfactory	Satisfactory	667.72
13	02/27/2011	Highly Satisfactory	Satisfactory	736.44
14	08/02/2011	Satisfactory	Satisfactory	754.35
15	03/29/2012	Highly Satisfactory	Satisfactory	754.35
16	11/11/2012	Satisfactory	Satisfactory	754.35

H. Restructuring (if any)

Restructuring Date(s)	Board Approved PDO Change	ISR Ratings at Restructuring		Amount Disbursed at Restructuring in USD millions	Reason for Restructuring & Key Changes Made
		DO	IP		
03/11/2011		HS	S	736.44	Reallocation of Loan Proceeds for the Colombia, Second Additional Loan for the Integrated Mass Transit System Project, IBRD-77390, P082466.
12/06/2011		S	S	754.35	Reallocation of Loan Proceeds for the Colombia, Second Additional Loan for the Integrated Mass Transit System Project, IBRD-77390, P082466.
03/08/2012		S	S	754.35	extend the closing date of the above referenced Second Additional Financing (AF II)

Restructuring Date(s)	Board Approved PDO Change	ISR Ratings at Restructuring		Amount Disbursed at Restructuring in USD millions	Reason for Restructuring & Key Changes Made
		DO	IP		
					loan from the current closing date of March 31, 2012 to August 31, 2012, giving the Second Additional Financing a total duration of 3 years
04/18/2012		HS	S	754.35	Extension of closing date to December 31 2012 and exception to three-year limit for Second Additional Financing

I. Disbursement Profile (Amounts in USD million)



1. Project Context, Development Objectives and Design

1.1 Context at Appraisal

1. At the time of appraisal, Colombia was already a highly urbanized country, with approximately 75 percent of its population living in cities. By 2004, four Colombian cities (Bogotá, Medellin, Cali and Barranquilla) boasted over 1 million inhabitants, three cities (including Cartagena and Bucaramanga) had populations between 500,000 and 1 million and 33 cities (including Pereira) had between 100,000 and 500,000 inhabitants. [1]

2. Then as now, Colombian cities were centers of economic growth. Between 2000 and 2004, GDP growth in large and mid-sized Colombian cities was one percent higher than for the nation as a whole, contrary to the situation in other Latin American countries, such as Brazil and Mexico, where non-urban sectors were more dominant over the same period of time.[2] Not only was economic growth higher in cities, but it also was relatively less concentrated in the country's largest urban agglomeration. Compared to other Latin American countries, such as Argentina and Chile, Colombia's economic activity was, and still is, more balanced across its largest cities.

3. The urbanization process also moved poverty issues away from rural areas and into the cities. At the time of appraisal, it was estimated that two thirds of the population living below the poverty line was located in urban areas. A large part of the urban poor lived in the cities' periphery and lacked access to reliable and affordable transportation services. See Annex 10 for a detailed sector background.

1.2 Original Project Development Objectives (PDO) and Key Indicators (*as approved*)

4. The development objectives of the Integrated Mass Transit Systems (IMTS) Project (the Project) are to: (i) develop quality and sustainable Bus Rapid Transit (BRT) systems in selected medium and large metropolitan to improve mobility along the most strategic mass transit corridors; (ii) improve accessibility for the poor through feeder services and fare integration; (iii) build greater institutional capacity at the national level in order to formulate integrated urban transport policies, and at the local level in order to improve urban transport planning and traffic management. See Annex 11 for a detailed description of the Project.

5. The Project supported the implementation of a national mass transit program by consolidating the ad-hoc support of the Government of Colombia (GoC) to the Bogota BRT System (Transmilenio) into a broader country-wide program: The National Urban Transport Program (NUTP). The Project funded a time slice of GoC transfers to implementing agencies in Cities / Metropolitan Areas (MAs) that were part of the NUTP: Bogota (Transmilenio), Barranquilla (Transmetro), Bucaramanga (Metrolinea), Cartagena (Transcaribe), Pereira (Megabus) and Medellin-Valle de Aburra (Metroplus).[3] The Project also supported institutional strengthening activities at the local and national levels in support of the implementation of the NUTP. See Annex 10 for a description of the NUTP.

6. The key Project Outcome Indicators (as approved) are the following:

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[1] National Statistics Department (DANE)

[2] Samad, Lozano-Gracia and Panman, "Colombia Urbanization Review: Amplifying the Gains from the urban Transition", World Bank, 2012

[3] The Inter-American Development Bank (IADB) supported the development of the BRT system in Cali; and the Andean Development Corporation (CAF) and Organization of Petroleum Exporting Countries (OPEP) supported Transmilenio's Suba corridor.

1) Improve mobility and quality of public transport services in strategic corridors:
   a. Reduction in generalized door-to-door travel cost (fare, time) to users;
   b. Percentage of people rating the BRT system as being better than previous one;
2) Improve the accessibility of low-income populations:
   a. Increased use by the poor (two poorest quintiles) of public transport services along the project's area of influence;
3) Enhanced institutional capacity for urban transport policy formulation and system development:
   a. At the local level, system occupation per square meter is below a given threshold while maintaining no subsidies;
   b. At the national level, at least three (revised to six) BRT systems are operating successfully in participating cities and the GoC systematically monitoring program performance and its impact, in line with the requirements of National Urban Transport Program.[4]

7. Project performance was also monitored against a set of Intermediate Output Indicators, including the following: Number of kilometers of segregated trunk lines constructed; Number of kilometers of pre-trunk and feeder lines constructed; Number of terminals / garages constructed; Number of stations constructed; Number of construction contracts awarded; Number of operation contracts awarded; and Number of fare collection contracts awarded. [5]

1.3 Revised PDO (as approved by original approving authority) and Key Indicators, and reasons/justification

8. The First and Second Additional Loans did not introduce any changes to the PDO, as they only increased the geographical and physical scope of the original project. No changes have been introduced to the nature of the Key Project Indicators, but targets have been revised to reflect the additional financings. Outcome indicator (iii) (b) was modified following the approval of the First Additional Loan to account for the widening in the geographical scope of the Project, increasing the expected number of BRT systems operating successfully from three to six. In addition, output indicators were revised as part of the appraisal of the Second Additional Loan in order to account for changes in the Project's physical scope.

1.4 Main Beneficiaries

9. The main beneficiaries of the Project are public transit users in participating cities, who following the implementation of BRT systems are expected to benefit from greater access to safer, better-quality and faster transportation services. Since the public transit constituency is primarily made of low-income users (up to 70 percent of users of traditional bus services are from the lower income strata – strata 2 and 3), the Project benefits the urban poor, by giving them better access to services and economic opportunities and lowering their generalized transportation cost. The Project also benefits the urban population at large, who will experience better overall urban mobility and environmental conditions through the relief of traffic congestion, reduction in

[4] In the PAD for the First Additional Loan (page 15), the target for this indicator was increased to "six BRT systems operating successfully in participating cities" (see Revised Key Indicators section below)

[5] These intermediate output indicators were first defined as "General Summary Indicators" in the PAD for the Original Loan. These General Summary Indicators included other measures for which targets were never established and that have not been included in Project reporting over time. The PAD for the Second Additional Loan focused these indicators on a set of Intermediate Output Indicators and established targets for each city (Annex 9 of PAD for Second Additional Loan).These Intermediate Output Indicators have been tracked as part of ISRs and are the ones evaluated for the purpose of this ICR.

road accidents and air pollution. With the implementation of the Project, cities have been able to incorporate new, low-emission[6] high capacity buses, reduce over-supply and introduce cleaner fuel types[7]. Other beneficiaries are the residents and businesses along new transit corridors and renovated public space.

1.5 Original Components

10. The Original Loan had the following two components:

1. **Part A- Capacity Building:** Technical assistance and policy advice to the GoC and participating municipal governments, including: Strengthening the GoC's capacity to formulate national urban transport programs; Improving the institutional capacity of sector agencies at participating cities to ensure adequate system implementation; Strengthening the operational capacity of participating cities with respect to the implementation of urban development and transport strategies; Supporting overall project coordination, evaluation, supervision and implementation, including the strengthening of the Project Coordination Unit (PCU), the development of studies and audits and the establishment of a monitoring and evaluation system.
2. **Part B - BRT System Development:** Development of BRT systems including: Construction of segregated transportation corridors in participating cities / metropolitan areas; Construction of about 20 kilometers of segregated corridors in Bogota (Transmilenio's Norte-Quito-Sur Corridor-NQS); the resettlement of affected persons; and the design and implementation of Environmental Management Plans (EMP) associated with construction works.

1.6 Revised Components

11. The original components were maintained throughout implementation. The eligible categories of the two additional financings did not require a change in the original components. The First Additional Loan disbursements corresponded mostly to Component 2, while the Second Additional Loan disbursements supported a scale-up of both Component 1 and of Component 2.

1.7 Other significant changes

12. With the Second Additional Loan, the project's financing arrangements were changed to include land acquisition and resettlement compensation as eligible expenditures. In accordance with policy, the Bank's land committee reviewed the arrangements put in place for the financing of land acquisition and authorized this change in eligible expenditures. This provided an additional degree of flexibility on the allocation of project costs between the national and local governments. Up until then, land acquisition expenditures had been financed exclusively by local governments.[8] The Second Additional Loan had four restructurings that did not change the PDO.[9]

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry

[6] Buses comply with EURO emission standards, which limit CO_2 and local pollutant emission levels per kilometer.
[7] Compliance with EURO standards required the Colombian National Oil Company (Ecopetrol) to provide systems with Ultra-low Sulfur Diesel, which was previously not available in Colombia.
[8] The Bank financed approx. 2 million in land acquisition, out of a total of USD 116.4 million that has been carried out so far under the NUTP.
[9] See Annex 11 for details.

13. The Project's background analysis was based on previous policy and project design work, partially funded with the Bank's Regulatory Reform Technical Assistance Loan. The Project was also built on a strong political commitment from the national government. The GoC made implementation of the NUTP a priority, making a long-term budgetary commitment and executing the required co-financing agreements with local governments. The Project design is considered satisfactory having addressed multiple implementation challenges, including the need to build project ownership among local stakeholders and the high capacity building and supervision requirements associated with having to create multiple implementing agencies. Finally, the risk assessment is considered satisfactory as the team identified some of the most critical risks and mitigation measures at appraisal. See Annex 11 for a detailed description.

2.2 Implementation

Mid-term Review

14. The mid-term review workshop, carried out in October 2006, identified important strengths in the program including: the exchange of experiences between participating cities; the hiring of multidisciplinary teams at implementing agencies; and the collaboration between the central and municipal levels of government. These strengths were counterbalanced by the small budget available for technical assistance to enhance the capacity of implementing agencies, and the limited capacity of these agencies to negotiate concession agreements encouraging competition while at the same time giving preference to traditional local bus operators. Participants noted the advantages of working with the Bank, including: enhanced credibility, comprehensive safeguard policies, clarity in contracting rules and the technical support from the Bank's team. On the other hand, in the opinion of implementing agencies, working with the Bank entailed having to deal with an additional level of bureaucracy and required public officials and contractors to become familiar with the Bank rules that differ from local legislation.

15. Some of the main implementation issues identified included: limited coordination between the different agencies and municipalities involved in each project; inadequate capacity at implementing agencies to negotiate with private concessionaires; and the high attention given to the construction of infrastructure over the planning of operations.

Implementation Performance

16. Project implementation, including compliance with loan covenants, is considered **satisfactory**. The Project –first of its kind for the Bank and for Colombia– was highly complex, involving multiple new municipal government agencies and the construction of several transportation systems. Project implementation was successful in navigating these challenges. Most implementation issues were the result of factors outside the control of the Project and were addressed in a satisfactory manner:

17. **Delays in Project execution:** Implementing Agencies had a steep learning curve to internalize Bank safeguards and fiduciary policies. Initially, through continuous and extensive training activities, the Bank heavily supported the building of these competencies at the PCU and Implementing Agencies, which had to develop specialized procurement, environmental and social units from the ground up. These initial difficulties were overcome, as implementing agencies built strong teams that developed a high degree of ownership over the Bank's policies and learned from each other as implementation progressed. Other delays in execution were mainly the result of changes in the scope of the project, incomplete designs and unforeseen costs (see Efficiency section below).

18. **Partial execution of technical assistance component:** Although in early 2012 the loan closing date was extended to allow additional time for the execution of this component, the MOT was unable to execute it due to budgetary and procurement shortcomings and about 40 percent of the total amount allocated for this component (about USD 2.4 million) was not disbursed. These shortcomings were the result of broader institutional issues originating in the public management system as a whole and that were not within the operational purview of the Project.

19. **Project Coordination Unit (PCU) capacity was affected by public management issues:** The Project invested heavily in building a very capable PCU that played a fundamental role in implementation and that now has an expanded role. Nonetheless, after 2010, when the unit was further integrated into MOT's structure, its performance started to be affected by high personnel rotation and operational issues related to the public management system. As a result, the capacity of the PCU to provide technical support has weakened and the unit is currently focused on monitoring. The integration of the PCU into MOT is still being consolidated and will need further adjustments as the PCU evolves from Project implementation to policy-making.

20. **Lack of mandate and supervision resources for addressing operational aspects:** Despite the Bank and Borrower's efforts, implementing agencies were not accompanied in key operational areas, such as the negotiation of operating agreements and structuring of concessions to develop bus terminals (remunerated through user tariffs). This was due to the fact that the national policy gave exclusive responsibility in this area to local implementing agencies. The situation also reflected the priority that the program gave to the objective of completing the main infrastructure works over operational aspects and the limited resources available for loan supervision. The Bank compensated for the lack of mandate and resources by mobilizing technical assistance to municipalities via the supervision budget, grants and trust funds.

2.3 Monitoring and Evaluation (M&E) Design, Implementation and Utilization

21. The Project contemplated the development of a comprehensive M&E framework. Although with some initial delays, this framework (known as SISETU for its initials in Spanish) was designed and implemented in the form of a web-based application. Nevertheless, despite its breadth and high technical quality, the M&E framework was never internalized by the MOT or implemented consistently. A recent evaluation of the M&E framework found that despite the technical merit of the indicators, the complexity of the performance measures required is not commensurate with the capacity of the entities in charge of collecting the data and calculating the indicators.[10] As a result, compliance with reporting has been very low and measurements are only available for a limited number of indicators and mass transit systems. Furthermore, MOT did not internalize the system, focusing more on monitoring reporting compliance rather than on supporting local agencies with implementation. The MOT is currently working with Implementing Agencies to facilitate the use of the M&E system and ensure that indicators are adequately measured and reported on a regular basis. See Annex 12 for a complete evaluation of the design, implementation and utilization of the M&E framework.

2.4 Safeguard and Fiduciary Compliance

22. **Environmental:** The Project's environmental management methodology included innovative aspects and became a reference for other projects in Colombia and in other countries

[10] Framework consisted of a set of 35 indicators to measure performance in three areas: (i) performance of local transport; (ii) efficiency and effectiveness; and (iii) impact on the urban environment.

in the region.[11] All construction contracts, except a few related to small feeder road rehabilitation works, encompassed the adequate implementation of Environmental Management Plans (EMPs). Main issues were related to penalized non-compliance by contractors and also to the need to adjust the weightings of contractor environmental management evaluation forms, which in some instances did not give grounds to adequate penalties. A mid-term workshop and various other periodical meetings were held to review the program and make adjustments.

23. **Social**: Social management teams without previous experience in the use of Bank resettlement policies and working under newly created Implementing Agencies successfully implemented more than 20 resettlement plans. Implementing Agencies internalized this social management culture to the point that they now use these procedures even in projects that are not financed by the Bank (see Institutional Change / Strengthening Section). The most significant implementation issue in this area was related to the resettlement of public space occupants (street vendors), which requires more collaboration between implementing agencies and participating cities to manage the transition of vendors out of informality and into the formal sector of the economy.[12] Despite these issues, all resettlement processes were satisfactorily undertaken in compliance with Bank policy.

24. **Financial Management:** There were minor shortcomings in the financial management function. Main issues were related to missing financial reporting deadlines, delays in the implementation of financial control systems at Implementing Agencies and instances of ineligible expenditures (particularly expenditures related to the replacement of public utility networks) that were identified as part of audits and supervision. The first two issues were resolved through intensive training of officials and close support. The last one required the design of a technical clearance form certifying the eligibility of expenditures. Although the National Audit Office has issued observations, which are being addressed by MOT, there are no outstanding qualified opinions.

25. **Procurement:** Performance in this area was generally adequate except for a few issues related to the use of procedures established in local legislation as part of Bank-financed procurement processes. These instances were addressed through active supervision and training of Implementing Agencies. Procurement supervision, including one Independent Procurement Report, ex-post evaluations, and field visits, found no significant deviations from Bank policies.

2.5 Post-completion Operation/Next Phase

26. **Finalization of Project investments:** Only a few of the civil works that have been partially financed with loan proceeds are yet to be completed, including: two tranches of the high capacity bus corridor in Cartagena (one is 50 percent completed and the other 95 percent completed) and some terminals, stations and pre-trunk corridors.[13]

27. **Next phase/ follow-up operation:** In July 2011, the Board approved a new loan operation for USD 350 million to continue funding the mass transit systems in Medellin – Valle de Aburrá and Bucaramanga (included in the Project) and to support the development of a

[11] Environmental Management Plans were mandated as part of civil works contracts and its remuneration was based on performance, with a minimum value as percentage of the total contract value to ensure adequate planning and implementation. The guidelines developed for the Project were used in other projects in Mexico and Ecuador.

[12] This is the case of Cartagena, where Transcaribe has carried out all of the actions required to implement the resettlement plan according to policy, but the local administration has not yet executed the plan due to institutional weaknesses and political instability.

[13] The length of the two tranches is nearly 0.8 kilometers, less than 5% of the total corridor length.

Strategic Public Transport Plan (SEPT for its initials in Spanish) for various small cities, including Sincelejo and Valledupar.[14] It is envisioned that this loan will have a larger Technical Assistance (TA) component of USD 15 million, available to support MOT in the definition of the regulatory framework for mass transit systems and assist Implementing Agencies in the optimization of operations.

28. **Sustainability of outcomes:** Despite the advances made through the NUTP, there is consensus that the evolving experience and lessons learnt with the implementation of BRTs around the country merit revisiting the legal framework for urban transport interventions. In this sense, the MOT is considering issuing a new Mobility Law to address key issues for system sustainability. The Bank is supporting the analytical work required to prepare this legislation. Also, now that the main infrastructure works have been completed, and considering that systems have not been yet able to reach the forecasted demand levels, the focus of the program is now evolving towards optimizing operations.[15] In January 2013, the GoC established a working committee made up by representatives of DNP, MHCP and MOT. This Committee is charged with devising and executing a plan to ensure the sustainability of the systems.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

Rating: **High**

29. The Project outcomes are extremely relevant to the GoC and participating municipalities. The results of a perception survey carried out in 9 Colombian cities (including all Project cities) in 2011 indicated that citizens considered urban mobility as the most critical aspect that should be addressed by the next municipal administration (28 percent on average). The same survey evidenced a downward trend in mobility conditions (as measured by perceived travel times for all survey respondents) in most large and medium size cities (except Barranquilla, Medellin, Pereira and Valledupar).[16]

30. In addition, due to commercial liberalization policies and the upsurge in economic growth, the vehicle fleet in the country more than doubled from 2000 to 2010, resulting in increasing congestion. Studies based on conservative economic growth estimates forecast a two-fold increase in the number of vehicles by 2025 and a three-fold increment in the number of motorcycles.[17] Given the physical and financial limitations to the expansion of infrastructure and to city densification, the improvement of urban public transport is, without doubt, critical for the development of the country and the quality of life of three-fourths of its population.

31. In this context, the Project has and continues to be relevant for the strategic priorities that the Bank has defined for its engagement in Colombia. The Project was consistent with the Country Assistance Strategy (CAS) discussed by the Board in January 2003, which gave high priority to the promotion of competitiveness in the productive sector and to the improvement of high quality basic infrastructure services for the least privileged segments of the population. The Project objectives are also relevant to the Country Partnership Strategy (CPS) for FY 2012-16,

[14] Support to the National Urban Transit Program Project (P117947). Link to Project Document. The total loan amount was later revised downwards to USD 292 million, to account for the fact that GoC transfers for Pereira and Cartagena had been exhausted.
[15] During 2013, the Bank is has mobilized consultants to support operation optimization strategies.
[16] "Calidad de Vida en 9 Ciudades de Colombia: Encuestas de Percepción de la Red de Ciudades Como Vamos 2011", Ipsos Public Affairs, March 2012
[17] Acevedo Jorge, "El transporte como soporte al desarrollo de Colombia. Una Visión al 2040", Universidad de los Andes, 2009.

approved by the Board in July 2011. This CPS is aligned with the key themes of the GoC's National Development Plan for 2010-14, stressing the importance of enhancing access to services in an environmentally sustainable manner as a way to foster inclusive growth and expand opportunities for shared prosperity and increased productivity.

3.2 Achievement of Project Development Objectives

Rating**: Satisfactory**

32. The achievement of the PDO is rated **Satisfactory**. The Project substantially delivered the outputs necessary for the implementation of mass transit systems in participating cities and largely achieved or is expected to achieve the objectives set at appraisal. A summary of the results framework indicators and articulation between outputs, outcomes and inputs is included in Annex 2.

Objective 1: Develop quality and sustainable BRT systems in selected medium and large cities to improve mobility along the most strategic mass transit corridors

33. Achievement of this objective is considered **satisfactory**. The projects in operation are deemed of high quality and are perceived to have contributed to improve mobility as measured by the associated key performance indicators.

34. **Progress against key performance indicators:** At the launch of BRT systems in Bogota, Pereira and Barranquilla, users rated the service favorably relative to the traditional bus system (between 74 and 83 percent according to SISETU and independent survey statistics). Nonetheless, in these cities, service quality perception has decreased as the novelty factor disappears and systems' occupation increases. The perception of the service in Bucaramanga is not as favorable as in other systems, reflecting the limited coverage of the system in the early stages of operation. It is expected that user perception will improve as the system consolidates its operations and is implemented fully. On the other hand, Generalized Transport Cost (GTC) has declined in Pereira, but increased in Bogota, mostly as a result of increased transfer times. Ex-post cost-benefit analyses show that reductions in travel time are an important source of economic benefits in Pereira and Bogota. GTC statistics are not available for other systems (see Annex 2).

35. **Other Factors supporting the assigned rating:** The BRT systems developed with Project support are deemed to be of high quality and consistent with best practice and international standards. A recent evaluation carried out by the Technical Committee of the BRT Standard at the Institute for Transportation and Development Policy (ITDP) designated two of the sub-projects with the Gold Standard: Bogota-NQS and Medellin; and two others with the Silver Standard: Pereira and Barranquilla. [18] The Gold Standard is given to projects that are consistent in almost all respects with international best practice and achieve the highest in operational performance and efficiency, while providing a high quality of service. The Silver Standard projects include most of the elements of international best practice and are likely to be cost effective on any corridor with sufficient demand to justify BRT investment.[19] Furthermore, the Colombian BRT systems have proven an interesting knowledge sharing platform for technical delegations of more than 20 countries in Latin America, Asia, Africa and Europe.[20]

[18] The Technical Committee of The BRT Standard comprises globally-renowned experts on BRT. The Technical Committee certifies corridors and recommends revisions to The BRT Standard as needed.
[19] The BRT Standard 2013, Institute for Transportation and Development Policy (ITDP), February 2013
[20] As stated in surveys the ICR team conducted with Local Implementing Agencies.

36. **Progress against output indicators:** Given that the Project funded a time slice of the GoC's contributions to the program and that projects are being developed in phases, construction works are still ongoing but most of the required infrastructure for the operation of the initial phases of the systems has been delivered. Most of the key infrastructure that is still to be completed consists of terminals/ bus garages that were developed under concession agreements with private entities, which did not receive financing from the Project (See Annex 2 for Project output indicators and Annex 3 for a detailed description of Project outputs).

Objective 2: Improve accessibility for the poor through feeder services and fare integration

37. The achievement of this objective is considered **satisfactory**. The BRT systems have given people in the lower income strata greater access to quality transportation systems.

38. **Progress against key performance indicators:** The majority of users in Barranquilla (more than 70 percent) and Pereira (more than 60 percent) are poor. The proportion of poor users is about a third in Bogota and Bucaramanga. The percentage of users in the lowest income strata (strata 1 and 2) compares well relatively to proxy baselines in the cities for which this information is available (see Annex 2).

39. **Other factors supporting the assigned rating:** As of September 2012, an average of 38 percent of system passengers in systems with integrated feeder services used these services.[21] Bogota had the highest proportion with 48 percent and Bucaramanga the lowest with 25 percent. The Megabus system seems to have had the greatest impact on the poor, achieving a reduction in travel time and cost of transport for people belonging to strata 1 and 2. Although Transmilenio achieved an improvement in travel times for the poor, generalized cost of transport increased slightly.

Objective 3: Build greater institutional capacity at the national level in order to formulate integrated urban transport policies and at the local level in order to improve urban transport planning and traffic management

40. The achievement of this objective is considered **moderately satisfactory**. The Project has contributed significantly to build greater institutional capacity at the national and local levels, but it has not been able to achieve all of its outcome and output targets.

41. **Progress against key performance indicators:** The Project financed the development of six BRT systems: five currently in operation (Barranquilla, Bucaramanga, Bogota-NQS, Pereira-Dos Quebradas, Medellin-Valle de Aburra) and one that is still under construction (Cartagena) and should enter into operation by 2014 (96 percent of trunk corridors contracted had been completed). Therefore, the Project is one system short of reaching the outcome target of having six systems in operation. Nonetheless, a sixth system in the city of Cali, financed by the IADB, but also part of the NUTP and thus receiving technical support from the PCU is also in operation. The other indicator selected to evaluate this objective (occupation per square meter), where available, shows that the more mature systems (Bogota, Pereira and Barranquilla) are operating in a satisfactory manner (see Annex 2).

