

<b>1. Project Data:</b>		<b>Date Posted :</b> 06/28/2013	
<b>Country:</b>	Peru		
<b>Project ID:</b>	P035740	<b>Appraisal</b>	<b>Actual</b>
<b>Project Name:</b>	Pe Lima Transport Project	<b>Project Costs (US\$M):</b>	134.43      261.90
<b>L/C Number:</b>	L7209	<b>Loan/Credit (US\$M):</b>	45.00      45.00
<b>Sector Board :</b>	Transport	<b>Cofinancing (US\$M):</b>	45.00      45.00
<b>Cofinanciers :</b>	Inter-American Development Bank (IDB)	<b>Board Approval Date :</b>	12/09/2003
		<b>Closing Date :</b>	06/30/2009      04/30/2011
<b>Sector(s):</b>	General transportation sector (81%); Sub-national government administration (15%); Other social services (4%)		
<b>Theme(s):</b>	Municipal governance and institution building (29% - P); Urban services and housing for the poor (29% - P); Injuries and non-communicable diseases (14% - S); Pollution management and environmental health (14% - S); Improving labor markets (14% - S)		
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## 2. Project Objectives and Components:

### a. Objectives:

The statement of objectives in the Project Appraisal Document (PAD) and the Loan Agreement is identical: "to assist the Municipality of Metropolitan Lima in enhancing the economic productivity and the quality of life within the Lima Metropolitan area through improving mobility and accessibility for the metropolitan population, especially in the peri-urban poor neighborhoods by establishing an efficient, reliable, cleaner and safer mass rapid transit system ."

The project also included a Grant provided by the Global Environment Facility (GEF) with an objective "to help facilitate greenhouse gas reduction from ground transport in the Metropolitan Area of Lima -Callao through contributing to the promotion of a long-term modal shift to more efficient and less polluting forms of transport, such as non-motorized transport and high-capacity public transport vehicles operated on segregated bus ways".

The GEF Grant is referred to as parallel funding in the PAD (see Section 2c below) and will be discussed separately in this ICR Review.

### b. Were the project objectives/key associated outcome targets revised during implementation?

No

### c. Components:

**Component 1: Mobility and Environmental Improvements** (appraisal cost US\$99.92million; actual cost US\$203.30million). This component primarily comprises infrastructure works to implement the busways along existing road corridors: (i) construction of 28.6 km of segregated busways; (ii) repaving of mixed-traffic lanes adjacent to the new busways; (iii) traffic signal improvements, signposting and road markings along the corridors; (iv) bus stations and terminals; (v) bus depots and workshops, excluding equipment that will be financed by bus concessionaires; (vi) a control center to monitor and direct operations on the busways; (vii) paving and other

improvements of feeder roads to the two bus terminals, with an approximate length of about 50 km; this included the construction of sidewalks and bicycle paths to improve access conditions for non-motorized movement, complementing the non-motorized transport (NMT) investment under the GEF Grant; (viii) road safety measures along the corridors, their feeder roads, and the streets in their area of direct influence; and (ix) improvements to pedestrian and vehicular corridors, for pedestrians and busway users .

**Component 2: Social Mitigation and Community Participation** (appraisal cost US\$5.75 million; actual cost US\$2.42 million). This component comprises three areas of activity : (i) community consultation and education during the implementation and early phases of the busway; (ii) mitigation of the negative impacts on current bus operators through retraining and small-scale enterprise microcredits in collaboration with existing programs of the Ministry of Labor; and (iii) technical support to operators outside the system to strengthen their managerial and professional capacities, including route planning, service provision, maintenance, road safety, knowledge of laws and regulations, etc.

**Component 3: Institutional Strengthening** (appraisal cost US\$3.67 million; actual cost US\$1.35million). This component addresses the regulatory, monitoring and control functions of urban public transport and supports : (i) the development and implementation of a public transport policy, including its regulatory and policy -setting framework, as well as its administration, operation, monitoring and control; (ii) the formal creation, technical assistance and training of the entity responsible for implementing the busway operations, *Protransporte*; (iii) technical assistance and training of the Lima Municipal Enterprise for Fare Management (EMAPE), the entity responsible for implementing the physical works under the Project; (iii) technical assistance and training of Urban Transport Bureau (GTU) and the National Police, focusing on public transport regulations, and its monitoring, control and enforcement; and (iv) monitoring and evaluation of the busway operation and the Project .

**Component 4: Studies and Construction Supervision** (appraisal cost US\$8.58 million; actual cost US\$11.11million). This includes (i) supervision of the physical works described above; (ii) economic feasibility and environmental studies as well as the preparation final engineering designs to expand the busway network beyond the 28.6 km funded by the Project, and (iii) social impact assessments of the new system, in coordination with the urban poverty reduction strategy under preparation with Bank support .

**Component 5: Program Administration** (appraisal cost US\$5.58 million; actual cost US\$12million). This component, to be financed entirely by counterpart funds, includes the operational expenses of the institutions responsible for administering the Project and for implementing the busway operations (*Protransporte* and EMAPE).