42. **Other factors supporting the assigned rating:** It is important to consider that besides Bogota and Medellin, none of these cities had experience in the development and operation of a mass transit system or the transport planning capacity required to implement this type of projects. As a result of the support provided by the Project, now every city or metropolitan area now has an

[21] Medellin does not currently have a feeder service and the system in Cartagena has not started operations

Implementing Agency, with qualified personnel and adequate management systems. Furthermore, these entities have entered into agreements with local transit authorities for the restructuring of routes, setting of tariffs and operation of the BRT systems. Participating cities, such as Pereira and Cartagena, are now moving to set-up a city-wide integrated transport scheme with the BRT system as its backbone. Although a national mobility law has not been passed, the institutional capacity at the national level has also been improved as a result of the Project with the creation of a specialized Urban Mobility Unit at MOT (See Chapter 3.5.(b)).

43. **Progress against output indicators:** Also, the Project fell short of achieving its institutional strengthening outputs. MOT was unable to implement fully the Capacity Building Component due to operational issues that delayed contracting. Some of the envisioned outputs, including the establishment of a formal national framework to regulate mass transit operations were not achieved. The Bank mobilized other sources of funding for the provision of TA to address this situation.[22]

3.3 Efficiency

Ex-post Economic Evaluation

44. As of the end of 2012, the DNP has carried out ex-post economic evaluations for the sub-projects in Barranquilla, Bucaramanga, Bogota and Pereira. The evaluations were conducted by external consultants and are incorporated into the National System for Public Management and Results Evaluation (SYNERGIA). Ex-post evaluations for the systems in the cities of Cartagena and Medellin have not been carried out as the first one is still under construction and the second has only started operations in December 2011. All evaluations consist of a Cost-Benefit Analysis (CBA) based on the World Bank's methodology, ensuring that the results are consistent with the ex-ante analysis carried out as part of appraisal.[23] A summary of all of the available ex-post evaluations and a description of the methodology used is included in Annex 4.

45. The ex-post evaluation for the mass transit systems developed in the cities of Bogota, Bucaramanga and Pereira show that the BRT systems financed by the Project produced social benefits in excess of their costs. The evaluation for Barranquilla was broken down in two periods of analysis: one ex-post evaluation that only accounts for the cost and benefits in 2010 and 2011 and that not surprisingly results in a negative rate of return; and an updated evaluation of projected benefits and costs from 2012 to 2018 that shows a positive rate of return, well in excess of the discount rate. Given that the benefits of the project are expected to accrue over time, and not only over the construction period, the second evaluation is more relevant for the purpose of this analysis. All evaluations, except for Bucaramanga (due to a reported lack of sufficient information), took into account the losses resulting from construction delays from the calculated project benefits. An analysis of the projects' deviations from budget and time is included in the following section and is detailed in Annex 13.

Cost increases and construction delays

46. The initial scope of projects was adjusted to include additional interventions required to comply with revised operational requirements. These adjustments resulted in cost increases and

[22] See Annex 2 for Project output indicators and Annex 3 for a detailed description of Project outputs

[23] With the exception of the evaluation for Bogota, the evaluations are not limited to the traditional CBA methodology and incorporate the assessment of additional benefits, including increased urban land values and user safety. These benefits have not been considered for the purpose of this ICR so as to make the results consistent and comparable with previous evaluations. However, these results are reviewed and reported in the economic evaluation annex.

the extension of construction schedules. The majority of the total cost increase (23 percent) for all systems financed with the Project (except Bogota) came from expansions in infrastructure and in the geographical footprint of the project aimed at servicing a larger portion of demand. The cost of the projects in Barranquilla, Bucaramanga, Cartagena and Pereira increased for this reason.[24] The city where actual costs proved to be significantly higher than originally estimated was Medellin (47 percent of final cost was related to cover costs in excess of those estimated in the Project's original CONPES Document). On average, cost overruns accounted for 14 percent of final estimated cost. See Annex 13 for an explanation of scope, cost and schedule deviations.

47. However, irrespective of revisions to the projects' scope, the duration and size of some construction contracts were increased, leading to higher costs and longer than anticipated construction times. This is due to larger than expected interventions to restructure utility networks and greater quantities of works (Bucaramanga and Medellin), topographical and other design errors and delays in securing the Right of Way (ROW) (Cartagena) and land acquisition delays and additional works to address project interference with utility networks (Barranquilla). The MOT estimated that the value of contract additions was approximately 10 percent of the total contract value as of 2010. The delays are also directly associated with the institutional capacity in each city, as can be seen in the relatively low speed of construction (1 to 3 Km. per year on average) for Barranquilla, Bucaramanga, Cartagena and Medellin, when compared to Bogota (about 8 Km per year). This is due to the fact that as opposed to other participating cities, where the executing agency was created for the purpose of the Project, the executing agency in Bogota (Urban Development Institute or IDU) had extensive experience in the execution of works, being the public works agency of the city.[25]

Overall Cost-Efficiency of BRT Technology

48. BRT systems are considered efficient in terms of relative infrastructure costs and their capacity to move high volumes of passengers, which is comparable to the capacity other, more expensive technologies. The cost per kilometer of BRT systems is typically between USD 0.5 and 15 million. This compares well with USD 13 to 30 million for an at-grade Light Rail Transit (LRT) system; USD 40 to 200 million for an elevated system and USD 45 to 350 million for an underground metro system.[26] The average cost per kilometer of trunk corridor (excluding rolling stock) for the BRT systems financed by the Project is of approximately USD 6 million (excluding Transmilenio).[27] Transcaribe had the highest cost per kilometer of trunk corridor contracted (USD 8.1 million) and Megabus the lowest (USD 3 million). Although estimates of cost per kilometer may differ depending on the interventions that are included in the calculation, it can be concluded the BRT systems represent an economical option to serve the expected demand levels.

3.4 Justification of Overall Outcome Rating

49. The NUTP is regarded globally as a groundbreaking and highly successful national program and as a challenging and innovative project within the Bank. The Project was very ambitious, taking on the financing of mass transit systems and public transport reorganizations in

[24] The Project in Pereira-Dos Quebradas was expanded to include the construction of a trunk line in San Mateo Avenue and of a road interchange in Dos-Quebradas

[25] "Sistemas Integrados de Transporte Masivo en Colombia: Avances, Retos y Perspectivas en el Marco de la Política Nacional de Transporte Urbano", Contraloría General de la Republica, July 2010

[26] Bus Rapid Transit Planning Guide, Institute for Transportation and Development Policy (ITDP), June 2007

[27] Calculated based on information provided by the MOT *("Indicadores de Infraestructura a Diciembre de 2012"*) and using the average official exchange rate for the 2005-2012 period of 2,053 COP/USD.

multiple cities, when most Bank projects focus on only one. [28] This wide-ranging program was government-led, but the Bank played a key role supporting the Project's internal champions and contributing to the design and implementation, and ultimately, to the internalization of improved policies in the environmental, social and technical areas. The program created an urban transport culture in the country and has laid the groundwork for further interventions in other cities. There were many critical issues that could have derailed implementation but were successfully addressed, including political interference, the difficulty in building institutional capacity from the ground in participating cities, and the complications inherent in building large infrastructure works in urban settings.

50. BRT systems developed with Project support have contributed to improve the quality of life in Colombian cities. The Project's achievements have been recognized by the DNP's own evaluation of the program, the Bank's innovation award and independent evaluations carried out by specialized bodies. The approaches under this program are now considered international best practice and have been replicated by cities around the world.[29] See Annex 14 for a more detailed overview of the Project's achievements and recognition.

51. The proposed rating is **Satisfactory** in consideration of the following: (a) the Project is very relevant to the development of a highly urbanized country with exploding motorization rates and poorly regulated and low quality public transport services that are used by the majority of the population; (b) the Project's objectives defined as developing quality mass transit systems, increasing the access of the poor and enhancing institutional capacity for urban transport management at the local and national level have been either substantially achieved or are likely to be achieved; and (c) although the sub-projects have experienced cost increases and delays, most of these instances are the result of scope adjustments to meet operational and requirements and, despite time overruns, the BRT systems developed continue be cost-effective relative to other transit system technologies.

3.5 Overarching Themes, Other Outcomes and Impacts

(a) Poverty Impacts, Gender Aspects, and Social Development

52. **Increased accessibility for disabled populations:** As part of the implementation of the Project, the Bank supported the incorporation of accessibility features into the design of BRT systems with the objective of enabling the inclusion of disabled populations. Early in the implementation of the Project, the Bank hired a specialized consultant who visited participating cities and provided technical advice based on international best practices in the area of universal access. Later on, with resources from the governments of Finland and Norway, the Bank prepared a set of accessibility guidelines and presented the findings to implementing agencies as part of a workshop with representatives from implementing agencies.[30] Currently, pedestrian overpasses, stations and trunk buses are completely accessible for the disabled. Buses are required to dock at stations a distance not greater than 25cm (12 inches) and have onboard specially designated seats for the elderly and spaces for wheelchairs. These guidelines and best design practices have been used in BRT designs in other developing country cities, including Hanoi and Dar es Salaam.

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[28] The Project's performance indicators included a target of having at least six BRT systems operating successfully, while other multi-city Bank projects are designed so that an analog indicator is achieved with 50 percent or less of the cities successfully operating urban transport sub-projects.

[29] From Chaos to Order: Implementing High-Capacity Urban Transport Systems in Colombia, World Bank, 2010. Link to Report.

[30] Rickert Tom, Technical and Operational Challenges to inclusive Bus Rapid Transit: A guide for practitioners, World Bank, 2010. Link to document

53. **Road and industrial Safety:** The Bank provided technical support for the development of the Safe Mass Transit Program ("*Masivos Seguros*"), carried out by the Road Safety Promotion Fund ("*Fondo de Prevencion Vial*") in partnership with the MOT. The Fund performed a road safety audit of the systems' design with a view towards ensuring that the infrastructure built incorporated safety features. The NUTP's M&E system included a road safety indicator (number of accidents per million passengers in the system) that showed an improvement in this area in Bogota and Pereira, when compared with reference values for the without project situation.

54. **Gender Impact:** The Project's initial design did not incorporate gender-specific measures. However, the Project has had an impact in this area as BRT systems provide safer environments for women due to features such as proper lighting, security cameras, and restricted access to stations. Moreover, buses incorporate preferential seating for pregnant women and areas for baby strollers. Systems also employ women as drivers, workshop technicians, project administrators and executives in a sector that had been predominantly reserved for men.

(b) Institutional Change/Strengthening

55. **Institutionalization of a sustainable urban transport program:** The Project has contributed to the implementation of the NUTP to the point that the MOT has now expanded the program to smaller-size cities and set up a Unit with a mandate beyond the implementation of the Bank's Project. Since February 2012, the PCU is known as Sustainable Urban Mobility Unit (UMUS for its initials in Spanish) and has been charged with the implementation of both mass transit and SETPs in all participating cities across the country.

56. **Institutionalization of safeguard policies at the central and local government levels:** Through the Project, Implementing agencies developed an important degree of ownership over Bank policies in this area and internalized them into their own policy frameworks, now largely based on the Bank's methodology and procedures: Medellin instituted a new resettlement policy; Barranquilla started to account for social management costs into their urban development plan; and Cartagena created a new public space management office that borrowed heavily on the work that Transcaribe had done in this area following Bank guidelines. The MOT has adopted an environmental and social policy framework for application to all urban transport projects based largely on Bank's policies and methodologies, independent of their source of financing. The MOT intends to institutionalize this framework via a Decree.

(c) Other Unintended Outcomes and Impacts (positive or negative)

57. **Development of BRT expertise at the Bank and innovation:** Through the Project, Bank staff has acquired expertise in the development of BRT systems that has been used in other regions.[31] For instance, staff working in Project participated in the evaluation of a BRT system proposed for Vietnam. In April 2009, the Project received an internal award as part of the Bank's Innovation Fair. The team used the proceeds from the award to prepare and publish a book on the benefits of the NUTP: "Transport on a Human Scale".[32] The team also produced a video showing the results of the NUTP from the perspective of Project beneficiaries.[33]

58. **Change in the business model of urban transport companies:** The mass transit system operators are formal enterprises that pay taxes and that provide their employees with the benefits mandated by Law. This has been a transformational process that has changed the informality and poor working conditions that were the norm in the traditional bus services. The new framework is

[31] Annex 14 provides additional information on the transformative impact of the NUTP.
[32] Transport on a Human Scale, World Bank, 2009. Link to report
[33] World Bank and Colombia-National Urban Transport Program, May 2009: Link to video

not based on bus drivers' competing for customers, but rather on formal enterprises competing for route concessions. This change was first achieved with Transmilenio in Bogota and was later replicated in all of the cities where a mass transit system was developed with Project support. Colombian BRT operators have built a remarkable experience which has allowed them to win operating concessions in mass transit systems in Chile, Peru and Panama.

59. **South-south knowledge exchange:** The BRT systems developed with Project support have served as examples for other cities in developing countries that are implementing similar systems. Participating cities have received visits from delegations of other countries, including Brazil, Paraguay, South Africa, China, Vietnam, Tanzania, Peru and Mexico. Also, Colombia is becoming an exporter of consultants in the area of BRT development. These professionals are now working in the implementation of systems in Asia and elsewhere in Latin America. Knowledge exchange goes beyond BRT expertise, as the NUTP is regarded as international best practice in collaboration between central government and municipal authorities to address endemic urban transport issues in many countries. Since its inception, delegations from more than 20 countries have visited Colombia to learn about the program. Similarly, multi-city transport programs are being developed in other countries such as Mexico and Argentina with direct IBRD involvement and there has been a significant collaboration and sharing of knowledge between Colombia and other developing countries. There was also south-south exchange in the environmental and social management in the form of a tour of developing country officials that visited the projects to learn from the experience in this area.

60. **Positive urban development impacts:** The implementation of the systems has resulted in the development of a new model of urban development that gives priority to public transport and has also strengthened the use of non-motorized modes through integration. Emphasis has been placed on connecting bicycle paths, foot paths and pedestrian areas to the public transit system. The implementation of the NUTP has also resulted in improvements in public space in the cities were they have been implemented. The MOT estimates that at least 2.5 million square meters of new public space were generated. Finally, projects have had a side impact in the renewal of utility networks (construction of 1,340 Km of networks) that had to be intervened as part of construction works.[34]

61. **Environmental benefits:** Although environmental objectives were not included as part of the Project's Results Framework, the benefit of emission reductions was accounted for in the economic evaluation of projects. Nonetheless, it is worth noting that four BRT systems developed as part of the Project have been registered with the Clean Development Mechanism (CDM): Transmetro, Metroplus, Megabus and Transmilenio- Phases II-IV. The combined reduction in emissions that the first three projects are expected to achieve through 2019 is 1.5 million tons of CO_2, while Transmilenio's phases II-IV is expected to result in a reduction of approximately 4.0 million tons of CO_2 over the same period of time.[35] As explained in Annex 4, reductions in pollutant emissions from transport have also been linked to a decrease in deaths and diseases from respiratory illnesses. Finally, the financed sub-projects also incorporated the creating of green areas and public space surrounding the physical infrastructure. [36] The DNP found that the projects had resulted in improvements in the greening of transport corridors in the form of tree-planting (at least 100,180 trees planted according to MOT).

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops

[34] Integrated Mass Transit Systems Progress Report, Project Coordination Unit, Ministry of Transport,2010
[35] The value of Certificates of Emission Reductions (CER) has experienced a sharp reduction over the last year and CERs are currently trading at their lowest historical level (as of December 2012).
[36] Clean Development Mechanism Application Documents for relevant BRT projects

62. While this is not an Intensive Learning ICR and no specific beneficiary survey has been conducted for the purpose of the present evaluation, the team carried out an analysis of user perception based on the "*Cómo Vamos*" citizen Survey (See Annex 5 for a complete analysis of the survey results).[37] Perception surveys may not accurately reflect the operating performance of BRT systems because respondents' opinions are often shaped by single events or skewed by the specific situation at the time the questions are asked and are not a reflection of the general performance over a period of time. However, this survey offers interesting data for the Project because it is carried out in all participating cities and results are analyzed across cities and over time and presented every year. Relevant results for the Project are summarized below:

Box 1: Citizen Perception Surveys ("Cómo Vamos"): Summary of Findings

- The average percentage of people using mass transit systems has more than doubled since 2008, but the level of user satisfaction has declined as the novelty factor disappears and the BRT service is no longer comparatively evaluated against the service of conventional buses.
- Users' perception regarding the absolute and relative quality of the system is positive in Barranquilla and Medellin.
- Survey respondents in the Metropolitan Area of Bucaramanga are not yet completely satisfied with the service offered by the system.
- Survey respondents who indicated that *Megabus* was their main mode of transportation are generally satisfied with the system although the level of satisfaction decreased between 2011 and 2012.
- Satisfaction with the *Transmilenio* system has decreased continuously since 2008, while system usage has increased constantly over the same period of time.
- In Cartagena, the majority of survey respondents are dissatisfied with *Transcaribe* as an institution (operations have not yet started) given the delays in implementation.

4. Assessment of Risk to Development Outcome

Rating: **Moderate**

63. The project faces risks related to demand and financial sustainability and the need for supportive regulation. Nonetheless, given mitigation measures in place and improving situation, these risks are deemed moderate.

64. **Demand and financial sustainability risk:** With the exception of Transmilenio in Bogota, at the time of Project close, the mass transit systems developed with Project support had not been able to reach the demand levels initially forecasted, threatening long-term financial sustainability.[38] Trends in demand growth are positive for al cities; however, BRT systems in Bucaramanga, Barranquilla and Medellin-Valle de Aburra are currently mobilizing only 31 percent of the projected number of passengers per day on average. This is due to a combination of factors including: inability to eliminate parallel traditional bus routes that directly compete with the systems, high competition from informal transport modes, inaccuracy in demand forecasting models, increase in motorization (cars and motorcycles) and, in some instances, sub-optimal tariff policies. On the financial side, the Metroplus system (Medellin-Valle de Aburra MA) reported an overall deficit of approximately USD 5.6 million in its first year of operation (3.9 million in the first semester and 1.7 million in the second), although the monthly financial

[37] Red de Ciudades Como Vamos: Percepción Ciudadana sobre la Calidad de Vida en 10 Ciudades Colombianas. La Encuesta de Percepción de la Red Cómo Vamos 2012, Ipsos Napoleón Franco, Marzo de 2013.

[38] Based on latest demand numbers available and provided by the MOT. Transmilenio is currently mobilizing 117% of its projected demand, Megabus at 84%, Metrolinea and Transmetro close to 40% and Metroplus only 15%. The BRT system in Cali (not part of the Project).is also having lower demand than initially forecasted and is experiencing financial difficulties.

shortfall has been declining as demand increases. As of October of 2012, the Metrolinea system (Bucaramanga MA) was reporting monthly operational deficits of approximately USD 0.3 million.[39]

65. There have been recent improvements in system operations and demand levels, and the Government is committed to managing this risk appropriately. Metrolinea has made important operational improvements that have allowed it to gain demand from traditional bus operators (more than two-fold increase in the number of passengers per day in the last year). Metroplus has also increased demand over time but continues to be in deficit. In the case of Metroplus, it is important to consider that the whole system is expected to mobilize a greater number of users, given its integration with the metro rail, cable cars and future tramway (approximately 52 percent of demand). It is expected that this system will also evolve towards complete integration with traditional bus operators. Also, the GoC is currently working on devising measures to reestablish the financial equilibrium of these systems (see Chapter 2.5).

66. **Political / regulatory risk:** The project is also exposed to the risk of declining political support from local governments and potential unsupportive regulations. This is a critical juncture, when most systems are consolidating and require from strong institutional support. Political risk is deemed moderate as projects have reached a level of implementation that makes their reversal politically costly. In regards to regulatory risk, the GoC recognizes the importance of establishing a national framework for urban transport that sets the stage for supportive transport service regulation and transit management policies at the local level and shields projects from political interference at the local level (see Chapter 2.5).

5. Assessment of Bank and Borrower Performance

5.1 Bank Performance

(a) Bank Performance in Ensuring Quality at Entry
Rating: **Satisfactory**

67. The quality of entry is deemed satisfactory because the Project's concept and design addressed long-standing structural issues that stood in the way of high-quality and efficient mass transit systems in Colombian cities. The Project's design also built upon the successful experience of Transmilenio and background studies that were also supported by the Bank.

68. Project implementation arrangements proved to be effective and allowed to deliver results in a complex environment. The implementation arrangements incorporated decentralized investment management and planning (Implementing agencies) and the mobilization of local funds, combined with strong technical and financial oversight at the central government level (PCU). This design was successful at ensuring city ownership while reducing the risks inherent to the relatively lower institutional capacity at the local level.

69. The Project was successful in attracting private investments, while taking the steps necessary to promote affordability. In the chosen PPP model, the public sector was responsible for infrastructure investments (trunk and pre-trunk lanes and stations), while the private sector was responsible for investing in: trunk and feeder bus fleets, maintenance facilities and operation of fare-collection systems. The infrastructure investment is not recovered by bus fares, which are

[39] Amounts in USD calculated at the Exchange rate prevailing as of December 31 of 2012 of approximately 1,800 COP/USD

intended to cover Operation and Maintenance (O&M) expenses only. [40] The model also encouraged "competition for the market", rather than "in the market" through long-term concessions, addressing one of the fundamental weaknesses of urban transport in Colombia.

70. The mass urban transit systems developed under the Project are based on BRT technology, which is considered a cost-effective solution that provides a service of similar quality to that of other transportation systems, such as light rail or metro, at a lower cost (See efficiency section). The Specific Investment Loan (SIL) instrument chosen provided the flexibility needed to implement multiple sub-projects and to also fund and accompany the technical assistance activities required to ensure a successful implementation. Despite resulting in lower financing costs, the DPL and APL instruments were analyzed but discarded in light of the reduced flexibility of having to establish triggers upfront and the benefits of active Bank supervision of investments. During appraisal of the Original Loan, it was already envisaged that the GoC would likely request a follow-up operation to continue supporting the NUTP.

71. In retrospect, the Project's design at appraisal could have placed greater emphasis on the operational and regulatory aspects associated with the operation of the mass transit systems and devoted more resources to the TA component. In addition, the Project could have built in guidelines or policy mandates upfront (in the form of a legal framework or as part of the co-financing agreements with participating cities) regulating issues related to sustainability. For example, guidelines could have regulated a) the use of tariff revenues to finance exclusively O&M expenses and not infrastructure, and b) the coordination between Implementing agencies and other local entities to ensure supportive regulation and supervision of competing services.

(b) Quality of Supervision
Rating: **Moderately Satisfactory**

72. The Bank provided constant support to Implementing agencies in the development of the required capacity in the safeguards and fiduciary areas. The Bank team carried out multiple workshops and constantly visited implementing agencies to ensure adequate implementation. It also mobilized technical experts in different areas and leveraged funding from other sources (trust funds and grants) to support the implementation of the Project. The Bank team carried out at least two missions per year, in which it directly met with officials at implementing agencies, providing technical advice and opening avenues for cross-fertilization and knowledge sharing among these entities. In multiple instances, the Bank deployed specialists (particularly in the procurement and social areas) to various cities.

73. As the sub-projects moved from construction to operation, it became evident that nascent institutions with limited transport operations experience required from sustained and on-the ground technical support. The Bank carried out operations planning workshops in Bogota and Cali, which were attended by representatives from all Participating Cities and sent a specialist to Bucaramanga to help Metrolinea deal with operational issues. Also, as part of supervision missions the Bank team stressed the importance of properly structuring the concessions for associated infrastructure and advocated for a greater emphasis on the planning of operations. However, Bank influence in these areas was more limited given that they were outside the scope of the financing, which mainly focused infrastructure development. Furthermore, the fact that the national framework gave full responsibility over operational aspects to local implementing agencies and lack of resources prevented the Bank from having a larger role in this area.

[40] The public sector subsidized the construction of infrastructure (through the municipal gasoline surtax and central government contributions) to ensure affordable rates.

74. Finally, although the Bank developed a detailed M&E plan at appraisal and produced a detailed estimation of its costs, it did not follow up closely on its execution. The Bank could have carried out a more proactive evaluation of the M&E framework's implementation including the degree to which it had been internalized by MOT and the capacity of implementing agencies to comply with the established reporting requirements. Lastly, the Bank could have adjusted the Project's key performance indicators in accordance with progress in the implementation of the M&E framework.

(c) Justification of Rating for Overall Bank Performance
Rating: **Moderately Satisfactory**

75. Rating is considered **Moderately Satisfactory** due to the Bank's satisfactory performance in ensuring an adequate design at entry and high quality of supervision particularly in the fiduciary and safeguards areas. This Project required a substantial supervision effort, requiring the Bank to provide training, supervision and technical assistance services to five local government agencies that had to create an administrative apparatus from scratch and had no experience in the use of Bank policies and procedures. Nonetheless, this positive performance is counterbalanced by minor shortcomings related to a sub-optimal follow-up on implementation of the M&E framework and more proactive intervention in areas that, despite being outside of the scope of the Project, have had an impact on operational performance.

5.2 Borrower Performance

(a) Government Performance
Rating: **Satisfactory**

76. The performance of the MOT has been satisfactory in consideration of the high level of political support given to the Project, which built upon a successful scheme established by the national government and implemented in partnership with local governments: the NUTP. The other members of the Project's Technical Committee performed in a satisfactory manner: The MHCP has made the funding transfers to municipalities according to the pre-set annual schedule; while the DNP has been effective in developing the original and revised preparatory studies and policy guidelines for all sub-projects and in carrying out the ex-post evaluation of investments. The MHCP, MOT and DNP are now engaged in an effort to consolidate the systems and ensure their financial sustainability.