**Component 6: Grade Separation of Plaza Grau** (appraisal cost US\$10 million; actual cost US\$30.82million). This investment component included the reconstruction at Plaza Grau, one of Lima 's busiest intersections and a key node of the busway to be financed under the Project . A grade separation of conflicting traffic movements was required in order to insert the busway on the northernmost end of the Paseo de la República, thereby reducing the car traffic lanes from three to two in each direction . This component was funded by the Municipality, but it was part of the overall project.

During a second loan amendment the funds from the unallocated fund category were reallocated to consultant services and audits. The resources originally allocated for training and micro-credits were lowered to zero and reassigned to the civil works category .

The GEF Grant is referred to as parallel funding in the PAD and will be discussed separately in this ICR Review . The ICR gives a somewhat different picture . The PAD (page 3) referred to the GEF Grant as "parallel GEF funds will help facilitate green house gas reduction from ground transport in the Metropolitan Area of Lima -Callao through contributing to the promotion of a long term modal shift to more efficient and less polluting forms of transport, such as non-motorized transport and high-capacity public transport vehicles operated on segregated busways ." However, according to the ICR (page 1), "The Lima Transport Project consisted of two operations, one cofinanced by loans from the International Bank for Reconstruction and Development (IBRD) and the Inter- American Development Bank (IDB), hereafter called "the Loan," "the IBRD Project," or "the Bank Project," and another financed through a Global Environment Facility (GEF) grant, hereafter called "the Grant" or "the GEF Project." These operations were fully blended and shared the same project documents ." Then, on page 2, the ICR continues: "Despite being fully blended, the Loan and the Grant were implemented by separate implementation agencies and supervised by different task team leaders. Therefore, for most assessments in this ICR, which normally are conducted jointly for blended projects, it was necessary to draw clear distinctions between the two operations and elaborate on them separately ."

The GEF grant financed the bicycle infrastructure and promotion activities to complement the non-motorized transport activities of the Loan . It also financed capacity building in the area of sustainable urban transport and replication activities outside Lima and Callao . The Grant originally envisaged funds to complement the bus-scraping scheme devised under the framework of the operation of the bus rapid transit corridor . These activities were replaced

by a study to integrate and rationalize the public transport system in Metropolitan Lima, because *Protransporte* devised a new modality to finance the implementation of the bus-scraping program, which made the GEF financing for bus scrapping and the related social mitigation activities redundant .

#### **d. Comments on Project Cost, Financing, Borrower Contribution, and Dates:**

**Project Cost:** Total project cost was US\$261.90million at closure; almost 50% higher than the appraisal estimate of US\$134.43million due to the extension of the implementation period and cost increases in civil works .

**Financing:** At appraisal and project closure, the project was supported by an IBRD loan in the amount of US\$45million. The project was co-financed by the Inter-American Development Bank in the same amount as the Bank's financing (US\$45million). The GEF grant amount was US\$7.35 million by project closure, slightly decreased from the appraisal estimate of US\$7.93million as a result of changes in the activities (replacement of the bus-scraping scheme and related social mitigation activities with a study ). The GEF Grant is referred to as parallel funding in the PAD (see Section 2c) and will be discussed separately in this ICR Review .

**Borrower contribution :** The actual Borrower contribution was US\$171.90 million, a substantial increase over the appraisal estimate of US\$44.40 million due to the extension of the implementation period and cost increases in civil works.

**Dates:** The project was extended by a total of almost two years from the original closing date of June 30, 2009 to April 30, 2011. During project implementation, there were two loan amendments and three extensions of the loan closing date. The first loan amendment, on August 26, 2008, included a reallocation of funds and the extension of the closing date, originally scheduled for June 30, 2009, to June 30, 2010. These modifications were essentially designed to continue with the construction of the trunk line and provide time for the start-up and pre-operation of the transport system. A second loan amendment was granted on December 17, 2009 to reallocate funds from the unallocated fund category to consultant services and audits . The closing date was extended on May 26, 2010 from June 30, 2010 to December 30, 2010. A third amendment on December 23, 2010 extended the closing date from December 30, 2010 to April 30, 2011 and reallocated the remaining funds among categories . The purpose of this closing date extension was to assist the implementation unit to finalize the works contracts and consultant services . The project start-up was delayed by more than a year after loan approval as the Borrower took a long time to comply with loan effectiveness conditions . The harmonization of procurement procedures and bidding documents with the co-financier IDB delayed the project implementation by nine months after loan effectiveness . For the GEF Grant, the 2009 project restructuring included a 12-month closing date extension to June 30, 2010 as a result of the slow pace of implementation .