(b) Implementing Agency or Agencies Performance
Rating: **Moderately Satisfactory**

77. The performance of the PCU was very satisfactory for the most part, but affected by the high personnel turn-over that occurred after 2010 and that resulted in a progressive weakening of the Unit's technical assistance capacity. Although the MOT was highly committed to the execution of the project, operational shortcomings in the procurement function prevented the execution of the technical assistance component, which in turn constrained the ability of the PCU to operate effectively. The PCU has evolved towards a supervisory function and now has a more limited capacity to provide the close technical support required by the Project.[41]

78. Despite initial delays associated with the lack of experience, the newly-created implementing agencies performed well. This is noteworthy given an initial context of limited participation and ownership by local government authorities. However, there were minor issues

[41] The overall project management performance rating was downgraded from Satisfactory to Moderately Satisfactory in 2011 to account for this situation.

of non-performance procurement and financial management (as indicated in the Implementation Performance Section) and that resulted in a moderately satisfactory evaluation of these areas during supervision.[42] In addition, construction contracts were awarded based on preliminary designs that had to be revised as the operational requirements of the projects became more evident and necessary additional works were identified, particularly in relation to utility networks.

79. Finally, although the PCU devised a robust M&E framework for the NUTP, the indicators system was never internalized and its utilization has not been consistent. Implementing agencies have had difficulty in measuring and furnishing the required information to the PCU, which also lacks the capacity to support the measurement of indicators at the local level. Shortcomings in the M&E area included: (i) lack of institutional capacity to measure and monitor the indicators that make up the M&E framework; (ii) insufficient knowledge of the methodology for the calculation of the indicators; (iii) lack of clarity in data collection responsibilities within implementing agencies and across relevant entities in participating cities.[43] Also, the MOT did not appropriate the M&E tool, which was developed by an external consultant, and did not act timely to promote utilization.

(c) Justification of Rating for Overall Borrower Performance
Rating: **Moderately Satisfactory**

80. This rating reflects moderate shortcomings in the performance of the PCU and implementing agencies and minor shortcomings in Government performance. The performance of the PCU was strong in the initial years, but declined towards the end of the implementation period. On the other hand, implementing agencies had project management and fiduciary issues at the beginning that were corrected over time as they evolved into more structured entities. The implementation of the M&E framework has not been successful, affecting the overall borrower performance rating.

6. Lessons Learned

Mass Transit Program Design

81. **Coordination between implementing agencies and other entities in charge of regulating traffic and transport should be a cornerstone of any program in this area:** The reorganization of bus routes and regulation of transport operators and control of informality fall under agencies such as metropolitan authorities (i.e., Barranquilla, Pereira, Medellin and Bucaramanga) or traffic management agencies (i.e., Cartagena and Bogota's *Secretaria de Movilidad*). These entities need to be engaged strongly since day one to ensure they adopt the complementary measures required to enhance the operational performance of the entire urban transport system. The lesson learnt is that this type of national mass transit program needs to include the strengthening of these agencies and also to work early on the approval and implementation of supportive regulations that mandate coordination and effective regulation of traditional bus operators, control of informality, and elimination of parallel routes.

[42] Performance ratings for the procurement and financial management functions were downgraded from Satisfactory to Moderately Satisfactory in November of 2009 and December of 2007, respectively. The Financial Management Rating was further downgraded to Moderately Unsatisfactory in July 2010 and upgraded back to Moderately Satisfactory in September 2011.

[43] "Revisión y Recomendaciones al Sistema de Información, Seguimiento y Evaluación del Transporte Urbano-SISETU" Johnny López Martin, Departamento de Ingeniera Civil y Ambiental, Universidad de Los Andes, 2012.

82. **The implementation of BRT systems goes beyond building the infrastructure and a greater upfront effort needs to be placed on operational aspects:** There is the sense among Project stakeholders that the focus on bus operations needs to be strengthened as these projects are not infrastructure schemes, but rather transport schemes, requiring deep planning of operational, transit management and regulatory aspects that transcend beyond the realm of the Implementing Agency in charge of executing the works, including: route reorganization, development of bus scrapping schemes and regulation of informal transport services. Although these aspects were considered in the present Project, the lesson learned is the need to carry out detailed operational and regulatory assessments upfront, on a parallel front to the execution of the works in order to lay the groundwork for the start of operations. This lesson is already being applied to the SETP projects that the Bank is supporting under the new operation.

83. **Synergies and knowledge transfer are fostered by the simultaneous implementation of projects in multiple cities:** Important synergies have been created as a result of the simultaneous implementation of projects in cities participating in the NUTP. This has resulted in a continuous flow of know-how and best practices among participating cities, the PCU and the Bank, in areas such as civil works management, procurement and fiduciary processes, safeguards management, operational design, strategies for initiation of operation, among others. The Project has also benefited from these informal knowledge sharing arrangements to strengthen the implementation and institutional capacity of the new medium-sized cities which will begin implementation under the SETP operation.

84. **There is a role for the Central Government in the implementation of urban transport services reforms at the local level:** Given that small and medium-size cities lack both financial and technical resources, the participation of the GoC becomes crucial in promoting reforms at the municipal level. This Project showed that this role needs to take the form of constant support from the national government, particularly in areas such as the regulation of transport services and negotiation of concession agreements. The GoC has learned these lessons and is moving towards the formulation of a national urban mobility law.

Design of Bank Instruments

85. **Although the SIL instrument offered advantages over other instruments, Bank support to well-structured government programs could take the form of a programmatic results-based approach:** The SIL allowed for close supervision of investments and for enhanced technical support, but it also created additional costs and inflexibilities resulting from the definition of eligible expenditures. In this sense, the Bank could not finance costs associated with land purchases (this category was allowed in the Second Additional Loan) and could not cover the cost of utility relocations. To reduce this inflexibility and for high-quality programs, the Bank could consider in similar future operations an output-based approach whereby financing is provided to the national government to make its contributions to the program, without a connection to specific investments, but conditional on the achievement of agreed outcomes, in a similar fashion to that of the Program for Results (P4R) instrument, which did not exist at the time of Project Appraisal.

86. **The technical assistance component for this type of projects should have an important weight and alternative ways of deploying this component should be considered:** The client highly valued the Bank's technical support in areas deemed critical to ensure the sustainability of mass transit projects. However, resources were not sufficient to allow for closer support in key areas such as the negotiation of concession agreements for infrastructure and operations. The lesson learned for future operations is that a large TA component and more continuous and close technical support to the implementing agencies are required. This lesson

was already taken into account in the follow-up operation approved in 2011, which includes a relatively larger TA component. The Bank could also look at other potential ways to deliver TA, including contracting of activities directly by the Bank, to ensure that projects receive critical support on time when faced with structural limitations in the public procurement system.

Project Design and Implementation

87. **Capacity building should go beyond enhancing the capacity of the implementation unit and also focus on strengthening its mandate and facilitating its work within the Ministry:** The performance of the PCU was affected by factors outside its direct control and related to the institutional environment in which it operated. Future projects should build the capacity of the dependencies on which the performance of the PCU depends (i.e., procurement and financial management) and seek a long-term commitment to maintain its link to the highest levels of the institution or alternatively, strengthen the department to which the unit reports.

88. **M&E Framework design needs to account for the capacity of responsible agencies and mandate its internalization by the Borrower:** Despite the technical merit and design quality of the set of 35 indicators under SISETU, in practice, implementing agencies did not have the capacity to calculate them and the level of reporting was low. When the resolution mandating reporting of these indicators came out in 2009, and due to legal requirements, the focus of the PCU turned to ensuring compliance as opposed to providing technical assistance in the measurement of indicators with limited results. Currently, the MOT is working on passing a new resolution rationalizing the M&E requirements. A lesson learned for future projects is that it may be worth focusing on a set of SMART (simple, measurable, achievable, realistic, and time-bound) indicators that can be effectively managed by implementing agencies. In addition, the M&E framework implementation needs to be the direct responsibility of the PCU and not a task delegated to an external consultant and that is never internalized and implemented.

89. **Early consolidation of the environmental and social management capacity is important to ensure timely project implementation:** The local Implementing Entities include environmental and social management teams. Experience has shown that the earlier these teams are onboard and being able to participate in project design and planning, the higher the rate of success for the particular project activity. On the other hand, examples have shown that where environmental and social teams were not brought onboard early on, unmanaged social issues caused serious implementation delays, and adverse impact on the affected populations. Furthermore, environmental and social management teams need to place especial consideration on tackling problems and designing communication and implementation strategies for vulnerable groups.

90. **Urban transport infrastructure projects need to account for the risk of cost and time overruns arising from the need to relocate / replace public utility equipment and facilities that are affected as part of construction works:** One of the main causes of delays and cost overruns in the Project was associated with the additional works required to deal with affected utility networks, for which accurate plots did not exist in some cases, and that had to be funded by local governments (not eligible for Bank financing). Future projects should take this risk into account and establish clear working arrangements with public utilities and clearly delineate responsibilities. Budget contingencies should account for the potential additional cost. [44]

[44] Several authors have devoted entire research projects to analyze the reasons that explain why the majority of transport infrastructure projects tend to experience cost overruns and completion delays. For

Private sector participation

91. **Although private sector participation through commercial real estate developments can be positive and mobilize additional resources, the structuring of PPPs in this area needs to be carefully planned and monitored to avoid pitfalls:** Three of the sub-projects (Metrolinea, Transmetro and Transcaribe) executed concession agreements with private entities for the development of bus terminals associated with real estate developments. The implementing agencies for these systems assigned a portion of the tariff to remunerate the concessionaires over the concession period. Not only it can be argued that these projects were over-dimensioned, but also they pose a financial sustainability threat on the system, reducing the resources available for the operation and maintenance of the system. It has also been argued that charging public transport users for the stations they use is regressive. It is important to strengthen the capacity of implementing agencies to adequately evaluate these projects and to ensure that Project design includes mandatory regulations issued by the National Government that provide guidance on the structuring and negotiation of these concession agreements.

92. **The contracting of operations should contemplate the conflicts of interest that could potentially arise from the fact that the selected companies/ consortia could be operators of both the mass transit system and the traditional bus system at the same time:** The NUTP was designed so that existing bus companies would be given preference in the selection of mass transit system operators. This was done to ensure political support for the project and build ownership amongst operators. In some of the participating cities (i.e., Barranquilla and Pereira), conventional bus companies that now make part of BRT operations consortia continue to operate their conventional services on parallel to BRT corridors. This particularity does not allow for the necessary incentives to eliminate the competition between BRT routes and conventional routes to exist, since conventional-BRT operators can make a profit no matter what system keeps the passengers. The lesson here is to include regulations aimed at managing this potential conflict of interest and prevent the negative impact that this situation can have on the operational performance of the mass transit system.

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners

(a) Borrower/implementing agencies

93. **The Project has created a mass transit culture in the Country:** "The greatest learning which can be attributed to the implementation of the Colombia NUTP is a change in the beliefs, traditions and customs in the way in which citizens commute, as well as the urban, social and environmental transformation triggered by the BRT projects. This required a proactive approach to communications strategies before, during and after the phases of construction and implementation of BRT projects."

94. **Bank involvement has been fundamental for the achievement of the Project's objectives:** "The funding and constant monitoring of the Bank made it possible to achieve the main objectives of the project: construction of transport infrastructure in the participating cities, strengthening of institutional capacity in the transport sector and improving access for people with low income to public transport systems. Bank involvement also allowed for the transfer of knowledge at the national and international level, the execution of communication programs to support infrastructure projects, the generation of guidelines for implementation, the creation of a new approach for national and local authorities to engage the communities and the economic and

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example, see Bent Flyvberg's Megaprojects at Risk (2003), and Harry Dimitriou's Mega Projects and Mega Risks (2004).

social sectors in Participating Cities. What was done is equivalent to a true revolution of public transport in Colombia with a single goal: to improve the quality of life of citizens".

95. **The Project has contributed to other higher-level objectives:** "The contribution of the Colombia Mass Transit BRT projects to the economic development of the country is not limited to the economic development of the urban areas they are located in. The BRT projects are a way in which the Colombian Government, regions and private sector show they are capable of setting ambitious goals and achieving them. These goals have been achieved in part since entities ranging from the National Government to the Local BRT agencies have taken part in the implementation of the projects, anticipating the magnitude and complexity associated to them."

(b) Cofinanciers

Not Applicable.

(c) Other partners and stakeholders

Not Applicable

Annex 1. Project Costs and Financing

The Project costs and financing increased substantially from the time of appraisal as the geographical scope of the Project was widened to include more cities and the physical scale of the sub-projects was increased.

a. Project Cost by Component (in USD Million equivalent)

Components	Appraisal Estimate Original Loan (1)	Appraisal Estimate First Additional Loan (2)	Actual/Latest Estimate (3)	Actual as a Percentage of Updated Estimate	Actual as a Percentage of Original Estimate
1. Capacity Building	**2.3**	**2.3**	**4.8**	**208%**	**208%**
2.BRTs Development	**676.5**	**1,167.2**	**1,931.3**	**165%**	**285%**
Bogota NQS	400.0	637.3	796.4	125%	199%
Other Participating Cities	276.5	529.9	1,134.8	214%	410%
Total Project Cost	**678.8**	**1,169.5**	**1,936.1**	**166%**	**285%**
Front-end fee PPF	-	-	-		
Front-end fee IBRD (4)	2.5	4.6	4.6	100%	184%
Total Financing Required	**681.3**	**1,174.1**	**1,940.7**	**165%**	**285%**

(1)Based on estimates contained in the Original Loan PAD: Annex 1 (Page 22) and Annex 5 (page 41)
(2) Based on updated estimated contained in PAD for First Additional Loan (Page 10)
(3) Based on latest project budget (as of December 31, 2012), as provided by MOT in the latest financial monitoring report, and calculated using average exchange rate for the Project period of 2,059.4 COP/USD.
(4) Front-end fee calculated based on the percentage fees specified for each loan in the operations portal: Original Loan (1%), First Additional Loan (1%), Second Additional Loan (0%). These fees are not included in the Project budget (paid from own resources).

b.Financing (in USD Million equivalent)

Source of Financing	Appraisal Estimate Original Loan (1)	Actual / Latest Estimate	Actual / Latest as a Percentage of Appraisal Estimate (Original Loan)
IBRD	250.0	757.0	303%
Borrower (GoC)	136.0	554.7	408%
Municipalities	295.3	629.0	213%
Total Counterpart Funds Borrower+Municipalities	431.3	1,183.7	274%
TOTAL	**681.3**	**1,940.7**	**285%**

(1) Based on estimates contained in the Original Loan PAD (Page 22)
Front-end fees added to GoC's share of costs.

Annex 2. Results Framework Analysis

Project Outcome Indicators (Key Performance Indicators)

The indicators noted with a star (*) are the Key Performance Indicators defined at appraisal. Some of the BRT systems have not calculated / reported these indicators through SISETU or other means. The Bank made direct requests to implementing agencies in an effort to collect sufficient data to evaluate the achievement of the PDOs. Other indicators (additional to the ones defined at appraisal) have been added to the tables below in order measure progress in the achievement of the PDOs. The baseline of Key Performance Indicators was developed in 2007 by Steer Davies Gleave, at the request of MOT, and it is not available for all indicators and systems.

Progress in outcome indicators can be directly traced back to the output indicators for the Project, mainly related to the delivery of soft (executed operations and fare-collection contracts) and hard infrastructure works (stations, kilometers of trunk and pre-trunk lines, terminals and garages) required to launch and sustain the operation of BRT systems. Finally, the Project provided the inputs in the form of the financing of civil works and technical assistance activities.

Indicator	Sub-project	Baseline			Achieved Value			Comments on Achieved Value / Proxy Indicator
		Value	Year	Source	Value	Year	Source	
1. Improved Mobility and Quality of public transport projects in strategic transit corridors								
Generalized Transport Cost (2003 USD) * [Target: Lower than baseline]	Bogotá TRASMILENIO	0.99	2003	SDG (2007)	1.70	2010	SISETU	Average travel times for lower strata have decreased; transfer times, waiting times at stations and fare increases have impacted GTC
	Barranquilla TRANSMETRO	1.09	2003		N.A			
	Bucaramanga METROLINEA	N.A	2003		1.53	2010	SISETU	
	Cartagena TRANSCARIBE	1.04	2003		N.A			

Indicator	Sub-project	Baseline			Achieved Value			Comments on Achieved Value / Proxy Indicator
		Value	Year	Source	Value	Year	Source	
	Medellín-Valle de Aburra METROPLUS	0.91	2003		N.A			
	Pereira – Dos Quebradas MEGABUS	0.83	2003		0.61	2010	SISETU	Average travel times for lower strata have decreased, GTC has decreased
Percentage of people rating the system as better than the previous system (%)* [Target:90%]	Bogotá TRASMILENIO	-	-	-	73.8	2010	SISETU	
	Barranquilla TRANSMETRO	-	-	-	76	2012	Como Vamos	78 % of "Como Vamos" survey rated the systems above traditional buses in 2011.
	Bucaramanga METROLINEA	-	-	-	86	2012	Implementing Agency	"Como Vamos" survey: 23% in 2012, 39% in 2011, 19% in 2010.
	Cartagena TRANSCARIBE	-	-	-	N.A			
	Medellin-Valle de Aburra METROPLUS	-	-	-	N.A			
	Pereira – Dos Quebradas MEGABUS	-	-	-	82.3	2010	SISETU	-78.14% in latest user survey conducted by Megabus (2013)
2. **Improved accessibility of low income populations**								
Percentage of system users that belong the poorest segments of the population: Income strata 1 and 2 (%)*	Bogotá TRASMILENIO	3.34%	2007	SDG (2007)	39%	2009	SYNERGIA	Corresponds to the percentage of system users in this income group as per the Ex-post Economic Evaluation
	Barranquilla TRANSMETRO	22.7%	2007		71%	2012	SYNERGIA	Corresponds to the percentage of system users in this income group as per the Ex-post Economic Evaluation

Indicator	Sub-project	Baseline			Achieved Value			Comments on Achieved Value / Proxy Indicator
		Value	Year	Source	Value	Year	Source	
Baseline value correspond to percentage of public transport users that belong to these strata (Included for comparison purposes) [Target: compare urban transport as a whole with system]	Bucaramanga METROLINEA	6.87% (Buc. only)	2007		31%	2012	SYNERGIA	The user survey carried out as part of the Ex-post economic evaluation reported that the percentage of low income users across trunk, pre-trunk and feeder services averaged approximately 31%
	Cartagena TRANSCARIBE	40.5%	2007		N.A	-	-	
	Medellin-Valle de Aburra METROPLUS	32.0%	2007		N.A	-	-	
	Pereira – Dos Quebradas MEGABUS	24.6%	2007		61%	2011	SYNERGIA	Ex-post Economic Evaluation
Generalized Travel Cost for Lowest Income Strata (1 and 2) (2003 USD) [Target: lower than baseline]	Bogotá TRASMILENIO	1.24	2003	SDG (2007)	1.26	2010	SISETU	Not a significant increase
	Barranquilla TRANSMETRO	N.A.	-		N.A.	N.A	N.A.	
	Bucaramanga METROLINEA	N.A	-		1.81	2010	SISETU	
	Cartagena TRANSCARIBE	1.02	2003		N.A.	N.A	N.A.	
	Medellín-Valle de Aburra METROPLUS	1.41	2003		N.A.	N.A	N.A.	

Indicator	Sub-project	Baseline			Achieved Value			Comments on Achieved Value / Proxy Indicator
		Value	Year	Source	Value	Year	Source	
	Pereira – Dos Quebradas MEGABUS	1.00	2003		0.57	2010	SISETU	Important decrease
Average travel time for Lowest Income Strata (1 and 2) (Minutes)	Bogotá TRASMILENIO	65.02	2002	SDG (2007)	61.6	2010	SISETU	Decrease reflects reduced travel times especially for longer journeys
	Barranquilla TRANSMETRO	N.A.	-		N.A	-	-	
	Bucaramanga METROLINEA	N.A	-		N.A	-	-	
	Cartagena TRANSCARIBE	31.5	2002		N.A	-	-	
	Medellin-Valle de Aburra METROPLUS	92.63	2003		N.A	-	-	
	Pereira – Dos Quebradas MEGABUS	48.87	2001		45.65	2010	SISETU	Decrease is consistent with reduction in GTC
3. Enhanced Institutional Capacity for Urban Transport Policy								
At the local level, system occupation per square meter below a given threshold while maintaining no subsidies (Passenger / m^2)* [Target: <7]	Bogotá TRASMILENIO	x<7	-	-	6.91	2010	SISETU	System is operating according to target value.
	Barranquilla TRANSMETRO		-	-	4.65	2010	SISETU	System is operating according to target value.
	Bucaramanga METROLINEA		-	-	N.A	-	-	Not reported through SISETU and direct request
	Cartagena TRANSCARIBE		-	-	N.A	-	-	N.A.
	Medellin-Valle de Aburra		-	-	N.A	-	-	Not reported through SISETU

Indicator	Sub-project	Baseline			Achieved Value			Comments on Achieved Value / Proxy Indicator
		Value	Year	Source	Value	Year	Source	
	METROPLUS							and direct request
	Pereira – Dos Quebradas MEGABUS		-	-	4.36	2010	SISETU	System is operating according to target value. Reported occupation of 2.2 in 2011.
At the national level, at least six BRT systems operating successfully with systematic monitoring of performance and impact, according to the National Urban Transport Policy (number)* [Target: Original target was to have three (3) systems in	Bogotá-NQS TRASMILENIO	-	-	-	1		MOT	-The NQS corridor has been operating fully since 2006: -Northern tranche completed on July 1, 2005 -Southern tranche completed on April 15, 2006
	Barranquilla TRANSMETRO	-	-	-	1	2010	MOT	-Early Operations Date: April 7, 2010 -Commercial Operations Date: July 10, 2010
	Bucaramanga METROLINEA	-	-	-	1	2010	MOT	-Early Operations Date: December 22, 2009 -Commercial Operations Date: February 28, 2010
	Cartagena TRANSCARIBE	-	-	-	-	-	Implementing Agency	-The start of commercial operations is expected for January 2014
	Medellín-Valle de Aburra METROPLUS	-	-	-	1	2011	MOT	-Commercial Operations Date: December 22, 2011

Indicator	Sub-project	Baseline			Achieved Value			Comments on Achieved Value / Proxy Indicator
		Value	Year	Source	Value	Year	Source	
operation. This target was later increased to six (6) systems]	Pereira – Dos Quebradas MEGABUS	-	-	-	1	2008	MOT	-Early Operations Date: August 21, 2006 -Commercial Operations Date: August 23, 2008
	TOTAL				**5**			Six systems are in operation including the MIO system in Cali (financed by the IADB)
Passenger per Kilometer Index (total number of paid passengers divided by the number of Kilometers served) [Target: 4.5<Pax./Km< 9.0]	Bogotá TRASMILENIO	4.5<x<9.0	2004	PAD Original Loan	5.3	Q3 2012 average	MOT	In target range
	Barranquilla TRANSMETRO				7.3	Q3 2012 average		In target range
	Bucaramanga METROLINEA				3.8	Q2 2012 average		Out of target range
	Cartagena TRANSCARIBE				N.A	N.A		N.A.
	Medellin-Valle de Aburra METROPLUS				10.3	Q3 2012 average		-Last IPK registered was 6.8 for the month of December 2012 -Average for 2012 was 9.0
	Pereira – Dos Quebradas MEGABUS				9.8	Q3 2012 average		Out of target range

Project Output Indicators

In order to implement BRT systems aimed at improving mobility conditions and improving access by the poor, the Project financed the construction of segregated busways (trunk corridors), pre-trunk and feeder routes, stations, terminals and garages and associated infrastructure. In addition, the Project also supported technical assistance activities that enabled the preparation and execution of construction, operations and fare collection contracts required for the implementation of these mass transit systems based on a PPP scheme. Overall, output targets have been substantially achieved (up to a level that allows for the operation of the systems), with the exception of the construction of terminals / garages developed through concessions and not financed with project proceeds.

Indicator	Sub-project	Target			Actual			Comments on Achieved Value / Proxy Indicator
		Value	Year	Source	Value	Year	Source	
Physical Infrastructure								
Segregated trunk-lines constructed (kilometers)* [Target:88.3]	Bogotá-NQS TRASMILENIO	20.00	2009	**Original** 2nd Add. Loan PAD **Revised** PAD National Urban Transit Program (2011) / MOT	20.00	2006	IDU	Target 100% achieved
	Barranquilla TRANSMETRO	Original: 15.60 Revised: 13.40	2009		13.40	2012	MOT	Target revised down from to 13.40 Km and 100% achieved.
	Bucaramanga METROLINEA	8.90	2009		8.80	2012	MOT	8.80 Km contracted and 100% completed (99% of target achieved)
	Cartagena TRANSCARIBE	Original: 15.10 Revised: 10.3	2009		11.32	2012	MOT	Target revised to 10.3 Km. 11.78 Km contracted and 96.1% completed (110% of target achieved)
	Medellín-Valle de Aburra METROPLUS	12.50	2009		12.50	2012	MOT	Target 100% achieved
	Pereira – Dos Quebradas MEGABUS	16.15	2009		15.46	2012	MOT	15.54 Km contracted and 99.5% completed (96% of target achieved)
	TOTAL	**Original: 88.3** **Revised: 81.3**			**81.5**			**-92% achieved with respect to original target** **-99.3% achieved with respect to revised target** **-100%achieved with respect to kilometers contracted**
Pre-trunk and feeder lines	Bogotá-NQS TRASMILENIO	0	2009	**Original** 2nd Add.	0	2006	IDU	Target achieved

Indicator	Sub-project	Target			Actual			Comments on Achieved Value / Proxy Indicator
		Value	Year	Source	Value	Year	Source	
constructed (Kilometers)* [Target:255.6]	Barranquilla TRANSMETRO	61.95	2009	Loan PAD **Revised** PAD National Urban Transit Program (2011) / MOT	50.21	2012	MOT	59.22 Km contracted and 84.8% completed (81.0% of target achieved)
	Bucaramanga METROLINEA	Original: 105.30 Revised: 14.1	2009		9.5	2012	MOT	Target revised to 94.2 Km. (14.1Km. of pre-trunk and 80.1 Km of feeder roads) of which 8.9 Km. of pre-trunk corridors have been completed (9% overall completion and 67% of pre-trunk completion)
	Cartagena TRANSCARIBE	Original: 67.90 Revised: 25.9	2009		25.9	2012		Target revised to 25.9 Km of pre-trunk corridors (target 100% achieved)
	Medellín-Valle de Aburra METROPLUS	18.50	2009		5.9	2012	Implementing Agency	5.9 Km contracted and completed (Target 32% achieved)
	Pereira – Dos Quebradas MEGABUS	Original: 2.00 Revised: 4.00	2009		4.0	2012	Implementing Agency	Target revised to 4.0 Km (100% completed relative to revised target)
	TOTAL	**Original 255.6** **Revised 124.4**			**95.5**			**-37% achieved relative to original target** **-77% achieved relative to revised target** **-84% achieved relative to kilometers contracted**
Terminals /	Bogotá-NQS	1	2009	**Original** 2nd Add.	1	2011	Transmilenio	Target achieved

Indicator	Sub-project	Target			Actual			Comments on Achieved Value / Proxy Indicator
		Value	Year	Source	Value	Year	Source	
Garages constructed (Number)* [Target:12]	TRASMILENIO			Loan PAD **Revised** National Urban Transit Program PAD (2011) / MOT				
	Barranquilla TRANSMETRO	Original: 3 Revised: 2	2009		1 (Soledad)	2012	MOT	-Target partially achieved -Barranquillita: 50% completed Soledad: 99% (phase 1) / 0% (phase 2) -These works correspond to concession agreements that are not part of the projects financed by the GoC and the Bank.
	Bucaramanga METROLINEA	4	2009		0	2012	MOT	-Target not achieved -Only 47% of Floridablanca Portal completed, equivalent to 21% of the contract value for all four terminals -The terminal at Floridablanca is being developed through a concession -The construction of the three other terminals has not been contracted -The system is operating with a provisional terminal / garage in Floridablanca
	Cartagena TRANSCARIBE	2	2009		0		MOT	-Target not achieved -21% of Portal El Gallo has been completed through a concession agreement -Operation will require the construction of an alternate

Indicator	Sub-project	Target			Actual			Comments on Achieved Value / Proxy Indicator
		Value	Year	Source	Value	Year	Source	
								terminal / garage, which has not been contracted
	Medellín-Valle de Aburra METROPLUS	-	2009		-	2012	MOT	-Target achieved
	Pereira – Dos Quebradas MEGABUS	2	2009		2	2012	MOT	-Target achieved
	TOTAL	**Original 12** **Revised 11**			**4**			**-33% of original target achieved** **-36% of revised target achieved** **-57% of target achieved with respect to contracted terminals/garages**
Stations constructed (Number)* [Target:84]	Bogotá-NQS TRASMILENIO	23	2009	2nd Add. Loan PAD	21	2012	Transmilenio	
	Barranquilla TRANSMETRO	16	2009		16	2012	MOT	
	Bucaramanga METROLINEA	Original 76 Revised 27 (24 boarding and 3 transfer stations)	2009		14	2012	Ex-post economic evaluation	-12 boarding stations and 2 transfer stations in operation -The 76 stations target value corresponds to all phases of the project -52% achieve relative to revised target
	Cartagena TRANSCARIBE	Original 23 Revised 18	2009		16	2012	MOT	-70% achieved relative to original target - 89% achieved relative to revised target

Indicator	Sub-project	Target			Actual			Comments on Achieved Value / Proxy Indicator
		Value	Year	Source	Value	Year	Source	
	Medellín-Valle de Aburra METROPLUS	52	2009		20	2012	MOT	-95% of trunk line stations completed -38% of overall target achieved
	Pereira – Dos Quebradas MEGABUS	38	2009		38	2012	MOT	Target 100% achieved
	TOTAL	**Original 228 Revised 174**			**125**			**-55% of original target achieved** **-72% of revised target achieved**
Construction contracts awarded (Number) [Target:112]	Bogotá-NQS TRASMILENIO	5	2012	IDU	5	2012	IDU	
	Barranquilla TRANSMETRO	14		MOT	12		MOT	
	Bucaramanga METROLINEA	27			14			
	Cartagena TRANSCARIBE	15			12			
	Medellín-Valle de Aburra METROPLUS	30			19			
	Pereira – Dos Quebradas MEGABUS	21			20			
	TOTAL	**112**			**82**			**-73% of all contracts executed or in execution**
Operations contracts awarded (Number) [Target:9]	Bogotá-NQS TRASMILENIO	1			1	2012	MOT	
	Barranquilla TRANSMETRO	2			2			
	Bucaramanga METROLINEA	2			2			

Indicator	Sub-project	Target			Actual			Comments on Achieved Value / Proxy Indicator
		Value	Year	Source	Value	Year	Source	
	Cartagena TRANSCARIBE	1			0			The process for the contracting of operations has not started
	Medellín-Valle de Aburra METROPLUS	1			1			Since no agreement could be reached between the Metro and the bus operators, the city decided that the Metro Company would buy the buses and operate the trunk corridor of the BRT system. Although an operations agreement with a private entity was not executed, the system is being operated by the public mass transit operator.
	Pereira – Dos Quebradas MEGABUS	2			2			
	TOTAL	**9**			**8**			**-89% of all operations agreements have been executed (including the agreement between Metroplus and Metro Co.)**
Fare-collection contracts awarded (Number) [Target: 5]	Bogotá-NQS TRASMILENIO	1			1	2012	Transmilenio	
	Barranquilla TRANSMETRO	1			1		MOT	
	Bucaramanga METROLINEA	1			1			
	Cartagena TRANSCARIBE	1			0			
	Medellín-Valle de Aburra METROPLUS	1			1			Fare collection awarded to the Metro company.

Indicator	Sub-project	Target			Actual			Comments on Achieved Value / Proxy Indicator
		Value	Year	Source	Value	Year	Source	
	Pereira – Dos Quebradas MEGABUS	1			1			
	TOTAL	**5**			**5**			**-100% of all fare-collection contracts have been awarded (including agreement between Metroplus and Metro Co.)**

Project Input Indicators (Execution by Category and Component)

Amounts in USD millions

Component	Financing Category	Total Budgeted Amount (All Loans)	Total Executed Amount (All loans)	Percentage Execution by Financing Category	Undisbursed Balance	Comments
1. Technical Assistance	1.Goods	0.04	0.03	76.0%	0.0	
	2.Consulting services	4.84	2.99	61.7%	1.9	0.4 Million (loan 7457) used in Transmilenio NQS project.
	3.Training	0.10	0.02	20.3%	0.1	
	Total	**4.98**	**3.04**	**61.0%**	**2.0**	
2. BRT System Development	4.Participating Cities (Barranquilla, Bucaramanga, Cartagena, Medellin and Pereira)	306.19	306.16	100.0%	0.0	
	5.Transmilenio-NQS	442.32	441.15	99.7%	1.2	
	6.Land acquisition and compensation	3.50	2.62	75.0%	0.9	
	Total	**752.01**	**749.93**	**99.7%**	**2.1**	
Unutilized	7. Reinstatements		0.24		0.2	
TOTAL		**757.00**	**753.21**	**99.5%**	**3.8**	

Annex 3. Project Outputs by Component

Component 1: Capacity Building

Part A: Implementing Capacity Building

Component Objectives	Associated Outputs	Comments / Additional Outputs
1. Strengthening the GoC's capacity to formulate national urban transport programs and strategies though, among others: (a) the definition of a national urban transport institutional map; (b) the formulation of a transport sector policy; (c) the definition of operational, regulatory, institutional, environmental, social and road safety strategies within the urban transport and urban development context; and (d) the identification of appropriate mass transit solutions to improve transport and to improve traffic management.	**Substantially achieved** -Communications campaign (involving all systems) to disseminate the Integrated Mass Transit Systems strategy and support the launch of operations in different cities. -The Project supported accessibility audits for the design of the BRT systems.	-The Bank supported a complementary activity related to this component through a donation from by PPIAF. The activity consisted of the preparation of the legal framework for the integration of mass transit systems with the traditional bus services to created Integrated Public Transport Systems. The Activity produced a draft decree that has not been implemented. -PPIAF also supported the implementation of a communications strategy for the NUTP. -With the support of a grant from the governments of Denmark and Norway, the Bank supported the development of accessibility guidelines for the BRT projects.
2. Improvement of the institutional capacity of transportation entities of Participating Cities to ensure adequate implementation of BRTS, through, among others: (a) the provision of equipment and training; (b) the setup of an operational structure able to program, monitor and administer public transportation services; and (c) the implementation of	**Achieved** -Specialized technical assistance in the infrastructure and operations areas: Hiring of specialists in geological aspects, pavements and materials and operational design and launch of BRT systems. -Various workshops aimed at strengthening the capacity of Implementing agencies: -Infrastructure	- In 2008 PPIAF funded various activities supervised by the Bank Team: -Detailed diagnostic of Barranquilla's public finances and a strategic plan to address the most pressing constraints, including the municipality's ability to co-finance 30 percent of the cost of the BRT system.

twinning arrangements between BRTS and Bogota's TransMilenio S.A.	maintenance; -Sharing of experience regarding the launch of the BRT system in Cali; -Sharing experience in the acceptance of the bus fleet and operational set-up.	-Technical assistance to La Promotora, a development finance institution owned by the city of Pereira, to improve its credit rating. Risk management and activity-based costing systems were prepared and a strategic planning exercise was conducted in this activity. As a result, La Promotora issued USD 6.5 million loans for infrastructure improvement projects.
3. Strengthening of the operational capacity of participating cities with respect to the implementation of urban development and transport strategies.	**Substantially achieved** -Execution of multiple workshops with implementing agencies to disseminate knowledge and share experiences in the implementation of the Project - At least ten (10)workshops were organized to share know-how and develop synergies among the BRTS agencies. The topics were related to general implementation issues, infrastructure, system operation, resettlement, procurement and financial management, project experience, operation and lessons learnt.	-In 2012, the Bank supported a study to evaluate the use of the exclusive bus way by mixed traffic in Bucaramanga. This study aimed at providing recommendations that allowed for the use of this busway without affecting the operational performance of the system. -The Bank supported a complementary activity related to this component through a donation from the Government of Spain. The activity consists of technical assistance to support the establishment of an integrated transport system in the Metropolitan Area of Pereira (2012). The results of this TA activity will be delivered in the second quarter of 2013. -In late 2012, the Bank supported a study to evaluate bus scrapping options for the city of Cartagena -In 2008, PPIAF supported the development of a feasibility study for a project to use cable cars to expand the Bucaramanga's mass transit system and integrate it with Metrolinea. A feasibility study for the integrated system was conducted to determine the financial sustainability of the proposed cable car corridors. A financing and implementation plan

		was also produced, which examined the costs of the proposed cable car corridor, identified and assessed sources of financing for the expansion and analyzed the expansion's expected impact on the overall finances of Metrolínea.
4. Provision of support for overall Project coordination, evaluation, supervision and implementation, including, among other: (a) the strengthening of the capacity of the PCU to comply with its responsibilities; the carrying out of audits; (b) the carrying out of Project studies, including, among others, performance reviews and impact evaluations; (c) and the design and implementation of a program to monitor and evaluate the carrying out of the Project.	**Partially achieved** -The Project funded the staffing of the PCU and hiring of specialized consultants in multiple areas. -However, PCU did not execute technical assistance component fully.	

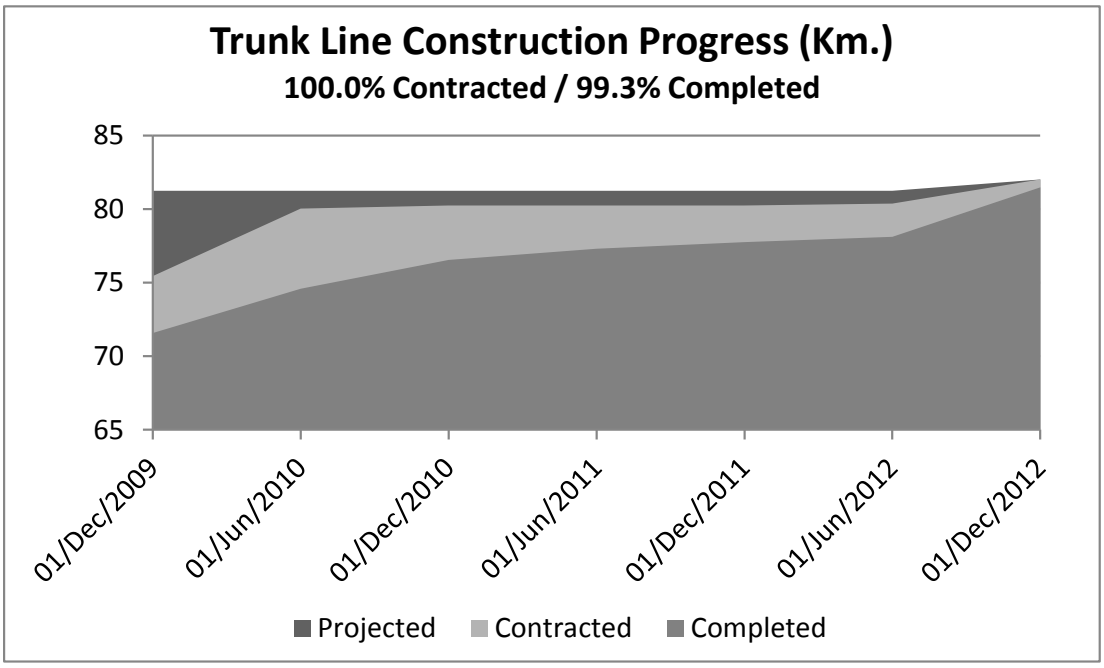
Component 2: BRT System Development

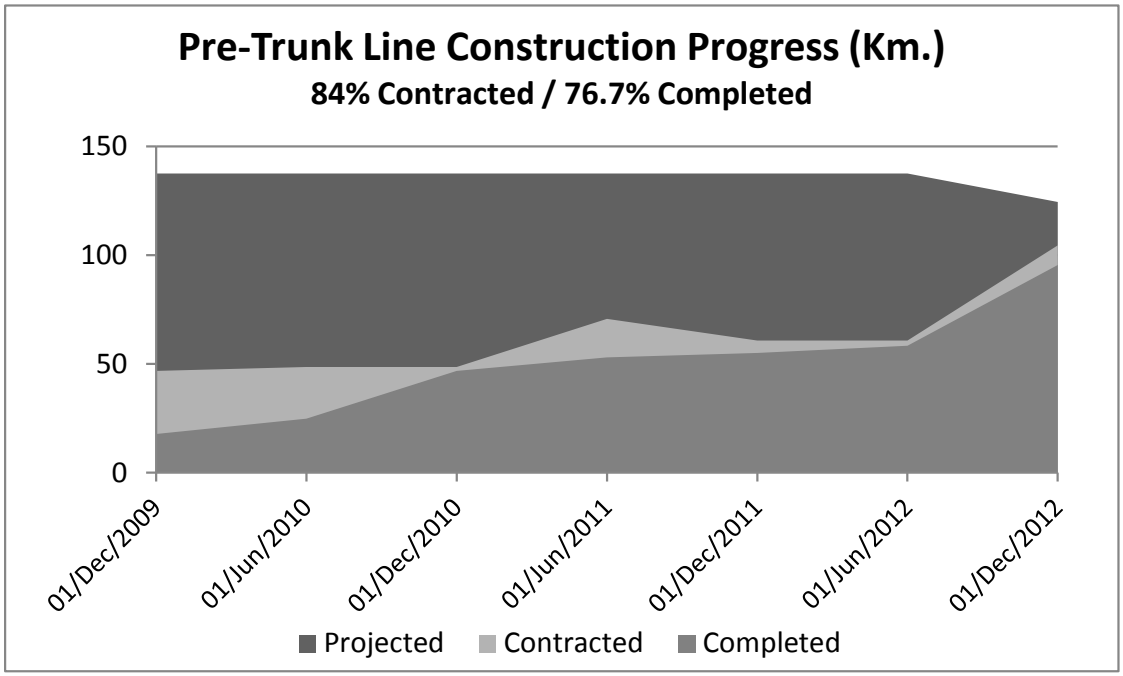
Part B: BRT System Development

1. Construction of segregated transportation corridors in Participating Cities, including but not limited to: (a) construction of segregated busways; (b) repaving of mixed-traffic lanes adjacent to new busways; (c) construction and installation of bus stations and terminals; and (d) paving of feeder roads.	**Substantially achieved** -Construction of 81.5 Km of segregated busways -Construction of 95.5 Km of pre-trunk and feeder roads -Construction of 125 stations -Construction of 4 terminals/garages	

2. Construction of about 20 kilometers of segregated corridors in the NQS Line in Bogota, including: (a) construction of segregated busways; and (b) repaving of mixed-traffic lanes adjacent to new busways.	**Achieved**	
3. Definition of a new regulatory framework for the implementation of BRTS in Participating Cities.	**Likely to be Achieved** -A draft decree was produced, but not yet implemented	
4. Resettlement of affected persons in connection with the carrying out of Parts B.l and B.2 of the project. The financing of land acquisition required for carrying out part B.1 was included as part of the Second Additional Loan.	**Achieved** -The project implemented a total of 28 Resettlement Action Plans (RAPs). -As of December of 2012, 23 of these PARs were completed and all properties under these plans have been acquired. There are still 5 RAPs to be completed, however, one of them (section 5 of Itagüí) will not be carried out due to design changes that reduced the number of properties that needed to be acquired. -The Project financed land acquisition for the development of the Metroplus system in an amount of approximately USD 2 million.	
5. Design and implementation of Environmental Management Plans (EMPs) for the carrying out of Parts B. 1 and/or B.2 of the project.	**Achieved** -All of the construction projects included EMPs, except for a few minor works contracts for the rehabilitation of feeder roads. -The Project executed USD 20.5 million in EMPs, of which the Bank financed approximately USD 11.2 million.	

Progress in the Delivery of Main Project Outputs Over Time (Trunk and Pre-Trunk BRT Lines)





Source: National Planning Department and Ministry of Transport

Annex 4. Economic and Financial Analysis

The ex-post economic analyses and evaluations for the BRT subprojects discussed in this Annex are based on the contents of ex-post economic evaluations hired by the Colombian National Planning Department –DNP to independent consulting firms and incorporated into the National System for Public Management and Results Evaluation (SYNERGIA). To December 31, 2012, ex-post economic analyses have been hired by DNP and conducted by independent consultants in Barranquilla, Bogota, Bucaramanga and Pereira. Evaluations have not been undertaken neither in Cartagena or Medellin, the former since its BRT system is yet to start operations, and the latter since its very recent start of operations did not give time for a proper ex-post evaluation to be conducted during 2012. The following table summarizes key information related to the ex-ante and ex-post evaluations for all projects. The table also indicates the start dates for revenue-operations for all systems. Most information was obtained from local Implementing Entities, the DNP and the MT. All data was updated whenever possible.

Table 1 – Key ex-post evaluation information for participating cities

City - BRT System	Start of Revenue Operations	ex-ante Evaluation date, update	Ex-post Evaluation Date (Evaluation Period)
Barranquilla – TRANSMETRO	Apr 2010	AF I, AF II	2012 (2010-2011, updated 2012-2018)
Bogotá – TRANSMILENIO Phases I and II	I: Jan-2001; II: Feb-2005	OP, AF I	2009 (1998-2018)
Bucaramanga – METROLINEA	Feb 2010	AF I, AF II	2012 (2006-2030)
Cartagena – TRANSCARIBE	2013 (expected)	OP, AF II	N.A.
Medellin – METROPLUS	Dec 2011	AF I	N.A.
Pereira – MEGABUS	Aug 2006	OP	2011 (2005-2025)

Source: Own elaboration based on information from MOT and DNP.

The ex-post evaluations for the four cities described above were done in different years and encompass different evaluation periods. As illustrated in Table 1, the evaluation period for Bogota and Pereira is 20 years, while for Bucaramanga is 24 years. It should be noted that although the Project addressed in this ICR financed only the Transmileno NQS corridor of phase II in Bogota, the ex-post evaluation for Bogota is done for Phases I and II.

The evaluation for Barranquilla was divided into two periods of analysis: one ex-post evaluation that only accounts for the cost and benefits accounted between 2010 and 2011, and an updated evaluation of projected benefits and costs from 2012 to 2018. Unsurprisingly, the Barranquilla evaluation encompassing only two years of analysis results in a negative rate of return. The updated evaluation, although only spanning over 6 years, shows a positive of return.

a. Methodology

The methodology used for the ex-post evaluations is based on the standard World Bank methodology used to estimate and evaluate BRT projects. This ensures that the results are consistent with the ex-ante analysis carried out as part of appraisal. An explanation on costs and benefits included in the evaluations is explained on the following paragraphs.

Costs

The costs the methodology associates with a BRT project fall into two categories: (ii) one-time investments, particularly in infrastructure development, institutional capacity building and purchase of the new bus fleet; and (ii) recurring annual costs of the system's operation and maintenance. In addition, there are one-time losses in time due to construction works. The following table summarizes the evaluated costs for each city.

Table 2 – ex-post costs for each evaluation

Project Costs	Barranquilla	Bogota	Bucaramanga	Pereira
Time losses during construction	●	●	○	●
One Time Investments				
Studies: fesibility, engineering, design, operation	●	●	●	●
Infrastructure rehabilitation and construction costs, including project management costs	●	●	●	●
Financial Costs	●	○	○	○
Land purchase and resettlement costs	●	●	●	●
Bus fleet	●	○	●	●
Fare-collection systems	●	○	●	●
Implementation of a public regulatory agency and/or a control center for system operation	○	●	●	●
Recurring annual costs				
Entire system operating and maintenance costs	●			
Fleet operating and maintenance costs		●	●	●
Fare-collection operating and maintenance costs		●	●	●
Public regulatory agency operating and maintenance costs		●	●	●
Infrastructure maintenance costs		●	○	●

Source: own with information from DNP

As illustrated in Table 2, ex-post evaluation for all cities takes into consideration time losses during construction, different one time investments and recurring annual costs. According to the Bucaramanga evaluation, there was not enough data for this city to allow the calculation of time losses during construction. All other cities did calculate this component.

In general terms, Barranquilla is the only subproject which displays costs in a way different to other cities. However, this does not mean costs are not comparable among cities. Overall, cost estimations for all cities take into account the most significant investments during construction and operation phases. The following paragraphs discuss the way in which one time investments and recurring annual costs are presented in the ex-post evaluation of each city.

One time investments: As shown above, the only city which explicitly calculated financial costs is Barranquilla. Other cities have incorporated the financial costs directly in other investment components. Also, Barranquilla is the only subproject which does not document the investment

costs associated to the implementation of the Implementing Agency in charge of managing the entire project during operational phase. The analysis of the report suggests this cost was included as part of the infrastructure investment component.

Recurring annual costs: Barranquilla presents a condensed value for recurring annual costs. These costs include mainly fleet operating costs and fare-collection system operating costs. The evaluations for Bogota, Bucaramanga and Pereira present specific values for operational and maintenance costs of bus fleet, fare-collection system, Implementing Agency and infrastructure maintenance costs.

Benefits

The evaluated benefits are encompassed by the four main categories of the standard World Bank methodology: (i) time savings of transit users; (ii) savings in operating costs for the replacement of buses; (iii) accident reduction; and (iv) pollution/emission reductions, including savings occurred from modal shift (from private cars to mass transit).

The ex-post cost-benefit analysis compares the incremental costs and benefits of a with-project scenario to a without-project scenario that does not assume any type of infrastructure investments and maintains the original level of service. The comparison assumes in both scenarios an increase in demand due to the population growth and the passenger demand for travel in the corridors of the cities studied. As it will be shown over this Annex, the benefits of the BRT projects come mainly from savings in time and optimization of bus operation. With the exception of the evaluation for Bogota, the benefits calculated in the other evaluations are not limited to the benefits calculated in the traditional CBA methodology and incorporate the assessment of additional benefits, including increased urban residential land values and user safety. These benefits have not been considered for the purpose of this ICR so as to make the results consistent and comparable with previous evaluations. The following table summarizes the benefits considered in the standard methodology and the benefits calculated in the evaluation of each city. The table contains a column which defines the benefits included in the standard World Bank CBA analysis (area within the dotted lines).

Table 3 – ex-post benefits for each evaluation

Project Benefits	WB Methodology	Barranquilla	Bogota	Bucaramanga	Pereira
Savings in travel times for project users	●	●	●	●	●
Savings in Public Transport Fleet operating costs	●	●	●	●	●
Savings (reductions) in GHG and/or local contaminant emissions	●	●	●	●	●
Savings (reductions) in road accidents (fatal and non-fatal)	●	●	●	○	●
Savings in travel times for car users	○	●	○	○	●
Savings in deaths due to illnesses related to poor air quality	○	●	○	○	○
Savings in medical care due to reduced air-quality related illnesses	○	●	○	○	○
Savings in deaths and wounded due to improved citizen safety/security	○	●	○	○	○
Savings in proprierty loss due to improved citizen safety/security	○	●	○	○	○
Increase in residential land value	○	●	○	○	○

Source: own with information from DNP

As Table 3 illustrates, the Bogota evaluation is the only one that calculates only the World Bank methodology benefits. Pereira and Barranquilla calculate travel time savings for private car users. These benefits may be calculated since BRT projects tend to organize traffic and free streets from conventional buses which due to the nature of their operation (slow speeds and frequent stops) tend to slow down traffic. However, it can also be argued that the reduction in congestion and possible increase in mixed lane travel speeds is not significant over the long term since the road network tends to rebalance and thus more cars will be attracted to the mixed lanes running parallel to the BRT corridor. It is also worth noting that according to the Bucaramanga ex-post analysis, there was not enough data which allowed estimating savings due to reductions in road accidents. All other cities reported savings in road accidents.