### **3. Relevance of Objectives & Design:**

#### **a. Relevance of Objectives:**

**High.**

The project development objective and Grant's global environmental objective remain relevant to the priorities of the FY2007-FY2011 IBRD and IFC Country Partnership Strategy for the Republic of Peru, which aims at fostering environmentally sustainable economic growth by reducing urban air pollution and the transport infrastructure deficit . They are also consistent with the current development priorities of the Government of Peru since the new President stated in his inaugural speech in July 2011 that the Government would support the development of urban transport activities in Lima. And they are in line with the 2006 Municipal Policy Guidelines for Public Transport in the Lima Metropolitan Area, which refer to the importance of: (i) mass transport systems in corridors with high demand; (ii) the rationalization of public transport supply; (iii) the operational efficiency of public transport; and (iv) environmental sustainability, including the promotion of non-motorized transport. The promotion of bicycle use as an alternative mode of transport is explicitly foreseen in the Strategic Plan for Bicycle Transport and the new national bicycle law . The project's goals were consistent with the Country Assistance Strategy at appraisal, which aimed at addressing barriers to growth and economic and social development of the poor .

#### **b. Relevance of Design:**

**Substantial .**

The project results framework provides a logical link between the activities to be financed by the project and the outputs and outcomes related to the attainment of the development objectives . For example, with regard to physical investments in the construction of bus rapid transit system and related improvements under Component 1, the

activities were expected to establish an efficient, reliable, cleaner and safer mass rapid transit system, thus improving mobility and accessibility for the metropolitan population, especially in the peri-urban poor neighborhoods (46.8% of the *Metropolitano's* users come from low income areas). The causal chain between Bank outputs and intended outcomes was clearly set out in Annex 1 of the PAD.

The project design was relevant throughout the life of the loan, though it underwent two loan amendments and reallocation of funds to consultant services and audits as well as among categories .

**GEF Grant:** With regard to the investments financed by the Grant in implementation of bus scrapping, expansion of the bikeway network and promotion of bike use, the activities were expected to help facilitate greenhouse gas reductions from ground transport in the Lima-Callao Metropolitan Area. These, reinforced by strengthened institutional capacity for environmental issues and transport planning, were intended to contribute to a long-term modal shift toward more efficient and less polluting forms of transport . However, the key GEO-related target of duplicating bicycle use was not realistic; insufficient account was taken of Lima 's dangerous traffic conditions and strong perception of insecurity .

#### **4. Achievement of Objectives (Efficacy):**

The degree of achievement of the project objectives - *to enhance the economic productivity and the quality of life within the Lima Metropolitan area through improving mobility and accessibility for the metropolitan population, especially in the peri-urban poor neighborhoods by establishing an efficient, reliable, cleaner and safer mass rapid transit system* - is substantial.

##### Outputs:

- Construction of the first Bus Rapid Transit (BRT) corridor in Lima (*Metropolitano*): 27.48km of high capacity bus corridors. The buses operate in segregated traffic lanes that result in higher capacity . Reduction in 1.92km against the targeted 29.4km was a result of environmental concerns: the original alignment covered the land used by migrant birds.
- 35 bus stops and North and South terminals of the trunk line have been completed as planned and are in operation.
- 176 high-capacity buses, out of 312 are operating and 197 feeder buses, out of 232. The buses are the modern articulated type, run on compressed natural gas (CNG), and are monitored by a global positioning system (GPS). Electronic fare collection started in June 2010 and the central control system is in place and operating .
- An air quality monitoring and report system was put in place . The implementation of the environmental monitoring network is complete and the network is measuring air quality and producing data .
- To improve access within low-income areas, two bikeways were constructed in Chorrillos (South cone). These bikeways were built on the side of the rehabilitated feeder roads on Avenida Guardia Civil, among other feeder roads. In the North cone, the Municipality built another bikeway perpendicular to Avenida Tupac Amaru, along Avenida Los Olivos.
- The project also financed three contracts to reconstruct and slightly widen sidewalks on several streets in downtown Lima and to repave road surfaces along these same streets .

##### Intermediate outcomes:

- The targeted number of 600,000 passengers per weekday using the new bus system was not reached . By project closure, the number of passengers was 340,000. However, according to subsequent information obtained from the task team, the demand continues to increase month by month, and, by November 2012, it had reached an average of 470,000 passengers per week day .

##### Outcomes:

- ***The project contributed to a more efficient mass rapid transit system*** : As a result of project-financed civil works, equipment and technical assistance, travel times in the affected corridor have been reduced from an average of 53 to 35 minutes due to the implementation of dedicated lanes and the reduction in the number of *micros* and buses in the corridor area . Under the electronic fare collection system, passengers paid upon entering a station and then board the bus . This substantially increased the efficiency of the automated bus fare collection system, according to the ICR .
- ***The project contributed to a more reliable mass rapid transit system*** . Riders' satisfaction with the transport service has increased from 13.4 percent to 82 percent rating the *Metropolitano* service as good or very good,

according to a user survey carried out by *Protransporte*. A total of 801 surveys were conducted in the *Metropolitano* stations (South 1, South 2, Center and North) in November 2010.

- **The project contributed to a cleaner mass rapid transit system** . Greenhouse Gas (GHG) emissions and local pollutants caused by the transport sector in the *Metropolitano* corridor have been reduced by about 324,440 tons per year (this is approximately 33 percent exceeding the target of 20 percent). This is the result of the use of a modernized fleet that runs on natural gas engines (COSAC's Air Quality Monitoring Network 2010).
- **The project contributed to a safer mass rapid transit system** . Fatal and serious accidents in the *Metropolitano* corridor have been reduced by 65 percent against the target of 45 percent. Accidents and fatalities were reduced from 26 fatal or serious accidents per month to 9 accidents per month and 2 fatalities in 11 months.
- **The project has improved accessibility for inhabitants of the peri-urban poor neighborhoods** . A survey conducted by *Protransporte* showed that 46.8 percent of the *Metropolitano*'s users came from low income areas, principally from the North and South cones. The project expected to benefit 10 percent of the low-income population in the peri-urban poor neighborhoods with no access to a formal transport system .

**Economic Productivity** . No evidence is yet available to gauge the effect of project activities on economic productivity.

**Quality of Life** . It would be reasonable to assume that there has been some enhancement in the quality of life in the Lima Metropolitan area due to project activities. Travel times and accidents were reduced in the *Metropolitano* corridor. The greenhouse gas emissions caused by the transport sector in the *Metropolitano* corridor have also been reduced. 10 percent of the low-income population in the peri-urban poor neighborhoods benefited from access to a formal transport system.

**GEF Grant:** With regard to the GEF objective "to help facilitate greenhouse gas reduction from ground transport in the Metropolitan Area of Lima-Callao through contributing to the promotion of a long-term modal shift to more efficient and less polluting forms of transport, such as non-motorized transport and high-capacity public transport vehicles operated on segregated bus ways", the key targets of retiring aged and polluting public transport vehicles through the Credit Guarantee Fund and doubling the number of bicycle trips on project-financed bikeways were not achieved. The bus-scraping-related activities have been taken over by *Protransporte*. The Grant was restructured to finance a study, however the project's bus-scraping indicators were retained as *Protransporte* was expected to scrap the same number of buses envisaged under the originally planned GEF-financed scrapping schemes. The acquisition and scrapping of buses started in January 2012; 16 buses had been scrapped at the time of ICR preparation. The use of bicycles has increased only by 3.6 percent. The CO2 reductions resulting from the switch from motorized transport to bikes were estimated at 879 tons/year at appraisal; the ex-post analysis figure was 22 tons/year, mainly due to the fact that bicycle usage has hardly increased at all. It is not possible to determine to what extent the institutional strengthening activities contributed to a modal shift toward more sustainable transport and the achievement of the GEO. There are, however, an increasing number of municipalities implementing their own bicycle-infrastructure and motorized traffic reduction measures.

## 5. Efficiency:

The overall economic rate of return (ERR) for the project at closure is estimated at to be at 19.5 percent as compared with 20.7 percent at appraisal. At appraisal, the benefits of the system were calculated by estimating the demand and calculating the benefits in time savings to users and savings in vehicle operating costs for the new buses. A similar methodology was used for the ex post analysis. The ex-post analysis, however, also includes benefits stemming from generated demand, from the reduction in GHG emissions, and from fewer accidents along the corridor. The task team clarified that these additional benefits included in the ex-post model go a long way towards explaining why the ERR at project closure was close to the appraisal estimate, despite the fact that the usage of the BRT system was less than 60% of what was projected. In addition, the unit values of time and vehicle operating cost savings were higher at closure than at appraisal, and fewer buses than initially estimated were required to replace the larger, aging fleet.

However, the project experienced high cost overruns (the actual total project cost was 195 percent of its appraisal estimate), and there were delays amounting to almost two years. Moreover, the fleet of buses purchased by the concessionaires under the project was not being fully utilized. Only 176 of the 312 trunk buses and 159 of the 232 feeder buses acquired were operating by project closure, as the demand of 600,000 rides per day had not been realized. According to the task team, by November 2012, the BRT was using 256 trunk buses and 173 feeder buses to meet the demand of 470,000 passenger per week day. The operators and *Protransporte* agreed to extend the expiry of the concession contracts to reflect the low bus usage at the beginning of the contract. *Protransporte* and the Metropolitan Municipality of Lima administrations also helped the operators refinance their debts to secure lower interest rates.

In addition, the project preparation took 7 years. The feasibility studies and first designs for the BRT line had to be updated. The need for harmonization of procurement procedures and standard documents between the Borrower, the IDB and the World Bank was not foreseen at appraisal and generated a delay in project start-up. Several of the reasons for the almost two year delay in project closing point to inefficiencies in the use of resources (see Section 2d above).