Of particular interest is the Barranquilla ex-post evaluation, since in this subproject consultants estimated savings beyond the World Bank methodology, including: (i) savings in deaths due to illnesses related to poor air quality; (ii) savings in deaths and wounded due to improved citizen safety; (iii) savings in property loss due to improved citizen safety; and (iv) increase in residential land value. The Barranquilla analysis does a separate CBA analysis which does not include any of these additional benefits in order to make the CBA comparable with the ex-ante analysis. As mentioned before, additional benefits have not been considered for the purpose of this document.

Common considerations in the calculation of costs and benefits

The with-project scenario includes the effects of both the trunk lines and the feeder lines. The analysis includes the assessment of the operating costs for both services where the trunk network uses new high-capacity buses and the feeder routes are served by new regular buses. The savings in travel time for project users assumes the same number of passengers with or without the project and an average value of travel time for urban transport users, based on the information obtained from stated preference surveys conducted in each city. The benefits to existing car users in the corridors are estimated in Barranquilla and Pereira but not in Bogota or Bucaramanga, since the latter considered benefits to be temporary since road network re-configuration tends to equilibrate travel times in the long run. Generated trips and modal changes (i.e. car users switching to transit) are estimated and considered as additional benefits to the each project, thus increasing travel demand. In addition, benefits from reductions in accidents and pollutants are calculated based on accident records and emission models which take into consideration the reduction of bus fleet and transport oversupply, as well as the incorporation of more efficient combustion technologies in the new fleet.

b. Summary Results

For the purpose of the analysis included in this ICR, an exercise of comparison of costs and benefits of subprojects was undertaken. Costs and benefits were taken from the ex-post evaluations in COP and converted to current USD. The following paragraphs summarize the total costs and benefits found in the ex-post evaluations to later compare key indicators of the ex-post evaluations: Net Present Value –NPV-, Economic Rate of Return –ERR- and Cost-Benefit Ratio –CBR.

a. Summary of Benefits and Costs

Costs

Costs were aggregated into the categories included in the methodology and shown in Table 2. The following table includes all economic costs for Barranquilla (2010-2011), Bogota (phases I and II), Bucaramanga and Pereira.

Table 4 – ex-post costs for each evaluation

Project Costs (Economic Prices)	Barranquilla (USD$2011 millions)	Bogota (USD$2008 millions)	Bucaramanga (USD$2011 millions)	Pereira (USD$2010 millio
Time losses during construction	$ 16.65	$ 89.65	$ -	$ 193.43
One Time Investments				
Studies: fesibility, engineering, design, operation	$ 1.35	$ 12.58	$ 2.03	$ 1.27
Infrastructure rehabilitation and construction costs, including project management costs	$ 165.27	$ 879.68	$ 164.21	$ 78.53
Financial Costs	$ 22.90	$ -	$ -	$ -
Land purchase and resettlement costs	$ 19.77	$ 145.21	$ 16.69	$ 12.78
Bus fleet	$ 58.42	$ 222.55	$ 31.34	$ 37.97
Fare-collection systems	$ 14.51	$ 10.08	$ 9.55	$ 4.77
Implementation of a public regulatory agency and/or a control center for system operation	$ -	$ 43.42	$ 2.53	$ 14.35
Recurring annual costs				
Entire system operating and maintenance costs	$ 14.18			
Fleet operating and maintenance costs		$ 383.63	$ 8.44	$ 128.42
Fare-collection operating and maintenance costs		$ 106.50	$ 0.40	$ 18.57
Public regulatory agency operating and maintenance costs		$ 3.29	$ 0.05	$ 1.33
Infrastructure maintenance costs		$ 44.90	$ 6.52	$ 12.42
Total Costs	$ 313.06	$ 1,941.50	$ 241.75	$ 503.86
Total Costs excluding time losses during construction	$ 296.40	$ 1,851.84	$ 241.75	$ 310.42
Total Corridor kilometers delivered	13.4	84.0	8.4	15.3
Economic costs per kilometer	**22.1**	**22.0**	**28.8**	**20.3**
(COP): 2008: 1,939 COP/USD / 2010: 1,977.32 COP/USD / 2011: 1,827.5 COP/USD				

Source: own with information from DNP, corridor Km from MOT

Table 4 presents total costs for one time investments and recurring annual costs. The costs reflected in the table are numerically identical to those reported in the ex-post evaluations. Costs were calculated for each case using shadow price index, and COP/USD exchange rates were taken for the year in which the analysis was conducted. Costs associated with time losses during construction are included. The highest time-loss associated costs are found in Pereira ($193 million) while the lowest are for Barranquilla ($16.7 million). Given the comparable total corridor kilometers delivered in Pereira and Barranquilla, the enormous difference in costs associated to time losses calls the attention. Other costs are more comparable in proportion to the total corridor kilometers delivered.

The total costs with and without time losses during construction were calculated. An estimation of the economic costs per kilometer of corridor was conducted for the sake of comparison for this ICR. The results show that the average economic cost per kilometer is between US$ 20 and $30 million (current dollar prices). These results are consistent with other analysis of typical BRT infrastructure costs.

Benefits

Benefits were drawn from the ex-post analysis for Barranquilla (2010-2011, 2012-2018), Bogota (phases I and II), Bucaramanga and Pereira. The following table includes all economic benefits reported in the ex-post analysis, including additional benefits not quantified in the standard World Bank methodology. For the sake of comparison, this ICR only adds the costs of the standard

methodology. It should be noticed that in some cases (particularly Barranquilla), additional benefits not included in the standard methodology may be higher than standard benefits. Table 5 summarizes benefits for the four cities mentioned before.

A Note on the Barranquilla ex-post Benefits: The benefits included in the ex-post analysis for Barranquilla are not directly comparable to benefits from other cities' ex-post analysis, since the Barranquilla evaluation is the only one which distinguishes between two evaluation periods: 2010-2011 (actual operation period at time of evaluation) and 2012-2018, which the evaluation calls "ex-ante" analysis. The authors of this ICR opted to include all the benefits quantified for the 2010-2011 period, and a general, aggregated benefit quantified for the 2012-2018 period. Additionally, the Barranquilla ex-post includes a series of additional benefits which are not calculated in other evaluations (e.g. citizen safety, land value) and that are in many cases more important in terms of magnitude than the benefits included in the standard methodology. The highest benefit in Barranquilla (excluding potential increases in land value) is given by a reduction in deaths due to reduced transport-related contaminant emissions.

Table 5 – ex-post benefits for each evaluation

Project Benefits (Discount Rate: 12%)	Barranquilla (USD$2011 millions)	Bogota (USD$2008 millions)	Bucaramanga (USD$2011 millions)	Pereira (USD$2010 millio
1. Savings in travel times for project users	**$ 0.86**	**$ 1,581.37**	**$ 1.87**	**$ 471.48**
2. Savings in Public Transport Fleet operating costs	**$ 16.31**	**$ 1,150.38**	**$ 50.46**	**$ 157.28**
3. Savings (reductions) in GHG and/or local contaminant emissi	**$ 12.10**	**$ 106.25**	**$ 0.40**	**$ 17.50**
4. Savings (reductions) in road accidents (fatal and non-fatal)	**$ 4.68**	**$ 155.49**	**$ -**	**$ 35.09**
Savings in travel times for car users	$ 0.03	$ -	$ -	$ 36.50
Savings in deaths due to illnesses related to poor air quality	$ 4.72	$ -	$ -	$ -
Savings in medical care due to reduced air-quality related illnesses	$ 10.68	$ -	$ -	$ -
Savings in deaths and wounded due to improved citizen safety/security	$ 214.19	$ -	$ -	$ -
Savings in proprierty loss due to improved citizen safety/security	$ 8.05	$ -	$ -	$ -
Increase in residential land value	$ 245.31	$ -	$ -	$ -
Total Benefits - WB Methodology (1 through 4)	**$ 33.95**	**$ 2,993.48**	**$ 52.73**	**$ 681.35**
Barranquilla - Total Benefits WB Methodology 2012-2018	**$ 520.52**			
Total Corridor kilometers delivered	13.4	84.0	8.4	15.3
Economic benefits per kilometer (Barranquilla: 2010-2018)	**41.4**	**35.6**	**6.3**	**44.5**
(COP): 2008: 1,939 COP/USD / 2010: 1,977.32 COP/USD / 2011: 1,827.5 COP/USD				

Source: own with information from DNP, corridor Km from MOT

Table 5 presents total benefits for the period of analysis for each city. The benefits reflected in the table are numerically identical to those reported in the ex-post evaluations. Economic Benefits per kilometer vary importantly between cities. This is partly explained by the specific context of each city. For example, Barranquilla and Bucaramanga have the lowest benefits associated to savings in travel times for project users. According to information gathered during the preparation of this ICR, these lower benefits are explained since trunk-feeder systems tend to force users to transfer between feeder and local services. This may add additional travel time to users. In smaller cities, where the average commuting trip is under 30 minutes, the additional time taken by doing transfers is not easily compensated by higher travel speeds in BRT corridors, thus reducing the total time savings in travel times. Also, the fact that most cities (except Bogota) have not reached yet the initially estimated daily passenger demand means that in some cases benefits due to savings in travel times are lower than they should be. This situation is especially true for the case of Bucaramanga.

An estimation of the economic benefits per kilometer of corridor was conducted for the sake of comparison for this ICR. For the case of Barranquilla, benefits per Kilometer were calculating by adding up benefits from the 2010-2011 and 2012-2018 periods. The results show benefits close to $40 million per kilometer, except for Bucaramanga. As explained before, it is expected that benefits for Bucaramanga increase notoriously when demand reaches the levels initially forecasted. These results are consistent with other analysis of typical BRT infrastructure costs.

Results of the Cost-Benefit Analysis

The ex-post evaluation for the mass transit systems developed in the cities of Bogota, Bucaramanga and Pereira show that the BRT systems financed by the Project produced social benefits in excess of their costs. For Barranquilla, benefits are greater than the costs only when taking into account expected benefits for the 2012-2018 period of analysis. As discussed earlier, this should not be surprising since the 2010-2011 evaluation period does not allow the accrual of benefits beyond the initial first year of operation.

The results of the ex-post analysis are congruent with the ex-ante economic evaluations conducted during appraisal. The following table summarizes the results of the CBA analysis done for each subproject both at appraisal and on ex-post evaluations.

Table 6 allows a comparison between the results of the ex-ante and ex-post evaluations for all projects. As discussed earlier, the only case in which an ex-post evaluation produces a negative ERR, NPV and CBR is the Barranquilla analysis for the 2010-2011 two year period of analysis. Ex-post ERR, NPV and CBR for Bogota and Pereira are higher than those calculated at appraisal. In Bucaramanga, the ERR is positive and acceptable although lower than the rate calculated at appraisal.

Main Economic Benefits

Table 6 shows the main economic benefit found in the ex-post evaluations for each subproject. In all cases besides Barranquilla, the main benefits are directly linked to the improved conditions of the urban public transport system: Reduced public transport vehicle operating costs, and savings in travel times. These results are consistent with the objective of the project and reflect the positive impact the BRT subprojects have on Colombian cities. In Barranquilla, the ex-ante analysis concluded that the main economic benefit would be the reduced vehicle operating costs. However, ex-post analysis conclude that the main economic benefit is the lower mortality associated with pollution. Barranquilla is the only case in which the ex-post evaluation found the lower mortality associated with pollution as the main economic benefit. For Bogota, Bucaramanga and Pereira, ex-ante analysis at appraisal had concluded the main economic benefits of the BRT subprojects would come from a reduction in the costs associated to the operation of the public transport system. This conclusion was congruent with the ex-post analysis for the Bucaramanga ex-post analysis. Ex-post analysis in Bogota and Pereira concluded that the main economic benefit is reduction in user travel times instead lower operating costs in the urban public transport system. These results indicate the benefits for the total population of project users outnumber the benefits derived from increased efficiency of the system. It is possible that the main economic benefit for Bucaramanga will also be reduction in travel times as actual demand catches up with the initially forecasted demand. Overall, the main economic benefits for all subprojects are congruent with the Project objectives and may be considered as evidence of the satisfactory achievement of the Project Objectives.

Table 6 – CBA results[45]

System	Evaluation (year)	Scenario and Evaluation Period	Economic Rate of Return (ERR)	NPV @12% discount rate (US$ millions)	US$ million year	Benefit / Cost Ratio	Main Economic Benefit
MA Barranquilla – TRANSMETRO	Appraisal (2007, 2009)	2012 (2012, 2018)	12.30%	5.94	2008	1.02	Vehicle operating cost savings
	Ex-post (2012)	Actual (2010-2011)	-13%	(23.40)	2011	0.92	Lower mortality associated with less pollution and traffic accidents
	Ex-post (2012)	Updated (2012-2018)	112%	798.80	2011	2.24	Lower mortality associated with less pollution and traffic accidents
Bogotá – TRANSMILENIO Phase II – NQS	Appraisal (2004, 2007)	2009 (1998-2018)	14.89%	99.58	2006	1.45	Vehicle operating cost savings
	Ex-post (2008)	2009 (1998-2018)	24.20%	1,052.00	2008	2.5	Travel time savings
MA Bucaramanga – METROLINEA	Appraisal (2007, 2009)	2012 (2006-2030)	22.80%	244.61	2008	1.74	Vehicle operating cost savings
	Ex-post (2011)	2012 (2006-2030)	13.80%	22.60	2011	1.09	Vehicle operating cost savings
MA Centro Occidente (Pereira) – MEGABUS	Appraisal (2004)	2011 (2005-2025)	16.45%	12.80	2003	1.13	Vehicle operating cost savings
	Ex-post (2011)	2011 (2005-2025)	45%	225.40	2010	1.69	Travel time savings

Source: Own elaboration with data from DNP and PADs

Construction delays and cost increases: Most subprojects required additional civil works than the ones initially estimated due to changes in the scope of the BRT subprojects or to unforeseen needs to intervene public utility networks. Consequently, the duration and size of most construction contracts was increased, leading to higher costs and longer than anticipated construction times.

In Barranquilla, Bucaramanga and Medellin, there were larger than expected interventions to restructure utility networks and greater quantities of works. In Cartagena (not included in the ex-post evaluations), topographical and other design errors, as well as delays in securing the Right of Way (ROW) led to higher costs. In Pereira, these processes took less time, allowing for the start of operations within the original schedule.

[45] *USD amounts Calculated at the average exchange rate for the year corresponding to the calculation in Colombian Pesos (COP): 2008: 1,939 COP/USD / 2010: 1,977.32 COP/USD / 2011: 1,827.5 COP/USD*

Construction delays were mainly the result of: (i) issues attributable to the public sector related to defective project designs and delays in delivering the ROW; (ii) issues attributable to contractors' non-performance and (iii) the lack of comprehensive utility network inventories and plots in participating cities. The delays are also directly associated with the institutional capacity in each city, as can be seen in the relatively low speed of construction (1 to 3 Km. per year on average) for Barranquilla, Bucaramanga, Cartagena and Medellin, when compared to Bogota (about 8 Km per year). This is due to the fact that the executing agency in Bogota (Urban Development Institute or IDU) had extensive experience in the execution of works, being the public works agency of the city.[46]

Changes in Land Value as an additional benefit of BRT subprojects

The ex-post evaluations for Barranquilla, Bogota, Bucaramanga and Pereira include an analysis on the effects on residential land value around the catchment area of the BRT corridors. The evaluations reported that Real Estate Market Monitor databases report effective increases in land value (above market increases) in zones within 1 kilometer of BRT corridors. The increases are more perceptible around terminals and interchange stations. A summary of the findings in every city is presented in the following paragraphs:

Barranquilla: The ex-post analysis found an increase in land value for residential plots within the catchment area of the BRT system. According to the evaluation, increase in land value is the second most important benefit found in the ex-post evaluation when considered additional benefits not included in the standard World Bank methodology. Benefits associated to increase in residential land value are US$ 245.31 million (Table 5).

Bogota: The ex-post analysis states that the Bogota Real Estate Market Monitor reported effective increases in land value between 2000 and 2001 in zones within 1 kilometer of Transmilenio. This increase occurred, according to the study, at times where land value dropped overall. Other studies, including price studies and panel surveys between 2000 and 2004, found positive tendencies in land value for plots within walking distance of Transmilenio. However, there are differences between positive and negative changes in land value according to the socioeconomic strata of the plot. Increases in land value were found especially in low and middle income strata, while on high income strata there were decreases in land value, especially in cases of "immediate closeness", where residential plots lose value as they become more attractive for commercial purposes and they become more exposed to noise and safety issues. The Bogota ex-post analysis does not calculate a rounded number for the benefits associated to increase in residential land value.

Bucaramanga: According to the ex-post analysis, the Metro Area of Bucaramanga has experienced a positive dynamic in real estate construction and an increase in land value due to a healthy demand for real estate and lower availability of empty plots within the Metro Area. However, the study found that the average increase in land value for plots within the catchment area of Metrolinea is similar to the increase in areas outside the catchment area of the system. A higher increase in land value was found in areas around terminal stations. The Bucaramanga ex-post analysis does not calculate a rounded number for the benefits associated to increase in residential land value.

[46] *Contraloria General de la Nacion* (National Audit Office)

Pereira: the ex-post analysis for Megabus compared increases in land value in zones directly served by Megabus with increases in land value in zones not directly served by the system. The study compared a total of six cases, of which 3 are zones directly served by Megabus and the other 3 are not directly served. The ex-post analysis calculated an average differential in residential land value increase of 25.81% between zones directly served and not directly served by Megabus. A differential of 67.69% was found in commercial land value under the same analysis circumstances. The Pereira ex-post analysis does not calculate a rounded number for the benefits associated to increase in residential land value.

Annex 5. Bank Lending and Implementation Support/Supervision Processes

(a) **Task Team members**

Names	Title	Unit	Responsibility/ Specialty
Lending			
Mauricio Cuellar	Task Team Leader	LCSFT	Transport
Jose Luis Irigoyen	Sector Manager	LCSFT	Transport
Jose Barbero	Senior Transport Specialist	LCSFT	Transport
Marcela Silva	Transport Specialist	LCSFT	Transport
Guillermo Ruan	Lead Highway Engineer	LCSFT	Transport
Melanie Glass	Junior Professional Associate	LCSFT	Transport
Elena Correa	Senior Social Scientist	LCSEO	Social
Juan Lopez	Senior Environmental Specialist	LCSEN	Environment
Daniel Boyce	Senior Financial Management Specialist	LCCOAA	Financial management
Efraim Jimenez	Senior Procurement Specialist	LCOPR	Procurement
Joseph Formoso	Senior Finance Officer	LOAG3	Loan Management
Jozef Draaisma	Senior Country Economist	LCSPE	Economist
Sally Burningham	Senior Engineer	EASTR	Peer Review
Judy Baker	Senior Economist	TUDRR	Peer Review
Jorge Rebelo	Lead Transport Specialist	LCSFT	Peer Review
Eduardo Brito	Head Lawyer for Colombia	LEGLA	Legal
Camila Hernandez Rodriguez	Infrastructure Specialist	LCSTR	Transport
Tatiana Daza	Program Assistant	LCSTR	Administration
Fatima Galarraga	Language Program Assistant	LCSFP	Administration
Marta Kozak	Program Assistant	LCSFP	Administration
Andres Pacheco	Consultant		
Dario Hidalgo	Consultant		
Diana Ortiz	Consultant		
Hernan Aristizabal	Consultant		
Margarita Castro	Consultant		
Maria Ines Londono	Consultant		
Eduardo Bayon	Consultant		
Supervision/ICR			
Diomedes Berroa	Senior Operations Officer	LCSPT	Operations
Elena Correa	Sr Social Development Specialist Consultant	LCSSO	Social
Jeannette Estupinan	Sr Financial Management Specia	LCSFM	Financial Management
Kristine M. Ivarsdotter	Senior Social Development Spec	LCSSO	Social
Karina Kashiwamoto	Language Program Assistant	LCC1C	Administration
Juan Lopez-Silva	Consultant	LCSEN	Environment
Jose M. Martinez	Senior Procurement Specialist	ECSO2	Procurement

Shomik Mehndiratta	Lead Urban Transport Specialist	LCSTR	Transport
Gerhard Menckhoff	Lead Transport Specialist / Consultant	MNSTR	Transport
Carlos H. Mojica	Junior Professional Associate	LCSTR	Transport
Ramon Munoz-Raskin	Junior Professional Associate	LCSTR	Transport
Andres Pacheco	Consultant	LCSTR	Transport
Daniel Pulido	Infrastructure Specialist	LCSTR	ICR
Camila Rodriguez Hernandez	Infrastructure Specialist	LCSTR	Transport
Maye Rueda Gomez	ET Temporary	LCCCO	Administration
Harvey Scorcia	Junior Professional Associate	LCSTR	Transport
Leonardo Canon Rubiano	Junior Professional Associate	LCSTR	Transport
Santiago Torres	Consultant	LCSPT	Procurement
Mercedes Souza Weich	Consultant	LCSPP	Poverty issues

(b) **Staff Time and Cost**

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
Lending		
FY03	17	73.04
FY04	50	263.35
Total:	67	336.40
Supervision/ICR		
FY03		0.00
FY04		0.00
FY05	35	148.26
FY06	34	151.46
FY07	46	174.33
FY08	54	270.69
FY09	33	196.2
FY10	N.A	240.8
FY11	N.A	166.4
FY12	N.A	166.8
FY13	N.A	90.1
Total:	**202**	**1605.0**

Annex 6. Beneficiary Survey Results

Citizen Perception Surveys ("Como Vamos") Surveys

Introduction

The survey has a defined methodology that is applied consistently across participating Colombian cities and across time with a yearly frequency. It is an annual public perception survey that collects the opinion of between 1,000 and 1,500 individuals that represent the various zones and social strata in participating cities and com from both genders. With a total population surveyed of almost 12,000 this survey has become one of the most important sources of information available on the quality of life of the majority of the Colombian population, who resides in cities. The "Como Vamos" survey is a private sector initiative bringing together the chamber of commerce, a local newspaper and a private university in each city, and the Corona Foundation.

The main evaluation tool is the series of public perception indicators designed for each sector. The survey includes a chapter that focuses on mobility and a number of questions related to the perceived performance of public transport in general, and of the mass transit system in the cities where one exists. IPSOS- Napoleon Franco administers the survey and processes and analyzes the data. The survey has been carried out in participating cities over the following periods: Pereira (2011-12), Barranquilla (2008-12), Medellin (2006-12), Bogota (1998-2012) and Bucaramanga (2010-12)

Overall results for Urban Mobility and Mass Transit System

Perception surveys may not accurately reflect the operating performance of BRT systems because respondents' opinions are often shaped by single events or skewed by the specific situation at the time the questions are asked and not to general performance over a period of time.

The latest analysis for all cities in Colombia (Quality of Life Perception Survey in 10 Colombian cities: "Cómo Vamos" 2012), released in March 2013, showed a deteriorating perception of the population regarding mobility conditions and an erosion of satisfaction with mass transit systems, relative to other transportation modes.[47]

On average, about 53 percent of users are satisfied with the mass transit system, down from 71 percent in 2008. Also, for the first time since 2008, the average satisfaction of users of traditional public transport services surpassed that of mass transit system users. From 2008 to 2011, mass transit systems had been rated higher than the traditional bus system (buses and mini-buses).

The average percentage of survey respondents that use mass transit systems (in the cities where they exist) has increased since 2008.Nonetheless, average usage of public transport as a whole (including both mass transit and traditional bus services) has experienced a downward trend. This has corresponded with an increase in the proportion of survey respondents that frequently use private vehicles and motorcycles, which as increased every year since 2005.

[47] Red de Ciudades Como Vamos: Percepción Ciudadana sobre la Calidad de Vida en 10 Ciudades Colombianas. La Encuesta de Percepción de la Red Cómo Vamos 2012, Ipsos Napoleón Franco, Marzo de 2013. Link to document.

On the other hand, satisfaction with city and neighborhood roads has been increasingly consistently. In 2012, on average 53 percent and 38 percent of survey respondents were satisfied with the quality of neighborhood and city roads, respectively. These percentages have increased from 41% and 30 percent in 2008-2009.

Survey results with regards to overall urban mobility conditions and the performance of mass transit systems in the cities that participated in the Project is included below. The main conclusions for the main cities include:

- Users' perception regarding the absolute and relative quality of the system is positive in Barranquilla and Medellin.
- The survey indicates that the population of the Metropolitan Area of Bucaramanga is not yet completely satisfied with the service offered by the system.
- Understandably, given the delays in the implementation of the project, the perception of citizens regarding Transcaribe is not the best. In the latest survey (2012), 62 percent of respondents indicated that they are not satisfied with the progress made so far in the construction works and 41 percent believe that the system will not contribute significantly to improve mobility in the city (34 percent it will improve conditions and 25 percent consider the situation will remain the same).
- Survey respondents who indicated that Megabus was their main mode of transportation are generally satisfied with the system although the level of satisfaction decreased between 2011 and 2012.
- Satisfaction with the Transmilenio system has decreased continuously since 2008, while system usage has increased constantly over the same period of time.

Barranquilla (Transmetro)

In 2012, 66 percent of survey respondents indicated that they use public transportation for work and study related trips. The proportion of public transport users has remained relatively flat since 2009, when it experienced an important increase to 64 percent from 49 percent in the previous year.[48] Regarding the mass transit system, the percentage of people using Transmetro as their main transport mode has increased from 4 percent in 2011 to 13 percent in 2012. This increased has occurred at the expense of traditional buses and taxis, which have seen reduced their share in 9 percentage points and 1 percentage points, respectively, over the same period of time.

The overall satisfaction with the system was 83 percent in the year following the start of commercial operations (2011), decreasing to 70 percent last year. The proportion of people who believe that Transmetro significantly improved or somewhat improved the mobility situation in the city increased from 41 percent in 2011 to 47 percent in 2012. The percentage of people who considered that the introduction of Transmetro did not have any impact on mobility decreased from 43 percent in 2011 to 36 percent in 2012, while the percentage of people who considered that Transmetro somewhat or significantly worsened mobility increased slightly to 17 percent up to 16 percent over the same period of time.