GEF Grant: An incremental cost analysis was undertaken for the project ex post and the results were compared with the appraisal scenario. Because the CO<sup>2</sup> emission reductions from the bicycle-related activities were so much lower than expected (see Section 4 above), the unit cost per ton of the emissions was well above what had been anticipated.

The GEF project was delayed by a year as a result of the slow pace of implementation .

As a result of substantial cost and time overruns, efficiency is assessed as **modest**.

**a. If available, enter the Economic Rate of Return (ERR)/Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation :**

	Rate Available?	Point Value	Coverage/Scope*
Appraisal	Yes	20.7%	45.4%
ICR estimate	Yes	19.5%	66.8%

\* Refers to percent of total project cost for which ERR/FRR was calculated.

**6. Outcome:**

The project was highly relevant to the needs of urban transport users in the Lima Metropolitan area, in particular to poor urban commuters concentrated on its periphery . Design relevance was substantial. The project-supported construction of the first bus rapid transit (BRT) system in Lima improved mobility and accessibility in the 28km bus corridor, especially for the peri-urban poor neighborhoods. Efficiency, however, was rated modest, mainly as a result of major cost and time overruns.

GEF Grant

While bicycle usage supported by GEF has hardly increased on project - financed bikeways, the scrapping of aged and polluting buses started in January 2012 by *Protransporte* will most likely contribute to GHG reductions .

**a. Outcome Rating :** Moderately Satisfactory

**7. Rationale for Risk to Development Outcome Rating:**

The main risk to development outcome is the bus system 's financial sustainability. The implementation of Lima 's bus rapid transit system is not yet generating returns that would allow it to be self -sustaining. This is fundamentally due to the fact that demand for the service was considerably lower than anticipated at project closure . Although more recent evidence from the project team indicates that demand is rising, it was still 22% below project closure projections in November, 2012 (470,000 passengers per week day).

By the time of the ICR preparation, *Protransporte* was receiving eight percent of the revenue for validated tickets for its participation in the system. This did not cover the costs for security or the system 's sustainability (maintenance, cleaning, basic utilities: lighting, water, personnel, etc.). For this reason, *Protransporte* required direct transfers from the Metropolitan Municipality of Lima (MML) in order to meet its operating costs (ICR, Annex 7, Borrower's report).

*Protransporte* has proposed an action plan that will increase ridership to at least 600,000 passengers(which was the target to be achieved by the project) by December 2013,. The plan includes the following actions: the execution and implementation of route rationalization of buses still competing with the *Metropolitano*, the application of new fare integration, the implementation of bus scrapping, and the extension of the North trunk line by 12 km. As was subsequently confirmed by the project team, these actions are being implemented, except for the extension of the line by 12 km in the north. These reforms are believed to make the project sustainable in the long term, and cover administrative and private bus operators' operating costs.

GEF Grant: The Municipality maintained the unit responsible for non -motorized transport implementation (*Proyecto Especial Metropolitano de Transporte No Motorizado*), which continued with many project activities and started new ones. In addition, the national bicycle law created a legal requirement for municipalities to promote bicycle use . Most of the bicycle promotion activities in Callao were nevertheless discontinued and the expected GHG emission

reductions may not be fully achieved . *Protransporte* started bus scrapping in January 2012. At the time of ICR preparation, *Protransporte* scrapped 16 buses on a pilot basis . The task team subsequently updated on the progress related to the bus scrapping activity : 780 buses were scrapped by *Protransporte* at the time of the ICR review (November 2012). The scrapping program is continuing; the plan is to scrap a total of 4,000 vehicles.

**a. Risk to Development Outcome Rating :** Moderate

## **8. Assessment of Bank Performance:**

### **a. Quality at entry:**

The Project's technical preparation took more than 7 years. However, there were still some shortcomings : (i) finalizing bidding documents consistent with Bank and IDB procurement guidelines took over a year; (ii) the cost estimates were based on pre-feasibility studies; and (iii) the project had several conditions for loan effectiveness, which took a long time to fulfill. In addition, the feasibility study and the terms of reference of the final studies did not consider interferences with electricity and other public utility services, thus delaying project procurement processes.

Preparation underestimated the institutional capacity to manage a complex project . The staff of *Protransporte*, the project implementation unit, had limited experience in the administration and execution of Bus Rapid Transit projects. The project start-up took longer than required due to the staff learning curve and delayed implementation during the initial years . The consequences of the fact that the Borrower did not own the lands for the construction of two planned transfer terminals and yards were not foreseen . The land purchase delayed construction of transfer terminals and yards to the last two years prior to operation of the *Metropolitano*.

Insufficient attention was paid to the need to re-build pedestrian crossings along the bus corridor (a safety issue) and limit access to garages, thus resulting in complaints from stakeholders and increased project costs . Solutions for some garages in downtown Lima were still pending by project closure . These cases could have been foreseen and some probably could have been avoided if an adequate social assessment had been carried out during project design.

Responding to a complaint by residents in the District of Barranco within the Lima Metropolitan area, an Inspection Panel investigation found that the initial Environmental Assessment studies did not comply with Bank policy in terms of identification, analysis and mitigation of impact beyond the corridor itself (see Section 11 below). The Panel found that during the critical design phase of the project the dissemination of information and consultation with the affected people in Barranco was insufficient .

GEF Grant: The design and preparation of the GEF Grant benefited from the technical background analyses partially financed through a Project Development and Preparation Facility Block B Grant . A large number of participatory events helped outline and fine -tune the project design, prepare terms of reference and technical specifications, and disseminate the planned project activities . The Grant, however, left the identification of most new bikeways to the Bicycle Master Plan and other studies developed under the Project, thus pushing the construction of new bikeways toward the Project's end and leaving insufficient time for their promotion . In 2009-2010, when the last user counts took place, bicycle users were not yet familiar with the new facilities .

**Quality-at-Entry Rating :** Unsatisfactory

### **b. Quality of supervision:**

The Task Team identified implementation problems such as high rotation of upper management in *Protransporte* and the lack of results on the ground focusing on the institutional and procurement issues as well as being proactive in finding ways to accelerate project implementation . However, during the initial years of implementation, supervision in the areas of environmental and social management was inadequate . Bank missions did not regularly include environmental and social specialists until late 2007.

Supervision activities were substantially strengthened following the problems identified in 2009 as a result of residents' complaints in the District of Barranco and the subsequent Inspection Panel investigation (see Section 11). A number of actions were taken, including contracting a traffic specialist and proposing a new traffic management study. The Panel found that this was in compliance with OP 13.05 on Project Supervision, which requires Bank staff "to identify problems promptly as they arise and to recommend ways to solve them, as well as to recommend changes in the project concept as appropriate as the project evolves ." The project team worked

proactively in preparing and focusing on the Management's Plan of Action in response to the Inspection Panel report.

Supervision of the *Metropolitano's* operations was also focused on traffic safety matters and pre-operation of the system. For example, the Bank, together with local staff, carried out station-by-station analyses of pedestrian and vehicle traffic safety. To further strengthen the supervision in this area, the Bank hired an international urban road safety expert, whose plan of actions and recommendations are in the process of being implemented by *Protransporte*.

GEF Grant: Supervision was carried out twice a year and the teams were qualified. In addition to the regular supervision missions, the Bank team followed up on commitments through monthly conference calls documented in detailed minutes. When in Lima, the Bank team met with different local stakeholders to promote ownership of project activities and products after grant closure. It would have been beneficial to have prepared environmental guidelines for civil works to facilitate bicycle traffic, even though there was no formal requirement to do so. The Grant Agreement included an obligation to prepare an Environmental and Social Management Plan, and this Plan was an effectiveness condition. The Bank considered the Plan adequate and declared the project effective.

**Quality of Supervision Rating :** Moderately Satisfactory

**Overall Bank Performance Rating :** Moderately Satisfactory

## 9. Assessment of Borrower Performance:

### a. Government Performance:

The Metropolitan Municipality of Lima (which was also the Borrower, with the Loan guaranteed by the Government of Peru) demonstrated support and leadership during construction and pre-operation of the *Metropolitano*. During the construction phase, the Municipality contributed the resources needed for project implementation, and raised its local counterpart contribution from US\$ 44.4 million to US\$171.9 million. During pre-operation, leadership and commitment to the project were demonstrated through the allocation of budget resources for communication campaigns and rationalization of bus operators. The municipal administration that took office in January 2011 is also demonstrating commitment during the operation of the project; it is continuing key institutional reforms in Lima's transport sector while contributing resources to the infrastructure improvements of the *Metropolitano*.

However, during the first years of project execution, the changes in *Protransporte's* upper management staff generated delays. The Mayor rotated high- and middle-level managers several times due to weak performance or results at project start-up. Project performance was rated unsatisfactory due to low disbursements.

GEF Grant: The Metropolitan Municipality of Lima provided adequate financing for the entity in charge of non-motorized transport, (*Proyecto Especial Metropolitano de Transporte No Motorizado*, PEMTNN), which maintained and extended the existing bikeway network, and promoted separate non-motorized transport initiatives. The Municipality provided sufficient co-financing for Grant implementation. However, in terms of bus scrapping, the Municipality changed its mind several times on how to proceed, thus delaying the project implementation. Moreover, during the implementation of the Study for the Consolidation of the Integrated Public Transport System in Metropolitan Lima, some of the issues did not receive immediate attention at the highest level.

The Provincial Municipality of Callao strongly supported the bicycle promotion activities throughout project implementation, but invested less in non-motorized transport than it had originally committed to. This delayed the approval and completion of GEF-financed bikeways in Callao.

The municipalities benefitting from the Project tended to favor motorized transport over non-motorized transport when it came to allocating scarce road space for bikeway construction. A few district municipalities in Lima delayed authorizations for bikeway works or changed their minds when the bikeway design was ready to be implemented. In addition, although they generally supported bikeway construction, the municipalities did not always make sufficient efforts to keep parked cars off the bikeways.