The perception of survey respondents regarding the quality of service of Transmetro relative to that of traditional bus services has remained positive, particularly for the actual users of the system. In 2012, 76 percent of system users considered that Transmetro offered better service than traditional buses and only 6 percent considered the relative level of service of the BRT

[48] This increase mainly corresponded to an upsurge in the use of buses, from 43 percent in 2008 to 59 percent in 2009; and coincided with a drop in the reported use of private vehicles (privately-owned cars and motorcycles) from 29 percent in 2008 to 18 percent in 2009.

system to be worse. This is similar to the results obtained in 2011, when 78 percent of users considered Transmetro's service to be better than that offered by traditional buses and only 3 percent indicated the opposite. The relative value of Transmetro is lower when looking at the population as a whole. In 2012, 55 percent of all survey respondents (users and non-users) gave Transmetro's service a higher mark than that given to traditional buses (13 percent rated it lower), down from 57 percent in 2011 (8 percent rated it lower).

Finally, the overall perception regarding neighborhood roads has improved since 2009, when only 34 percent of survey respondents were satisfied with the quality of these roads. In 2012, 63 percent of respondents were satisfied with the general condition of roads in their neighborhood. The level of satisfaction in the southeastern segment of the metropolitan area, where the Project is rehabilitating local roads for feeder services has increased from 49 percent in 2010 to 57 percent in 2012.

Bogota (Transmilenio)

Overall satisfaction with the mass transit system in Bogota has declined from 49 percent in 2008 to 33 percent in 2011. Although satisfaction with the mass transit system has declined, until 2011 it remained above that of the traditional public transport services. Nonetheless, for the first time since the launch of the survey, traditional bus services' users reported a higher level of satisfaction (47%) than users of Transmilenio (28%).

Transmilenio usage among the surveyed population has continued to increase and is now 27 percent, relative to the 6 percent verified in 2002. The introduction of the complete NQS corridor after 2006 seems to have resulted in an increase in Transmilenio usage, which went from 14 percent in 2007 to 24 percent in 2009. Usage of traditional public transport reported a large decrease from 47 percent in 2011 to 36 percent in 2012. This coincided with an increase in private transport from 25 percent to 18 percent over the same period of time. It was also observed that public transport in Bogotá (Transmilenio buses and minibuses) continue to show lower levels of user satisfaction, while bicycles, taxis and buses to improve this level

Bucaramanga (Metrolinea)

Public transportation use (for work and study trips) in the city has remained flat at around 47 percent in the last year. Nonetheless, the percentage of people who use the Metrolinea system has increased from 7 percent in 2010 and 2011 to 16 percent in 2012. The increase in Metrolinea use appears to have occurred at the expense of the use of traditional bus services ("buses and busetas"), which has gone down from 35 percent in 2010 to 24 percent in 2012. The share of informal transportation (mostly moto taxi) has remained constant at 3 percent. These results are consistent with the increase in demand that has been verified for the system since the start of operations in 2009 and point to a substitution of traditional bus services for Metrolinea.

Also, the percentage of the surveyed population that now has used the system at least once went up from 43 percent in 2011 to 59 percent in 2012. This increase in first time use has mostly been the result of increased usage by low income – strata 1 and 2- (increase from 37 percent in 2011 to 55 percent in 2012) and middle income populations–strata 3 and 4- (increase from 47 percent in 2011 to 63 percent in 2012).

Breaking down usage by zone shows that the area in which most people have used the system is Floridablanca (78 percent in 2012 and 64 percent in 2011). Usage in Piedecuesta has experienced an important increase (from 26 percent in 2011 to 69 percent in 2012) as the system has recently

expanded to that area, resulting in an important increase in overall ridership. Giron continues to report the lower number of people who have used the system (16 percent in 2011 and 24 percent in 2012).

The survey indicates that the population of the Metropolitan Area of Bucaramanga is not yet completely satisfied with the service offered by the system. The overall satisfaction with the mass transit system has gone down from 48 percent in 2010 to 46 percent in 2011. The satisfaction of all survey respondents with respect to the mass transit system was not included as part of the 2012 survey.

At the same time, the perception of the users that carry out most of their trips in Metrolinea is not satisfactory. The percentage of satisfied users was 38 percent in 2010 (48 percent dissatisfied), 47 percent in 2011 (14 percent dissatisfied) and 19 percent in 2012 (56 percent dissatisfied). This may be associated with more crowding of buses as ridership increases.

Respondents do not seem to perceive a large difference between the level of service offered by Metrolinea and that offered by the traditional bus services. The percentage of respondents who believe that Metrolinea offers a better service than traditional buses and busetas was 19 percent in 2010, 39 percent in 2011 and 23 percent in 2012. The percentage of people who believe that Metrolinea offers a poorer service when compared with traditional bus services was 37 percent in 2010, 33 percent in 2011 and 54 percent in 2012. The decreasing quality of service perception, relative to traditional bus services, can be verified across all income groups.

The fact that user satisfaction and perception relative to traditional bus services was first ranked low in 2010, increased in 2011 and then decreased again in 2012 points to the evolution of system operations. The system started with low frequency and coverage that were later improved in 2011, leading to higher ridership in 2012, which is calling for adjustments in operations to increase the quality of service.

When asked about whether mobility situation in the city had improved as a result of the start of operations of Metrolinea, 63 percent of respondents considered that mobility had worsened, compared to 53 percent in 2011 and 44 percent in 2010. At the same time, the segment of the surveyed population that thought that mobility in the metropolitan area had improved as a result of the roll out of Metrolinea deceased from 26 percent in 2010 to 13 percent in 2012. Nonetheless, the above results are different according to the income level of respondents. Segmenting the results by income category shows that the percentage of low income population (strata 1 and 2) who believes that the overall mobility of the city has improved with Metrolinea has stayed flat at 15 percent in 2011 and 2012, while the percentage of people in this same income group who perceives the opposite had decreased from 63 percent in 2010 to 47 percent in 2012. This corroborates the view that private car users (higher income brackets) have a negative perception of the system due to the priority given to public transport for the use of road infrastructure.

The 2011 survey included questions aimed at identifying the satisfaction of users with regards to specific aspects of the Metrolinea system. The aspects with which users were satisfied the most included: station comfort (55 percent), bus comfort (52 percent), travel times (46 percent), accessibility for disabled persons (46 percent) and safety in buses and stations (40 percent). On the other hand, users expressed the most dissatisfaction with: crowding (47 percent), route coverage (41 percent) and proximity of stations to final destination (35 percent). The latter results are to be expected as it takes time for people to get used to a new paradigm in mass transportation.

Cartagena (Transcaribe)

Understandably, given the delays in the implementation of the project, the perception of citizens regarding Transcaribe is not the best. In the latest survey (2012), 62 percent of respondents indicated that they are not satisfied with the progress made so far in the construction works and 41 percent believe that the system will not contribute significantly to improve mobility in the city (34 percent it will improve conditions and 25 percent consider the situation will remain the same). The largest proportion of people who believe that the system will result in an improvement in mobility conditions can be found in the historic and northern part of the city (41 percent) and the lowest in the tourist and "De la Virgen" areas (26 percent).

The perception of citizens regarding Transcaribe as an institution has been eroded since 2009. The favorable perception of the institution has gone down from 71 percent in 2009 to 34 percent in 2012, while the percentage of people who value highly the management capacity of the institution has decreased from 50 percent in 2009 to 24 percent in 2012. Only a quarter of responded has high confidence in the institution, down from a third in 2011.

On the other hand, the percentage of people satisfied with road conditions in Cartagena has increased from 8 percent in 2008 to 39 percent in 2012. 71 percent of respondents now report that access roads to their neighborhoods are paved versus 65 percent in 2008. Road conditions for the lowest income segment of the population are improving. 35 percent of respondents in the low income strata (strata 1 and 2) are satisfied with road conditions, an important increase from the 15 percent who indicated the same in 2011.This may have to do with the increase in the percentage of low income people who report that their access roads are now paved: 62 percent in 2012 versus 52 percent in 2011.

Medellin (Metroplús)

Since the system only started operating in December 2011, the 2012 survey was the first one to include a specific question relative to the use of Metroplus. According to the survey, 0.4% of survey respondents use Metroplus as their main mode of transportation for school and work-related trips. This low participation is a reflection of the fact that Metroplus serves as a feeder to the metro rail system and that feeder routes to the system are still under development.

According to the survey, due to its integration with the metro rail system, the total impact of the implementation of Metroplus cannot be looked at in isolation. Considering that the share of the metro rail system increased slightly to 13.4 percent, in total, close to 14 percent of survey respondents indicated that they predominantly use either the metro rail or BRT systems for work or study purposes.

The satisfaction of all surveyed individuals with respect to the mass transit system in Medellin and Aburra valley has consistently been around 90 percent since 2008. From 2011 to 2012, the level of satisfaction with the mass transit system fell from 98 percent to 93 percent, but continues to be the highest of any Colombian city.

Finally, 94 percent of responded considered that Metroplus offered a safe transportation service , similar to the safety perceptions regarding the Rail and Cable services, also operated by the Metro Company.

Pereira (Megabus)

The "Como Vamos" survey has only been conducted in Pereira in 2011 and 2012. In the latest survey, the perception of citizens regarding mobility conditions in the city seems to have worsened. Citizens seem to observe more congestion than in the previous year, as indicated by their perceived travel times for work and school. This may be related to works affecting traffic flows during the year and corresponds to the perception of users of all modes, not only mass transit. Nonetheless, according to survey results, the users and level of satisfaction with Megabus have decreased somewhat.

According to the survey, the modal share of public transport (for work and school related trips) has decreased by two percentage points from 48 percent in 2011 to 46 percent in 2012. This decrease was not a result of increased private vehicle (car and motorbike) use, which actually decreased by two percentage points to 32 percent, but was due to an increase in walking and bicycle use. The overall share of Megabus went down from 21 percent in 2011 to 14 percent in 2012.

Survey respondents who indicated that Megabus was their main mode of transportation are generally satisfied with the system. In the 2012 survey, 73 percent of respondents indicated that they were satisfied and 16 percent expressed they were somewhat satisfied. Only 11 percent of the people surveyed indicated that they were not satisfied with the system. This represents a decrease in satisfaction relative to 2011, when 84 percent of users were satisfied, 14 percent somewhat satisfied and only 2 percent were unsatisfied.

Lastly, although not directly related to the project, the survey also points to decreasing satisfaction with almost all aspects of city traffic, except for road signaling, traffic lights and the organization and control of public transport. These are areas in which citizens reported an increase in satisfaction, but for which for which there continues to be a very high level of dissatisfaction (at or above 50 percent). It is worth mentioning that the biggest improvement in perception is related to the level of organization and control of public transport: reduction of 5 percentage points in dissatisfaction.

Citizens also perceive deterioration in the overall condition of the roads in the city and in the neighborhoods. The level of satisfaction with neighborhood roads has gone down from 76 percent in 2011 to 63 percent in 2012, while general satisfaction with city roads had decreased from 69 percent to 55 percent.

Annex 7. Stakeholder Workshop Report and Results

Not Applicable

Annex 8. Summary of Borrower's ICR and/or Comments on Draft ICR

A. Main Achievements, Lessons Learnt and Future Challenges

Main Achievements, Lessons Learnt and Future Challenges Faced by the Implementing Agency (Translated from Spanish by the authors of this document):

Achievements	Lessons Learned	Future Challenges
1. Institutional Strengthening: Five implementing agencies were created, all with teams trained in World Bank safeguards and procurement rules.	Hiring consulting firms on behalf of the implementing agencies had some difficulties due to official budget constraints. However, technical assistance from WB helped alleviate those shortcomings.	Guarantee continuity and sustainability of local implementing agencies in order to achieve optimum system operation
2. Financing: Five co-financing covenants were signed with local government and implementing agencies in order to guarantee necessary funding for projects. Additionally, 3 WB loans were signed. The total amount of resources allocated for the project was US$1.12 billion, of which WB financed 757 million.	During initial implementation stages, cities did not have enough resources to cover their entire commitments. Cities had to earmark resources from the municipal gasoline surtax. Additionally, in order to ensure resource flows, implementing agencies took credits with local banks. This allowed them to meet resource commitments year by year.	City dynamics makes necessary to increase the coverage of the transit system and optimize it to benefit mainly the poorest population. With this purpose, systems should appeal to alternatives such as the implementation of new (sic) and the integration with other transport modes, which will require additional financing.
3. Modernization of the transport industry: during the execution of the loans and the implementation of the mass transit projects, the inclusion, participation and modernization of the local transport industry was achieved. During this process, nearly 6 companies integrated by local proprietaries and transporters were formed.	During implementation, factions of the transport industry and owners of buses were against change. Also, big entrepreneurs tried to exclude minority owners from operating concessions. Implementing agencies and MOT mobilized technical and legal resources in order to protect minority owners. In many cases it was difficult to constitute operating consortiums entirely with minority	Achieve integration of mass transit systems with other public transport modes, in order to avoid unlawful competence Look for strategies that allow operating companies to be trained in bus operations as a means of helping them avoid financial sustainability issues.

Achievements	Lessons Learned	Future Challenges
	owners capable of accessing credits with local commercial banks which were required to fulfill contractual commitments with the systems.	
4. Start of operations: 4 mass transit systems have started operations: Pereira-Dos Quebradas-MEGABUS, august 2006, Bucaramanga-METROLINEA, December 2009, Barranquilla-TRANSMETRO, April 2010, and Vale de Aburra-METROPLUS on December 2011.	Conventional bus routes which competed with the mass transit systems were restructured. A collaboration agreement with local authorities for the restructuring process was reached.	Start of operations of the Cartagena BRT and subsequent phases of other cities. Coordinated work between national and local authorities and local implementing agencies is required so that conventional bus route restructuring programs are culminated successfully.
5. Upgrading of transport infrastructure: more than 186km of trunk ways, 170 km of pre-trunk ways, 154 stop stations, 235,818 $m^2$of intermediate and main stations, 337,258 m^2 of green spaces recovered or generated, 2,412,47 m^2 of public space generated and renovated, 41,499 new planted trees and 3193 land plots purchased. A total of 1,340 km of utility networks have been built, including dry and wet utilities.	Urban centers were intervened with high complexity mobility characteristics, as well as utility network and plot affectations. Deficiencies in public utility mappings were overcome. Due to technical and social changes in cities during implementation, additional civil works were required to be financed an built in order to ensure stability in the implementation of the systems.	Secure the construction of the required infrastructure for the subsequent phases of mass transit systems.
6. Generation of employment: more than 155 thousand direct and indirect employments. Professional capacities in local workforce were increased due to the generation of new knowledge derived from the implementation of large scale projects.	Through the implementation of the mass transit systems, construction workers from the vicinity where works were happening were hired. This worked as an employment relief especially in areas affected by construction.	Keep increment (sic) the number of local jobs generated by the start of operations of the systems and the construction of second phases of projects.

B. Highlights of the World Bank's Technical Assistance

As a result of the execution of the World Bank Loans which financed 6 of the 7 Colombian cities participating in the Colombia NUTP, the MOT can highlight the following benefits derived from the World Bank technical assistance to public entities involved in the execution of the program:

1. Pavement Management Manual Handbook

The Project supported the preparation and publishing of a virtual book titled "Pavement Management Manual" which encompasses experience in design, construction and maintenance of pavements in each BRT. The manual constitutes the basis for the implementation of an efficient system of administration of pavements main part of the operating infrastructure of integrated mass transit systems in the country. The result of this work was sent to the local BRT agencies as a reference document to identify and make decisions in the event of an alkali-aggregate reaction in concrete pavement systems. In December 2012, the first version of the maintenance manual was made widely available.

2. Visible Works Program

During the execution of the loans, the "visible works program" was implemented by the government, meeting the following objectives:

- To use the program as a monitoring tool, to ensure transparent and efficient recruitment in developing Mass Transit works throughout the country
- To reiterate the interest and the support of the National Government in monitoring mass transit projects in the country.
- To present to the public the progress and achievements in infrastructure projects and the current vs. the start of operation.
- To address the precise concerns of the community through their spokesmen and address them effectively.
- To strengthen the sense of belonging of projects in cities both within the community and in the unions.

3. Specialized Technical Assistance to Local BRT Agencies

A specialized technical assistance program was made available in form of a pool of renowned experts. The program covered topics such as structuring of technical, legal and financial concessions, bus operations and fare collection. The program took place during the monitoring and implementation stages of each BRT. Local BRT agencies also had the support of specialists in geotechnical, materials and pavements engineering. A specialist experienced in the operational design and implementation of mass transit systems and other specialists in different areas were hired by the MOT. Note that this allowed a permanent linkage with project management bodies and special counseling at different stages of the implementation of each system.

4. Knowledge Transfer

To promote the exchange of knowledge and experiences, meetings were held regularly with local BRT agencies to discuss these issues and generate new strategies of solution to the complexities of projects. During the period of management, execution unit coordinated and participated in the development of the following activities:

- Workshop of experiences for bus operators and their role during the entire process leading to the implementation of the system.
- Workshop aimed at having the experience of start of operation in Cali (MIO integrated system). This system was not financed by The World Bank. The workshop was attended by CEOs and operational managers of implementing agencies.
- In particular they discussed the plan to publicize and promote the system and lessons learned and recommendations.
- A system maintenance seminar was conducted, which was aimed that local operational managers submit to the other entities, the experiences we have had in maintaining the transport system infrastructure (stations and portals), road and public space that has been built.

5. Communications Actions

Listed below are the communications actions that were developed in the framework of the strategy for the achievement of the objectives indicated, as a support the process for the implementation of BRTs in Colombia:

- Tour each of the cities where the projects are developed, together the Mayor of each city, the observers, contractors, supervisors, unions, community leaders and media. In these meetings, a summary of the status of each system is done, including the recognized problems and solutions raised by local implementing agencies. It is shown that local and national governments are committed to the work within the implementing programs of each system. These meetings are part of the "Visible works" program.
- Visits to regional and national media: media rounds were held in all the cities in which they are building different systems, like the city of Bogota in the media with national coverage. People who give interviews are in charge of the project execution, in representation of BRT agency managers and management bodies representing the GoC, specifically the Minister and Deputy Minister of Transport.

Through this exercise, achievement of project goals was divulgated to the media in order to spread the message proposed in the strategy and contextualize the various journalists about reality and purposes of the BRT.

Meetings with columnists: Meetings were held with columnists in different cities. Through these meetings columnists were informed of progress of various projects. This is an exercise that is recommended to develop in all cities where BRT systems were implemented. The final objective of these meetings was to better inform those in charge of generating opinion in the media.

Media Monitoring: A media monitoring exercise was done to written media, radio, television and Internet media, on a daily basis, to document the news generated on mass transit.

Media training for managers, spokespersons and communications equipment each BRT: The objective was to provide tools for better transmission the message to different audiences. It sought to create a unified message starting from the national government and replicated in managers in their regions to finally be reinforced through press releases issued by the heads of communications. It aimed to show mass transit systems as a mega work of national and local government, and not as independent works.

Radio Spots: a project to position around the BRT in national and local media was structured. The strategy was to play local cribs in every participating city making these in turn in national cribs.

Identification of issues of importance to public opinion: After performing the media monitoring and analysis of news, a new briefing in BRT news was produced focused on:

- Transparency in handling money and procurement processes
- Compliance in the work schedule.
- Impact of works on both vehicular and pedestrian mobility of citizens.
- Works costs and certainty that the resources for the works are insured.
- Fuel used in the integrated mass transit systems.

In principle, national media were recording negative or decontextualized information that polarized debate about systems. From the communication strategy implemented and spreading the message of recognition problems, presenting solutions and work schedules with commitments for the community, the debate entered an equilibrium process, with an increase in informative or neutral information and a decrease of the positive and negative stubs.

Annex 9. Comments of Cofinanciers and Other Partners/Stakeholders

Not Applicable

Annex 10: Project Background

Urban Transport Sector Background

In Colombia, three out of four people in the cities used public transport to carry out their daily activities. The majority of them was poor and spent a relatively large fraction of their income in transportation. Despite this, urban infrastructure development had traditionally favored the use of private vehicles, which used approximately 80 percent of the available roadways, but only mobilized 25 percent of the people in cities. Bus transportation in Colombian cities operated with sub-standard quality and operating speeds significantly below those of international benchmarks, resulting in long travel times, traffic congestion, high incidence of road accidents and elevated levels of air and noise pollution.

Due to the factors explained above, developing efficient, reliable and affordable transportation systems was, and still is, a key component of the country's development agenda. Many challenges stood in the way of achieving this objective, including an inadequate regulatory framework and lack of institutional capacity to implement policies in the sector. The existing regulatory framework for the authorization of bus routes encouraged oversupply because it gave control of the routes to private intermediaries, whose profit did not depend on optimizing operations, but on the number of buses affiliated with them. Bus owners paid a fixed rent to the intermediaries, inducing them to maximize their revenue by fiercely competing for passengers in what became known as the "penny wars" ("*Guerra del Centavo*"). Buses operated under a de facto unregulated system that encouraged competition in the market (for passengers) and not for the market (for routes). In addition, national and municipal authorities did not have the sufficient institutional capacity to formulate and implement effective transport planning and traffic management policies.

The city of Bogota was the first in the Country to embark on the development of a mass transit system based on Bus Rapid Transit (BRT) technology[49], which became known as Transmilenio. In this system, a competitive bidding process was used to determine the bus operators that have the right to exploit a route or number of buses. Bus operators in turn needed to acquire and operate a high capacity and modern bus fleet under the coordination and supervision of a public implementing agency, which programs and controls service supply with to-the-minute accuracy. The buses operate on exclusive busways, built by the city government, resulting in higher operating speeds and better-quality services. By the time of appraisal, this system was already operating with highly satisfactory results.

The National Urban Transport Program

In order to respond to these challenges and following the successful experience of Transmilenio system in Bogota, the Government of Colombia (GoC) instituted a National Urban Transport Program (NUTP). The program established an enabling policy framework for improving urban transport across the Country and institutionalized its support to the development of similar mass transit systems in other cities. [50]

[49] BRT technology improves travel conditions for passengers because buses have exclusive lanes; passengers board buses from at-grade stations, and pay their fares upon entering the station.

[50] The legal foundation for NUTP was given by Laws 86 of 1989 and 310 of 1996. However, the NUTP was only formally launched following the approval of two National Economic and Social Policy Council (CONPES) Documents

The NUTP was created with the purpose of improving the quality of life and increasing productivity in Colombian cities. This goal depended on the successful implementation of mass transit systems in large cities (more than 600,000 inhabitants), which in turn contributed to the achievement of multiple objectives: improving the efficiency and safety of public transport services; providing reliable access to the poor; enhancing private sector involvement in service provision; reducing air pollution and greenhouse gas emissions; and encouraging comprehensive urban development processes. Following the successful experience of Transmilenio in Bogota and, given the resources available at the national level[51] and the operating requirements in participating cities, the NUTP opted for BRT as the preferred technology for the development of mass transit systems. Through the NUTP, the GoC committed to funding up to 70 percent of the cost of developing BRT infrastructure in the metropolitan areas (MA) of Barranquilla, Bucaramanga, Medellin and Pereira and the cities of Cartagena, Cali and Soacha.

The NUTP was built upon a partnership between the Central Government and participating cities. The GoC formalized its commitment through the approval of city-specific economic and social policy documents (CONPES documents), which detailed the proposed mass transit projects and the conditions of central government support and served as basis for subsidiary agreements executed between each municipality and the Ministry of Finance and Public Credit (MHCP for its initials in Spanish). This mechanism earmarked future national budget allocations ("*Vigencias Futuras*") to be disbursed alongside local counter-party funds against the execution of public works.

World Bank Support

The World Bank's engagement with the GoC on urban transport dates back to the mid-nineties. At this time the Government was pursuing a series of regulatory reforms to promote private sector participation in infrastructure, and the city of Bogota was laying the groundwork for the implementation of *Transmilenio*. By the time of appraisal, the Bank, through the Bogota Urban Services Project, had supported the development of *Transmilenio* and assistance scaled up significantly after the launch of the NUTP in 2002-03. In addition, though the Regulatory Reform Technical Assistance Loan (P040102), the Bank had previously supported the development of the NUTP and the conceptual design of several of the BRT systems that were later implemented through the Project.

issued in 2002 and 2003 (Documents 3167 and 3260), which established the policy and institutional framework for the program.

[51] Colombian Law 310 of 1996, known as the "metros law", established the commitment of national resources to finance urban mass transport systems.

Annex 11. The Integrated Mass Transit Systems Project

The Bank supported the NUTP through the Integrated Mass Transit Systems Project (IMTS) Project (the "Project"), which was funded by three successive loan operations: the Original Loan of USD 250 million approved in June 2004 (Loan 7231-CO / P082466); a First Additional Loan of USD 207 million approved in June 2007 (Loan 7457-CO / P101356); and a Second Additional Loan of USD 300 million approved in August 2009 (Loan 7739-CO / P114325).

The above-mentioned loans financed a time slice of the NUTP corresponding to 100 percent of GoC transfers to participating cities (Bogota's NQS corridor, MA of Barranquilla, MA of Bucaramanga, Cartagena, MA of Pereira and MA of Medellin-Valle de Aburra) with the purpose of developing BRT systems.[52] These loans also funded institutional strengthening activities both at the local and national levels in support of the implementation of the NUTP.

Initially, the responsibility for project implementation fell under the National Planning Department (DNP for its initials in Spanish), which served as the Secretariat of a Technical Committee made up by the Ministry of Finance and Public Credit (MHCP for its initials in Spanish), in charge of managing resources, and the Ministry of Transport (MOT), in charge of sector issues. The overall responsibility for project implementation was transferred to MOT in time for Project Negotiations stage[53], once certain conditions were complied with, including the establishment of an adequately staffed implementation unit. For this purpose, the MOT established the Integrated Mass Transit Project Coordination Unit (PCU).The PCU at MOT, in close coordination with DNP and the MHCP, has been responsible for the overall implementation of the Project at the national level, providing technical support to the NUTP and monitoring and evaluating program implementation.