**Government Performance Rating** Moderately Satisfactory

## **b. Implementing Agency Performance:**

The Municipality of Lima delegated project implementation to a Project Implementation Unit (PIU), which later turned into an executing agency called *Protransporte*. During the first three years of project implementation, *Protransporte* experienced difficulties in achieving the results due to its lack of experience in managing bus rapid transit (BRT) projects. The high turnover of key staff hurt the agency's implementation capacity; in 2006, more than 50 staff members were changed, thus delaying project implementation. During this period the project was at risk.

However, since 2007 with a new board of directors and new upper management staff, *Protransporte* has demonstrated improved capacity to implement the project by: (i) carrying out large and complex civil works, bus-concession and fare collection bidding processes; (ii) assisting in obtaining a line of credit from a Peruvian development bank, for the bus concessionaires; (iii) coordinating project implementation with the Urban Transport Bureau (*Gerencia de Transporte Urbano*, GTU) in charge of administering and supervising the concessions of transport routes and taxis, and the Lima Municipal Enterprise for Fare Management (*Empresa Municipal Administradora de Peaje de Lima*, EMAPE) and (iii) leveraging the additional funds required to successfully complete the operation of the *Metropolitano*.

GEF Grant: The National Environment Fund (*Fondo Nacional del Ambiente*, FONAM), the recipient and the implementation agency of the Grant, was a private and autonomous entity created to promote public and private investment in environmental projects in Peru. The members of its board of directors are representatives of public entities, and the Minister of Environment serves as its chairman. The bikeways and bicycle promotion activities were co-implemented by the Special Metropolitan Project for non-motorized transport (*Proyecto Especial Metropolitano de Transporte No Motorizado*, PEMTNM) of the Municipalities of Lima and Callao.

FONAM and PEMTNM carried out the non-motorized transport and institutional strengthening activities with minor problems and delays. Their institutional, technical and managerial capacity, which was weak during project preparation, grew considerably over the lifetime of the Project, including the ability to handle safeguard issues. The collaboration between the two agencies initially had some shaky moments and continued with occasional frictions throughout the Project's entire duration. Eventually, the commitment of the project staff in both institutions and the strong personality of the project coordinator became key assets.

The performance of *Protransporte* in implementing the Study for the Consolidation of the Integrated Public Transport System in Metropolitan Lima was satisfactory, despite some delays in making decisions and reviewing the respective deliverables.

**Implementing Agency Performance Rating :** Moderately Satisfactory

**Overall Borrower Performance Rating :** Moderately Satisfactory

## **10. M&E Design, Implementation, & Utilization:**

### **a. M&E Design:**

The project's indicators were appropriately linked with the intermediate objectives and included baseline data and measurable targets set at appraisal (PAD Annex 1; ICR-Section F of the Datasheet). The key performance indicators for the intermediate objectives were: (i) reduced travel times in the project traffic corridor; (2) reduction of fatal and serious accidents; (3) reduction in air pollution emissions from the transport sector in the main trunk corridor; (4) increased percentage of users satisfied with the current transport service; (5) percentage of low-income population benefited from the project.

*Protransporte* was in charge of collecting and analyzing project performance indicators.

GEF Grant: The indicators linked with GEO were mostly output-based, such as number of concessionaires of the high-capacity segregated busway system offered buses for scrapping; number of aged and polluting public transport vehicles retired through *Protransporte's* own scrapping scheme; km of bikeway rehabilitation and extension, etc. One indicator directly measured the modal shift toward non-motorized transport, i.e., percentage increase in number of bicycle trips in the project financed bikeway in comparison to the base line.

### **b. M&E Implementation:**

Through *Protransporte's* planning division in charge of collecting and analyzing project performance indicators, the Borrower and the Bank were able to monitor and assess the project's output indicators on a regular basis. At project

start-up, *Protransporte* assigned a team to collect data and report on project indicators . During the first year of implementation, a comprehensive Baseline Impact Study was carried out in order to provide the baseline of key project indicators that enabled the analysis and comparison of the results to be envisaged under the project . The project team subsequently clarified that, despite the project's long preparation time, baseline data had not been collected during preparation as a result of financial and human -resource constraints, and the task had to be done in the first year of implementation . The Bank team had the necessary data to analyze performance and detect issues . The Bank used this information to satisfactorily carry out the Mid -Term Review (Dec 2006). Data needed to analyze and assess the output and outcome indicators at the time of ICR preparation were readily available .

GEF Grant: Data were regularly collected and presented during supervision missions . Periodic M&E reports were prepared. Bicycle counts and bicycle-use surveys were conducted at approximately two -yearly intervals due to the high cost and taking into account the progress in bicycle infrastructure provision and bicycle promotion activities .

### **c. M&E Utilization:**

The M&E system was used to support recommendations or inform management decisions during the course of implementation.