At the local level, participating cities established implementing agencies in charge of executing the civil works and coordinating the operation of the BRT systems. The local implementing agencies included: Transmetro S.A. (Barranquilla MA), Transmilenio S.A. (Bogota), Metrolinea S.A. (Bucaramanga MA), Transcaribe S.A. (Cartagena), Metroplus S.A. (Medellin-Valle de Aburra MA) and Megabus S.A. (Pereira-Dos Quebradas MA).[54] With the exception of Bogota, these agencies were all created for the purpose of implementing the construction of the infrastructure and later managing the operation of the system.[55]

An important innovation was the corporate governance of Implementing Agencies, set up as Limited Liability Companies with independent boards comprising members of the local and national governments (MOT, DNP and MHCP initially, and later representatives appointed by the office of the president).

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[52] The Inter-American Development Bank (IADB) supported the development of the BRT system in Cali; and the Andean Development Corporation (CAF) and Organization of Petroleum Exporting Countries (OPEP) supported Transmilenio's Suba corridor.

[53] Within the World Bank's project cycle.

[54] In the case of Bogota, the local government relied on a specialized municipal works agency: Urban Development Institute (IDU) to carry out the construction of the BRT infrastructure, while operation rested with the implementing agency: Transmilenio S.A.

[55] In Bogotá the Urban Development Institute (IDU) is in charge of the construction of the infrastructure and Transmilenio S.A. is in charge of the operation of the transport system.

The Original Loan and Additional Financings

The Original Loan supported the implementation of the NUTP in the Metropolitan Areas (MAs) of Bogota, Cartagena and Pereira and contemplated the inclusion of additional MAs after they met minimum conditions. The First Additional Loan allowed for the financing of works in additional MAs that achieved compliance with eligibility requirements, including Barranquilla, Bucaramanga and Medellin-Valle de Aburra; and covered a financing gap of USD 100 million in the financing of Bogota's NQS BRT corridor. The Second Additional Loan funded a scale-up in the NUTP's physical scope (in Barranquilla, Bucaramanga, Cartagena and Medellin-Valle de Aburra), including the expansion of trunk corridors and feeder routes to meet increased demand and the improvement of associated infrastructure.

Project Loans and Objectives

Loan	Amount (USD million)	Objective	Time-slice of GoC Transfers	Approval Date	Effectiveness Date	Closing Date
Original Loan:	250	Financing of Bogota, Pereira and Cartagena Systems	2005-2007	June 10, 2004	January 20, 2005	March 31, 2009
First Additional Loan:	207	Geographical expansion of the NUTP to three additional cities.	2007-2010	June 12, 2007	January 17, 2008	March 31, 2010
Second Additional Loan:	300	Physical expansion of the original scope of the NUTP and funding of land acquisition and resettlement compensation	2009, 2010 and part of 2011	August 4,2009	December 9. 2009	December 31, 2012

Approximately 99 percent of the loan went to the financing of infrastructure works. As it can be seen in the table below, close to 60 percent of the loans' proceeds went to the financing of Transmilenio's NQS corridor in Bogota.

The Loan Agreement was amended to change the amounts allocated under eligible categories with the purpose of increasing the allocation for the financing of the NQS corridor in Bogota in two occasions: October 2010 (first restructuring approved in March 2011) and again in April 2011 (second restructuring approved in December 2011). This change was required to complete the payment of all transfers associated to that sub-project, as the associated contracts had been completely executed more than four years before. In 2012, the Loan Agreement was amended again, first in January (third restructuring approved in March 2012) and then in March (fourth restructuring approved in April 2012) to extend the closing date of the Second Additional Loan from March 31, 2012 to August 31, 2012 and to December 31, 2012, respectively. [56] This extension was requested to give additional time to the PCU to execute a remaining loan balance of approximately USD 1 million under the Capacity Building Component.

[56] This extension required a Regional Vice-President approved extension beyond the three-year limit for additional financing loans.

Loan Disbursements by Component

Project Cost by Component *(Amounts in USD million)*	Original Loan (LN 7231-CO)	First Additional Loan (LN 7457-CO)	Second Additional Loan (LN-7739-CO)	Total	% of Total
1) Capacity Building	1.8	0.4	0.8	3.0	0.4%
2) BRT System Development	248.1	206.4	295.4	749.9	99.1%
a. Transmilenio NQS (Bogota)	147.6	118.3	175.3	441.1	58.3%
b. Megabus (Pereira)	26.2	0	0.0	26.2	3.5%
c. Metrolinea (Bucaramanga)	23.4	29.1	29.1	81.6	10.8%
d. Transcaribe (Cartagena)	17.1	20.1	38.3	75.5	10.0%
e. Transmetro (Barranquilla)	4.0	18.9	36.7	59.6	7.9%
f. Metroplus (Medellin)	29.8	20.0	16.0	65.8	8.7%
3) Unutilized Balance	0.1	0.2	3.8	4.0	0.5%
TOTAL	**250.0**	**207.0**	**300.0**	**757.0**	**100%**

Project Preparation

Project's background analysis was based on previous policy and project design work and on a well-thought national policy framework. The Project's design built on the successful experience of the Transmilenio System in Bogota (supported by the Bank's Bogota Urban Services Project) and on the experience gathered by the Bank in other interventions in LAC countries. [57] The Project also built on previous analytical work financed by the Regulatory Reform Technical Assistance Loan. This Loan financed the feasibility studies for four BRT sub-projects (Barranquilla, Cali Cartagena and Pereira), as well as other analytical work that helped establish the NUTP policy (CONPES 3093).

The Project introduced a fundamental change in the urban transport sector and required a strong commitment from the GoC and participating cities. The GoC institutionalized a longstanding commitment to urban transport reform by instituting the NUTP and by approving long-term policy and co-financing agreements for the development of each of the systems included in the Project. The NUTP established a roadmap to guide design and implementation.

The Project is a highly-complex operation because it involved multiple sub-projects (construction of BRT systems) in different cities, some of which were relatively small and lacked the sufficient institutional and technical capacity to plan and implement mass transit systems. Of the six cities covered by the Project, only two (Bogota and Medellin[58]) had a mass transit system prior to the start of Project operations. Also, all cities had strong private traditional bus operators that needed to be engaged in the reform process. Finally, projects needed to strike a balance between affordability and financial sustainability. The Project design is considered generally satisfactory having addressed these realites.

[57] The Bank partially financed the construction of the first phase of Transmilenio (Loan 4021-CO) and supported the second phase of the improvement of feeder roads for the system (Loan 7162-CO). The Bank also had experience with the financing of BRT systems in Peru and Chile.

[58] Medellin has a metro system operating since 1995. The current rail system has two lines and an extension of 28 km.

The perceived impact of risks was accurate in the identification of risks "from outputs to outcomes" and less so in the identification of risks "from component to outputs". The risks to achieving the PDO through the delivery of Project outputs included: a substantial risk of regulatory failures (poor route reorganization and supervision of private operators); and a moderate risk that high prices and inadequate feeder services limited access for poor populations. This assessment is consistent with the most significant risks that can actually be verified now in the form of incomplete route reorganization and inadequate regulation of services and, potentially, in the negative impacts that charging infrastructure to the user tariff can have on affordability.

On the other hand, risks precluding the delivery or project outputs included: a high risk of insufficient political support; a substantial risk that implementing agencies are not able to execute financing, operation and fare-collection agreements; and a substantial risk that private operators of traditional services would be unwilling or unable to participate in the Project. None of the above risks resulted to be as critical for the delivery of outputs as envisioned in the PAD, as most of the issues in these are related to inadequate project designs leading to construction delays, and the need to strengthen the operations management capacity at implementing agencies.

Annex 12. Assessment of the Monitoring & Evaluation (M&E) System

Design

The National Urban Transport Policy (CONPES Document 3260) entrusted the Technical Committee with the responsibility of monitoring and evaluating the implementation and outcomes of the NUTP. According to the original project design, the data collection needed for M&E would be a shared responsibility of the implementing agencies and the DNP (later MOT).

In 2004, under the Original Loan, a comprehensive results framework was developed to monitor and evaluate the performance of the Project. As part of the loan covenants applicable to the Original Loan's implementation, it was agreed that the Borrower would carry out a study to determine the impact of the NUTP in terms of improved mobility, increased accessibility by the poor and institutional capacity; and that a baseline of associated indicators for participating cities would be constructed no later than six months following the Original Loan effectiveness date (January 2005). It was also agreed that the Technical Committee and participating cities would present the results of this study at the mid-term review mentioned above and at project end. In addition, the subsidiary agreements executed between the MHCP and participating municipalities, which govern the implementation of mass transit systems, contemplated as part of the obligations of Implementing Agencies, the establishment of an M&E system and the provision of project performance information as per the directions of MOT and based on the requirements of the Bank.

The M&E framework was implemented with some delays relative to the time frame envisaged at the time of Project design. Initially, with support from the Bank, the Borrower commissioned an initial study to develop a set of indicators and to establish a baseline for the mass transit systems in Pereira and Bogota.[59] This study was carried out by Steer Davies Gleave (SDG) and completed in early 2006. This was later complemented with a study that expanded the scope of this task to all participating cities and also included the development of a web-based system for the reporting of performance indicators. This follow-up activity, carried out by the same consulting firm, was commissioned in November 2006 and completed in October 2007.[60] The proposed M&E Framework consisted of a set of 35 indicators to measure performance in three areas: (i) performance of local transport; (ii) efficiency and effectiveness; and (iii) impact on the urban environment.

However, despite the progress achieved in developing a set of indicators and a web-based tool, the M&E framework was not consistently implemented in the years that followed. The commitment of Implementing Agencies to periodically report on the performance of the mass transit systems developed in each city was only formalized in 2009, through Resolution 4147 of the MOT, in effect since January 1 of 2010. This Resolution created the Urban Transport Monitoring and Evaluation System (SISETU for its Spanish initials) in the cities that develop mass transit projects with partial financing from the Central Government. The SISETU was built

[59] "Determinación de la Línea de Base y Esquema de Monitoreo Posterior para los SITM de Pereira-Dos Quebradas y Bogotá D.C.-Troncal NQS", Steer, Davies Gleave, 2006.

[60] "Consultoría para el Cálculo de Indicadores y Líneas de Base de Referencia y para el Desarrollo y Puesta en Funcionamiento de un Portal en Línea de Información y Reporte de Informes de Seguimiento para los Sistemas de Transporte Masivo en Colombia-Informe Final", preparado para el Ministerio de Transporte de la República de Colombia, Steer Davies Gleave, Octubre de 2007.

upon the set of 35 indicators developed by SDG with Bank support in 2007. The Resolution gave further legal grounding to the requirement that Implementing Agencies periodically collect and submit information to monitor performance.

Utilization and Sustainability

A recent evaluation of the SISETU found that despite the technical merit of the indicators, the number and nature of the performance measures required is not commensurate with the technical capacity of the entities in charge of collecting the data and calculating the indicators. Only two of the five systems in operation (Transmilenio and Transmetro) were able to report 100% of the quarterly information that needed to be submitted to the system in 2010.[61] It can be seen that the implementing agencies with the longest operating histories (Transmilenio, Megabus and Metrocali) have had a better record in the reporting of M&E indicators.

At the request of the Bank, in February 2013, the MOT carried out an evaluation of the SISETU that found that the level of compliance of implementing agencies with reporting requirements has not been satisfactory. Reporting (measured as the number of indicators reported over the total number of SISETU indicators) averaged 60 percent in 2010, the first year of reporting. With the exception of Metroplus, which started operations in 2011, the number of indicators reported by implementing agencies has gone down between 2010 and 2012. Metrolinea did not report any indicators for the year 2011, while Transmetro only reported 11 percent of the indicators in that same year. As of February 2013, none of the implementing agencies had reported indicators for the year 2012. [62]The MOT has indicated that the web-based tool is not user friendly and has some reliability issues, creating an additional hurdle for reporting agencies. The set of indicators and web-based tool were developed by external consultants, and the PCU never developed the internal capacity required to maintain the tool and update it based on needs.

The MOT is currently working with Implementing Agencies to facilitate the use of the M&E system and ensure that indicators are adequately measured and reported on a regular basis. Some of the measures being contemplated include simplifying the M&E framework by reducing the number of indicators to be reported so as to make it feasible for Implementing Agencies to calculate these. The MOT has also clarified responsibilities for the collection of indicators according to the competencies of different agencies at the municipal level. The MOT expects to issue a new resolution on this matter, incorporating the feedback received from implementing agencies, and to improve the web-based tool to make it more effective.

[61] "Revisión y Recomendaciones al Sistema de Información, Seguimiento y Evaluación del Transporte Urbano-SISETU" Johnny López Martin, Departamento de Ingeniera Civil y Ambiental, Universidad de Los Andes, 2012.
[62] "Reporte Consolidado SISETU a Diciembre 31 de 2012", Unidad de Movilidad Urbana Sostenible-UMUS, Ministerio de Transporte, Febrero de 2013.

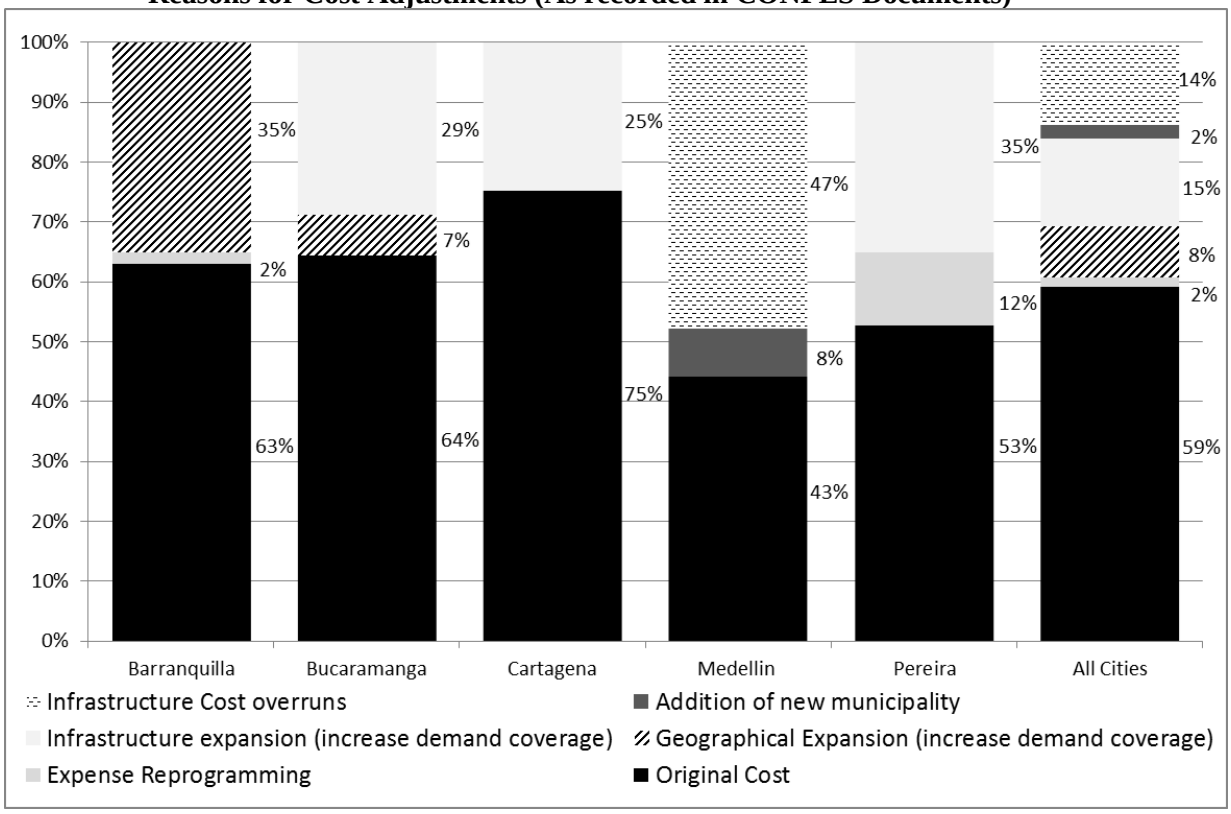
Annex 13. Original and Revised Scope, Cost and Schedule for BRT Projects

Project Implementation Schedule, Scope and Cost- Original Vs. Actual

Project Scope Original *Revised*	Trunk Km.	Pre-trunk / Feeder Km.	Terminal /Garages	Trunk-/Pre-Trunk Stations	% of demand serviced	Operation Start Date (Phase 1)	Total Cost COP (million) 2012	% Cost increase (Const. COP)
Barranquilla	13.2	0	3	16	32	Q1 2006	302,493	59%
TRANSMETRO	*15.6*	*61.9*	*3*	*16*	*38*	*Q1 2010*	*480,165*	
Bucaramanga	14.5	22.0	3	15	44	Q1 2006	356,891	55%
METROLINEA	*8.9*	*105.2*	*4*	*15*	*66*	*Q4 2009*	*553,503*	
Cartagena	11.3	0.0	1	23	70	Q4 2010	336,671	33%
TRANSCARIBE	*10.3*	*67.9*	*2*	*17*	*100*	*Q4 2013*	*447,793*	
Medellín-V.Aburra	12.5	18.5	0	22	12.2	Q1 2006	307,684	131%
METROPLUS	*12.5*	*18.5*	*0*	*52*	*11.0*[63]	*Q4 2010*	*711,721*	
Pereira-Dos Queb.	16.7	2.0	2	37	46.0	Q3 2006	134,749	89%
MEGABUS	*16.2*	*4.0*	*2*	*38*	*48.0*	*Q3 2006*	*255,246*	

Source: Own elaboration based on CONPES Documents and information from the DNP
Costs in Constant COP of 2012

Reasons for Cost Adjustments (As recorded in CONPES Documents)



Source: Own Elaboration based on information from the DNP

[63] The demand coverage of Metroplus is expected to reach 54% taking into account the integration with the Metro Rail system

Annex 14. The National Urban Transport Program (NUTP): A Transformational Project

The Integrated Mass Transit Systems (IMTS) Project and the national policy it supports, the National Urban Transport Program (NUTP), have shown results that go beyond the infrastructure interventions. Over the nine years that the Bank has supported the program, Bank teams have witnessed how the influence of the IMTS Project has surpassed national boundaries to become an international reference in urban transport transformation. This annex is not the first time that this transformative impact has been documented nor will it be the last. This annex seeks to highlight the main transformations that resulted from the NUTP and that have been recognized by numerous transport-advocacy organizations, NGOs, governments and international experts.

As means of Introduction: The panorama of the urban transport sector in Colombia in 2004

For many years, the streets of large Colombian cities resembled battle grounds. Due to the lack of adequate regulations, public transportation routes were awarded to private sector companies which acted as intermediaries, and who would hand over the routes to individual bus owners and operators. These transport entrepreneurs, acting almost as if they were franchisees, would recruit drivers to collect profits at any cost. At the same time, drivers were faced with the harsh reality of urban transport in shifts of 14 or more hours without any working benefits. These shifts included a fierce competition for passengers while collecting fares, dodging pedestrians, outmaneuvering competing drivers on the same route, and simply surviving the relentless urban transport war. Press reports even suggested that at certain points bus drivers would allow thieves to hijack buses in exchange for a part of their "earnings." Such is the nature of the infamous "Penny Wars".

Colombian women and men were used to a polluting transport system, characterized by noise, filth, fumes and insecurity. These elements painted an image of a dangerous, dirty gray city, which in the worst sense of the expression could be called a cement jungle. Everyone's daily trips were done in this environment. Even if business owners and the government would take care of their employees' work environment, it was the city's environment that required the most attention. The transport system was also associated with theft, scams and traffic accidents. To be a user of public transport was at some points a reason of shame, and the collective imaginary of the experience of using public transport had a widely-spread negative connotation.

The Integrated Mass Transit Systems in the Metropolitan Areas of Barranquilla, Bogota, Bucaramanga, Cartagena, Medellin and Pereira

The infrastructure of mass transit already forms part of the collective social imagery of most Colombians. Long buses quietly zooming by the streets alongside the traffic, the imposing stations with their metallic glow, the pedestrian bridges that emerge like giant tentacles and the road network that multiplies like a spider's web are all postcards of life in Colombian cities. However, behind that impressive material infrastructure hides a human infrastructure that has made the project a reality and the Integrated Mass Transit Systems, IMTS, a source, not only of changes, but also of employment.

The IMTS has tackled many challenges, and not only in terms of logistics, infrastructure and technology. It has also coped with the important issue of knowledge transfer—how to take the successful experiences to other regions, new urban settings, and to generate local structures or integrated models for its operation. Since the beginning, the IMTS has put an innovative working model into practice. Even though the initiative had a prototype in Bogota's Transmilenio and

some guidelines were set by the National Government, the IMTS modus operandi established that each city would have control to plan and define their destiny. In order to do so, a legal, administrative, technical and financial framework was devised and a Project Coordination Unit was created that together with the World Bank, would work in collaboration with each Local Authority. Such were the arrangements to take advantage of the massive resources that the State had allocated to solving urban transportation problems in the principal cities of the country. As time went by, this initiative gave life to new institutions, new dynamics and authorities. It established specific operating alternatives for each city—all with a similar, yet unique logic. In fact, one of the conditions for the municipalities to participate in this National program was to create autonomous Local Transit Agencies entities to develop the projects. Beyond the mobility and transportation objectives, the IMTS represents a decentralized and democratic work model that, in some ways, has managed to transport knowledge and human beings to different destinations in Colombia.

The IMTS transcends dimensions that are merely operative on the matter of transportation in order to reflect on other aspects that surround it. The construction of infrastructure like parks, public bathrooms, roundabouts and bridges has made the transportation network more efficient and more functional, as well as having an important urban impact. The "city experience" has also improved for the user, and it has heightened the collective strengths in order to generate a conscience about the city's urban and architectural heritage. Thanks to this, the urban scenario becomes more fertile every day.

Transport as a Social Enabler

Thanks to the arrival of the Integrated Mass Transit Systems, (IMTS) a new bus operating scheme was proven possible, challenging prejudices and negative images on urban bus systems and dramatically changing livelihoods for those working in the bus-operating industry. In the transition from the traditional system to the IMTSs many positive changes were brought to stay. IMTS have created many quality jobs in cleaning, infrastructure maintenance, ticket sales and bus operation. It has also allowed bus manufacturers to employ about 1,600 workers for putting together bodywork and assembling 12 and 18m buses. For women and men driving buses, in addition to receiving legal social benefits, adequate salaries, and an 8-hour work day, IMTS drivers are only asked to meet pre-established benchmarks for service quality, safety and speed. Just as passengers have benefitted from a substantial decrease in traffic accidents and much more pleasant travel experience, bus operators and route owners have also adjusted to new rules. Although they now work under a greater degree of regulation and supervision, they have also found better business opportunities and more respectability. As it tends to happen in times of peace, those that survived the "Penny War" have found a new life of well-being and tranquility.

> *"I was a bus driver for 13 years, but I've worked the last five months as a bus operator. Before that, my job was very stressful, especially because the work day was very long. I complied with the owner's passenger limit and, and after 310 passengers, the profits belonged to me. I made sacrifices to get them. Now, my life has changed 100% because I work for three hours, rest for one, and then I continue until I complete eight working hours. I have time for myself, my family, to go to the doctor, to study. Also, society now views me in a different light, and no longer looks down on me as before. Now I have goals set for myself: owning a house and having a well-established family."*
>
> John Jairo Mina Vidal. Bus Operator

There was also a positive impact to the women and men that participated in the construction of the system's structures. To 2009, the construction of infrastructure had generated more than

150,000 jobs. A good number of them were given to the unskilled labor force and to individuals from each region due to a policy that assigns a percentage of the jobs to citizens of areas where the projects are being constructed.

Transport and Gender

The concept of an integrated system implies that there are various subsystems that follow the direction of the "mother" system. Oddly enough, the term acquires another connotation when referring to the IMTS, because it has been particularly eloquent when describing the way it has addressed the needs of women. Women were especially vulnerable to abuse on the streets—especially late in the evening. They had to protect their children in the middle of the anarchy of traffic or deal with the chaos in transportation while pregnant. They have found in the IMTS an inclusive and, why not, "maternal" project. The network's security system and its access corridors provide safer scenarios because they are equipped with proper lighting and restricted access to improve security conditions. The blue seats inside the buses —for preferential use by pregnant women— and the areas allocated for baby carriage, complement the mobility experience for mothers. The System considers women's' needs in other ways too. For instance, they have access to the same employment opportunities as men. This is supported by the fact that the employment structure of the IMTS includes women holding positions in management, inspection areas, ticket sales, cleaning vehicles and even driving, which traditionally is associated with men. Also, women benefit from special considerations in cities like Cali and Bogota where mothers that are heads of families have priority in being hired for positions in ticket sales. In answering to women's' real needs, the IMTS recognizes their contribution to the Colombian society as women and as mothers, and because of this, it guarantees dignified, fair and equal treatment. As such, nothing is more coherent than defining the IMTS as the "mother system" of urban transport in Colombia.

Transport and Universal Accessibility

The IMTS have all owed citizen access to an unprecedented mobility experience in its cities—an experience that implies new benefits and new challenges. However, the systems have also allowed citizen access to new perspectives, many of them related to their individual and collective identities. One of them is the relationship to people with some form of disability and their right to participate in public transport. The idea of incorporating this important sector of the population to the network came up in the first phase of Transmilenio, when ramps, safety elements and audible mechanisms were included in the system with the idea of satisfying the particular needs of disabled people. Shortly afterwards, special devices were installed and more inclusive signposting was erected on the trunk lines. Currently, these lines provide a significant amount of handicap accessibility elements. In the future, the systems are expected to adapt the surrounding areas of feeder stops, mimicking the trunk line experience, in order to provide a more inclusive urban design. Beyond resources such as signposting for the blind, audible signals for the deaf and ramps for people in wheelchairs, the most important access code in the system is the code of conduct. This allows people with disabilities to access the world of equality, and promotes a behavior based on principles of respect and solidarity among users. The IMTS intends to give access to all people. For this reason, the systems have elements such as station ramps, access platforms and preferential spaces inside the buses.

> *I think we can say that the Bus Rapid Transit, BRT, experience in Colombia has already been a vital source of good practice far beyond Latin America. BRT construction around*

the world tends to "look" accessible with its use of ramped platforms and floor-level boarding. But looks can be deceiving and the Colombian BRT systems now in operation go beyond mere appearance to create systems which can and do set a standard for replication elsewhere.

Tom Rickert
Executive Director, Access Exchange International

Transmilenio gave me many good things. First of all, it takes me everywhere quickly, even though people complain that it's too crowded. The trip is really fast. Second, there's the comfort of having a guide tell me which bus to take. Third, the bus makes fixed stops as part of an itinerary; the other buses would see I was blind and assume I was going to get on to sing or beg. They also have elevators that help a lot

Luis Rincon
Blind User of Transmilenio

Transport and Environment

The IMTS have developed important initiatives to minimize their negative impact and to generate the best work and life environment possible for Colombians. On one hand, the systems are designed to use efficient technologies. In some cases, the Local Transit Agencies have decided to use cleaner fuels as well. The underlying objective is to use natural resources in more efficient ways compared to the conventional bus system. This is why the IMTS implement policies such as converting old buses that do not meet age and environmental efficiency requirements, into scrap metal. On the other hand, the systems also work on the creation of green areas surrounding the physical infrastructure and on decreasing the environmental impact of its construction. The projects consider the environment an integral part of the system and an inseparable part of the social and logistical dimension of a mass transit system. There is no better way to improve Colombia's work environment.

According to studies conducted by our center of investigation for Urban and Regional Sustainability SUR, one of the most effective measures to reduce air pollution in a city like Bogota has to do with the organization of its public transport. For example, a couple of years ago we measured the breathable particulate matter (PM10) in different city streets and discovered that the levels of pollution on a street with a high flow of traditional transit vehicles (buses and minibuses) are more than double the levels registered on a road that uses mass public transportation (TransMilenio in the case of Bogota). This means that, in addition to the implementation of emission control technologies and improved fuels, the organization of the buses and mini buses has been an essential element in order to improve the city's air quality.

Eduardo Behrentz
Director, Urban and Regional Sustainability Study Group, Los Andes University

Transport and Advances towards PPP schemes

The experience of the first mass transit networks shows that the stations and the terminals that house BRT buses constitute virtual engines for progress in the surrounding areas. The current goal in all the cities is to tap the systems' development potential in order to generate participation of the private sector in the projects' finances. With this in mind, the IMTS has started to develop

bus depots and terminals where the private sector builds the stations, the workshops, the parking lots and the offices together with commercial projects or housing developments in neighboring lots. This way, the system is generating property added value, which, in turn, allows entrepreneurs to invest and capitalize on commercial opportunities. This formula of mixed investment generates unprecedented opportunities for this kind of infrastructure and, above all, it allows the motors of the buses to become a driving force for change and progress.

Results beyond the World Bank, beyond Colombia

As of end of 2012, five of the six Bank-financed BRT systems are operating: Transmilenio-Bogotá, Megabus-Pereira, Transmetro-Barranquilla, Metroplus-Medellin, and Metrolinea-Bucaramanga. The most famous is Bogotá's Transmilenio, conceived in 1998, and which served as a model for the roll-out of the other BRT systems.

More than 20 trust funds have complemented the Bank's knowledge services agenda. These multi-year engagements have sought to build the knowledge base of the central government and of the governments of Bogotá and other cities to, among others, (i) strengthen capacity for analyzing urban mobility and options to improve planning, management, operations and financial sustainability of integrated public transport systems, (ii) strengthen capacity for planning and implementing travel demand management strategies and non-motorized modes, (iii) provide how-to guidance for the implementation of possibilities to better coordinate land-use with transport demand and promote transit-oriented development, (iv) assess and revisit tariff policy issues, particularly pertaining to affordability, accessibility, and how-to guidance for the implementation of targeted public transport subsidies, and (v) mainstream issues of road safety, gender and universal accessibility in public transport.

But besides internal recognition to this project within the World Bank (2009 Sustainable Development Innovation Fair Winner, 2009, Latin America and the Caribbean VPU Awards, 2010) and inspiration to similar operations in other regions of the Bank (Vietnam, China, India), the IMTS has obtained recognition and acknowledgement in the international field.

The IMTS has become an important point of reference throughout the world. Since Transmilenio's inception, delegations from more than 20 countries, including China, India, Vietnam, South Africa, Kenya, Finland and the United States have visited Colombia to learn about the program. The technical experience acquired by local experts has deemed them as global specialists and consultants on the subject who travel throughout the world sharing the Colombian experience and inverting the north to south transfer of knowledge in favor of a south to north and south to south experience. This is, consequently, the human infrastructure on which the physical infrastructure is erected, and this is its contribution: the raw material that supports the Colombian IMTS.

Colombia's urban transport program has also received financing from the Inter-American Development Bank (IADB) and the Andean Development Corporation (CAF). The IADB has financed the implementation of the BRT-based, integrated transit system in Cali, and the CAF has financed Bogotá's Transmilenio Suba corridor and will help implement Cucuta's system. Furthermore, the results of the IMTS have also triggered positive changes in the transport agendas of other multilateral development banks (MDBs), sustainable transport advocacy NGOs such as ITDP and EMBARQ, governments and academic centers. The contribution of the Colombia IMTS program to the field of sustainable urban transport has without doubt changed the landscape of the field for a long time to come.

Starting in 2001 we have seen a series of excellent Colombian students coming through the MST program all of whom have performed very well academically and contributed greatly to the success of the MST program itself. To date we have had six students from Colombia since 2001 all of whom received their undergraduate education in Colombia and were strongly influenced by TransMilenio in deciding to pursue graduate education in transportation and applying specifically to MIT to do the MST degree. I have no doubt that without the leadership Colombia took through TransMilenio many of these students would not have been attracted into the transportation field or come to a first rate US Research University such as MIT for their graduate education.

Nigel Wilson
Director, Master of Science in Transport, Massachusetts Institute of Technology

Moving Forward

Challenges remain to consolidate the sustainable urban mobility policy that Colombia embarked on more than a decade ago. The most pressing concern is the need to move forward with the full integration of public transport systems, since amidst the new systems, traditional public transport buses still operate. As cities move towards this full integration of public transport services, issues of accessibility and affordability become crucial to guarantee that the most vulnerable population is served. Furthermore, in an era of unprecedented urbanization and motorization, demand management schemes become crucial policy considerations, so that auto users actually pay for the costs they impose on society. The Bank will continue to support this agenda by mobilizing its financial, knowledge, and convening services to work towards more livable, green and inclusive Colombian cities.

Note:

Most of the text included here, unless otherwise specified, is taken from the World Bank Publication *Transport on a Human Scale* (2009), which was published as a World Bank – Colombian Government joint testimonial vision complementary to the mid-term review of the project.[64] *Transport on a Human Scale* contains a wealth of personal testimonies and photographs which will surely complement the reader's impressions on the project after reading this ICR.

[64] The PDF Spanish-English version of this publication is available at http://siteresources.worldbank.org/INTCOLUMBIAINSPANISH/Resources/TransporteColombia.pdf

Annex 15. List of Supporting Documents

1. Project Appraisal Document on a Proposed Loan in the Amount of USD 250 million to the Republic of Colombia for the Integrated Mass Transit Systems Project, May 2004;
2. Project Paper on a Proposed Additional Financing Loan in the amount of USD 207 million to the Republic of Colombia for the Integrated Mass Transit Systems Project, May 2007;
3. Project Paper on a Proposed Second Additional Loan in the amount of USD 300 million to the Republic of Colombia for the Integrated Mass Transit Systems Project, July 2009;
4. Project Appraisal Document on a Proposed Loan in the amount of USD 350 million to the Republic of Colombia for the Support to the National Urban Transit Project, June 2011;
5. Implementation Completion Report on a Loan in the amount of USD 12.5 million to the Republic of Colombia for a Regulatory Reform Technical Assistance Project, February 2005;
6. Survey of Project Implemented Agencies, February 2012;
7. Aide Memoirs for Project Supervision missions 2005-2012;
8. Project Implementation Status Report (16 sequences);
9. Integrated Mass Transit Systems Progress Quarterly Operational Reports for the Thirds and Fourth Quarters of 2012, Project Coordination Unit, Ministry of Transport, December 2012 and February 2013;
10. Integrated Mass Transit Systems Progress Financial Report for the Fourth Quarter of 2012, Project Coordination Unit, Ministry of Transport;
11. "Colombia Urbanization Review: Amplifying the Gains from the urban Transition", World Bank, 2012;
12. "Determinación de la Línea de Base y Esquema de Monitoreo Posterior para los SITM de Pereira-Dos Quebradas y Bogotá D.C.-Troncal NQS", Steer, Davies Gleave, 2006;
13. "Consultoría para el Cálculo de Indicadores y Líneas de Base de Referencia y para el Desarrollo y Puesta en Funcionamiento de un Portal en Línea de Información y Reporte de Informes de Seguimiento para los Sistemas de Transporte Masivo en Colombia-Informe Final", preparado para el Ministerio de Transporte de la República de Colombia, Steer Davies Gleave, October 2007;
14. "Revisión y Recomendaciones al Sistema de Información, Seguimiento y Evaluación del Transporte Urbano-SISETU" Johnny López Martin, Departamento de Ingeniera Civil y Ambiental, Universidad de Los Andes, 2012;
15. "Reporte Consolidado SISETU a Diciembre 31 de 2012", Unidad de Movilidad Urbana Sostenible-UMUS, Ministerio de Transporte, Febrero de 2013;
16. "Sistemas Integrados de Transporte Masivo en Colombia: Avances, Retos y Perspectivas en el Marco de la Política Nacional de Transporte Urbano", Contraloría General de la Republica, July 2010
17. "Calidad de Vida en 9 Ciudades de Colombia: Encuestas de Percepción de la Red de Ciudades Como Vamos 2011", Ipsos Public Affairs, March 2012;
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24. Ex-post Evaluation of the BRT system for the Metropolitan Area of "Centro-Occidente" - AMCO (Pereira Dosquebradas), commissioned by the National Planning Department (DNP for its acronym in Spanish) and developed by the consulting firms Ivarsson and Associates and Logitrans, February 2011;
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26. Ex-post Evaluations for the Mass Transit System in Bogota (Phases I and II), commissioned by the National Planning Department (DNP for its acronym in Spanish) and prepared by EMBARQ- Sustainable Transport Center of the World Resources Institute, November 2009;
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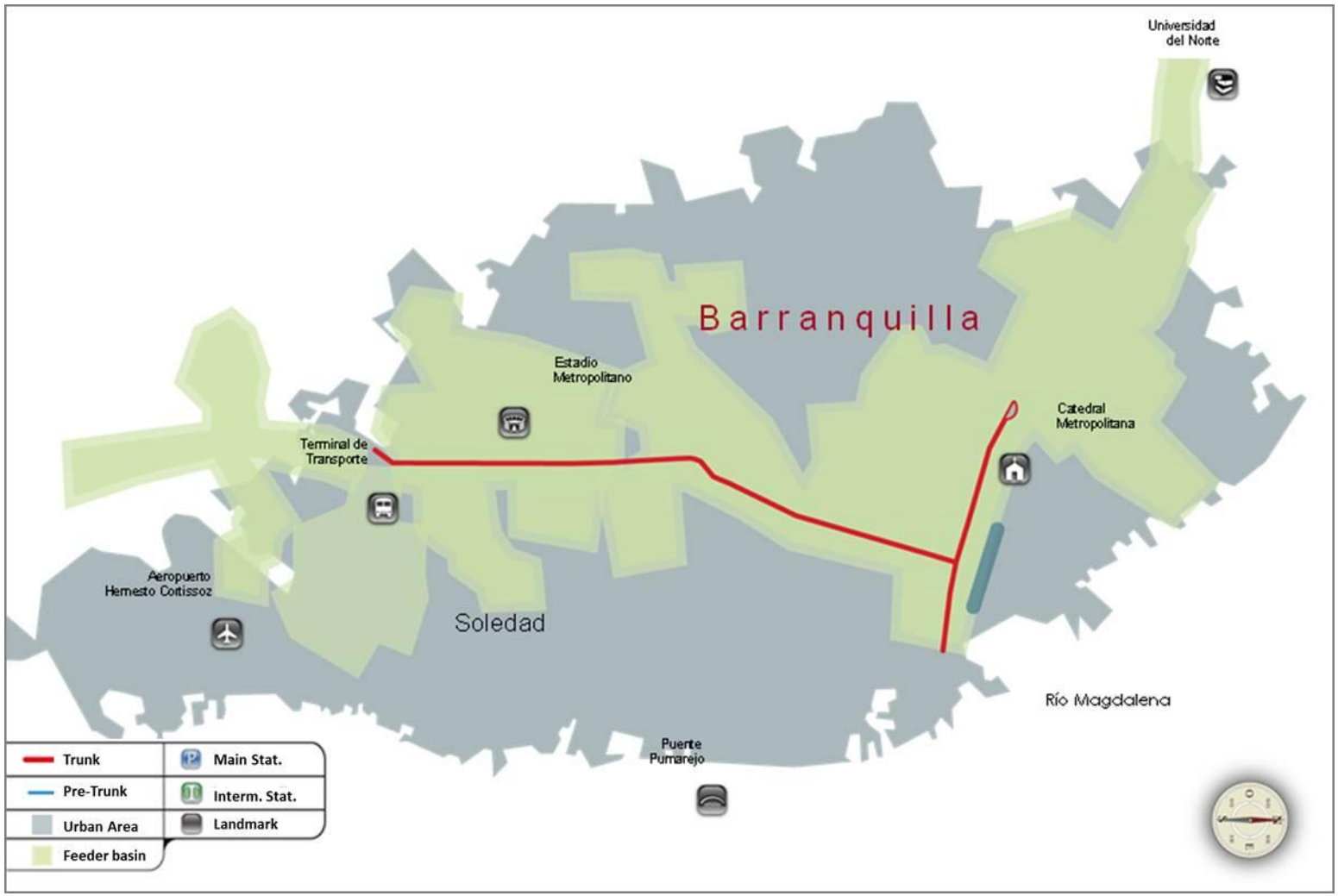
MAPS

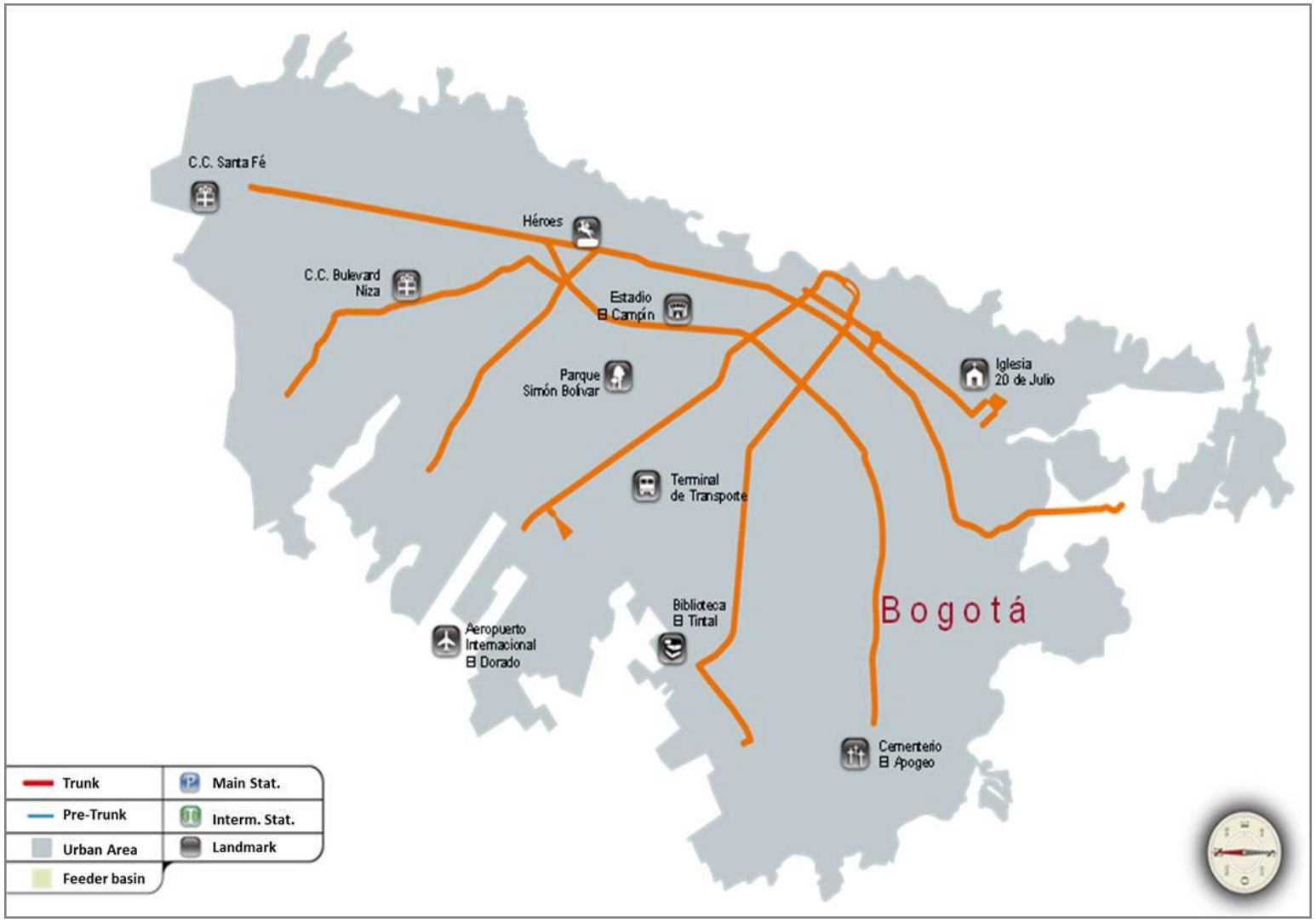
BRT Systems Maps

(Source: Ministry of Transport, cleared by GSD)

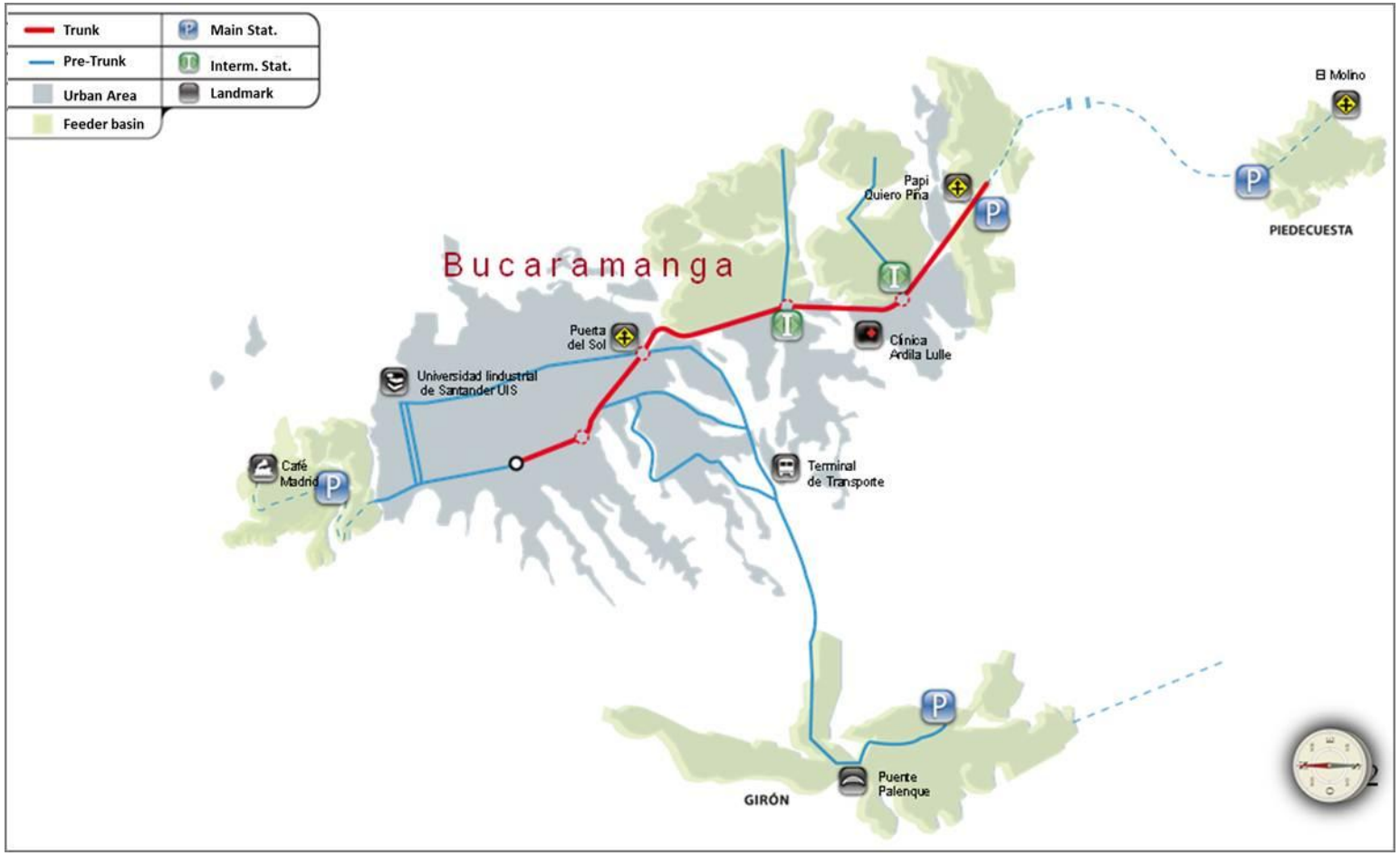
Barranquilla Metropolitan Area (BRT: Transmetro)



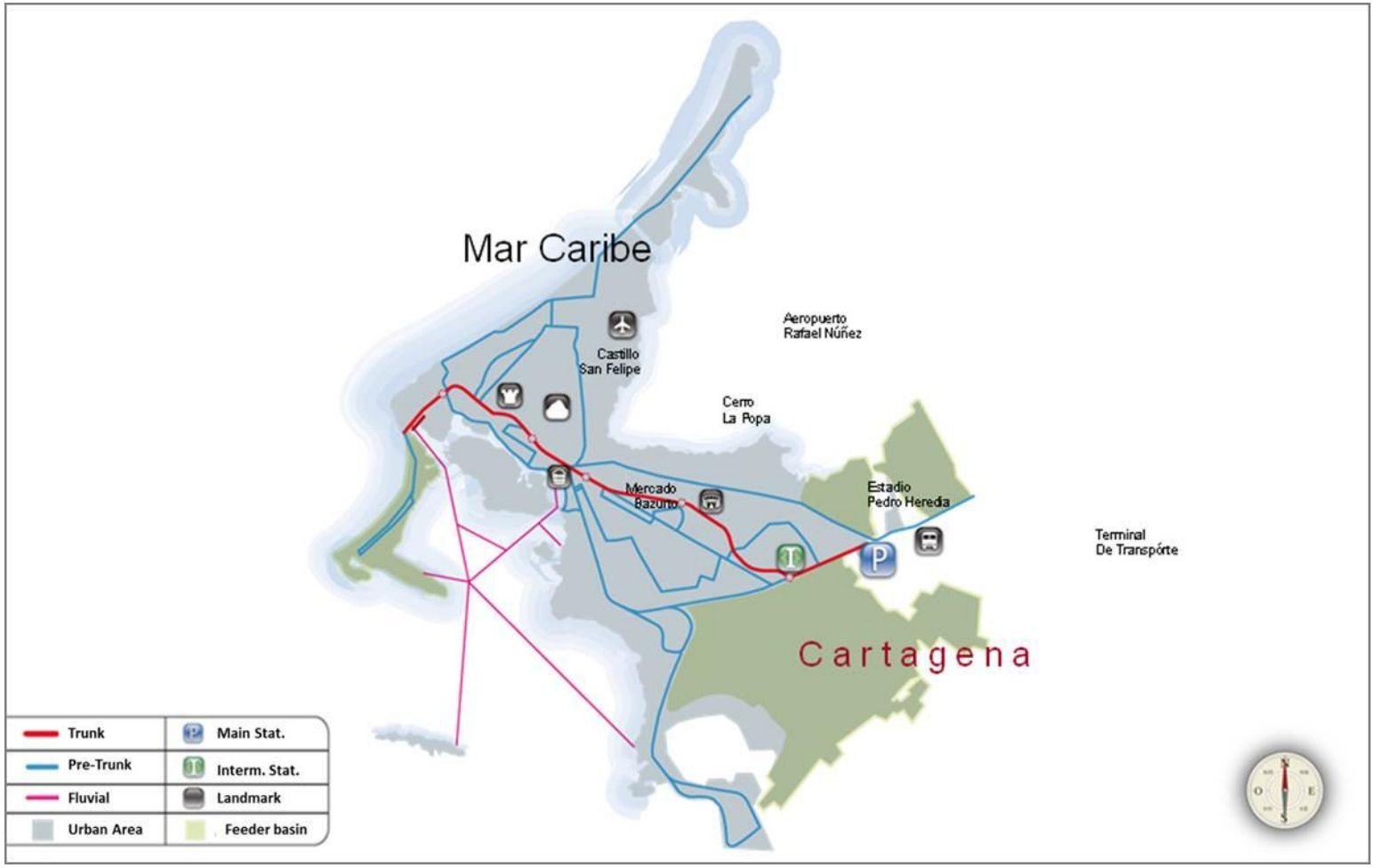
Bogota (BRT: Transmilenio)



Bucaramanga Metropolitan Area (BRT: Metrolínea)



Cartagena (BRT: Transcaribe)



Medellin-Valle de Aburra Metropolitan Area (BRT: Metroplus)

Pereira - Dos Quebradas (Megabus)