GEF Grant: The information collected during project implementation was used to improve bicycle promotion strategy and activities.

**M&E Quality Rating :** Substantial

## **11. Other Issues**

### **a. Safeguards:**

This was a Category "B" project that triggered four safeguards policies - OP4.01 Environmental Assessment, OP 4.12 Involuntary Resettlement, OP4.04 Natural Habitats, and OP4.11 Cultural Resources (PAD, page 43).

**Environmental Safeguards and Management :** The Environmental Impact Assessment (EIA) examined the project's potential impacts both during implementation and operation and recommended measures needed to mitigate them during construction, including carrying out more detailed studies to refine the management plans . 19 environmental impact studies relating to different segments of the BRT corridor were carried out under the Project during the preparation and implementation stages . However, disclosure of relevant documents did not always meet OP 4.01 requirements.

On October 1, 2009, the Bank's Inspection Panel received a request for investigation of the project . The request was from a group of residents of the District of Barranco within the Lima Metropolitan area . The requesters raised concerns that the project had : (i) significantly worsened traffic conditions in Barranco; (ii) caused negative environmental and social impacts that had not been adequately mitigated; (iii) failed to inform and consult the affected communities appropriately; (iv) caused irreparable adverse impacts to Barranco's designated buildings and areas of historic value; and (v) been poorly prepared and inadequately supervised .

The Inspection Panel found that the initial Environmental Assessment (EA) studies did not comply with policy in terms of identification, analysis and mitigation of impact beyond the corridor itself, e .g., changes in pedestrian and vehicular traffic flows and their economic and cultural impacts in the District of Barranco . The Panel concluded that the changes in traffic in Barranco resulting from the project and the general disruption resulting from the BRT -related construction work had caused deterioration in the quality of life of many residents in the district and posed a threat to its historic character . The Panel recognized, however, that these alleged adverse impacts, could not be attributed solely to the project . One of the reasons was that substantial increases in traffic volume had already been occurring throughout Lima, including Barranco, before the start of the project . The Panel also recognized that some of the requesters' complaints were temporary as they were related to construction works and would recede once the *Metropolitano* became fully operational.

Management prepared an Action Plan (December 2009) supporting strengthening *Protransporte's* dialogue and consultations with residents of Barranco and other stakeholders . It provided technical assistance to *Protransporte* and the Municipality of Barranco on how to advance consultative practices and processes to receive and address residents' grievances regarding the project . Management continued to supervise closely the environmental, cultural heritage and social aspects during and beyond Project implementation ( up to March 2012). The ICR (page 13) reports that "most of the social issues were resolved ."

In addition to complaints from the residents of Barranco, there were also several complaints related to pedestrian crossings on Avenida los Pumas and Avenida Tupac Amaru . A number of crosswalks were built, while others were still pending at project closure (ICR, page 48). Also, there were complaints related to limited access to garages on Avenida Bolognesi in Barranco, and on Avenidas Lampa and Emancipación in Lima Cercado. At project completion, most of these problems had been resolved, except for 2 private garages in Barranco, for which compensation payments are still pending (ICR, page 48). In Lima Cercado, the garages are still under evaluation .

The ICR reports (pages 36-37) that “On January 18, 2011, the Inspection Panel submitted its report on its investigation of the Lima Urban Transport Project (the “Project”). The Panel found that the Project had been correctly categorized as “B” and that the environmental studies on issues directly affecting BRT construction and operation had complied with OP 4.01, Environmental Assessment. Project supervision, information dissemination, and consultations with the affected communities had been strengthened in early 2009, as the construction phase ended, operations began, and the communities started to communicate their concerns in a more organized fashion . These strengthened activities complied with OP 13.05, Supervision, and OP 4.01.”

#### **Involuntary Resettlement :**

The Project required the resettlement of the flower market merchants who did not own the land where they had been located for several years . *Protransporte* provided generous support to those merchants who agreed to be moved to a nearby location. *Protransporte* went beyond policy requirements by supporting the merchants in : (i) finding credit to purchase new land, (ii) assisting them with the relocation, (iii) building a new market that included water, electricity and new infrastructure, and (iv) providing training in business management .

There were also informal street vendors in various sections of the bus corridor, particularly in the North segment and the downtown Lima area, who had to be moved out of the bus corridor . *Protransporte* made several agreements with the local municipalities that were responsible for managing these vendors . It also provided technical support and commercial advice to several of these street vendors who happened to be associated, helping them in their relocation to new areas and to new marketplaces .

#### **Natural Habitats :**

The ICR does not report on any issues related to compliance with OP 4.04. According to the PAD, this policy was triggered due to the situation of the southern terminal near the edge of an existing protected area, Pantanos de Villa . The wetlands were not supposed to be directly affected by the project, but an indirect impact could have increased pressure from easier access due to public transport and higher volume of private transport that was going to the terminal. A program was included in the EMP to support the master plan of the park, under implementation since 1998. Activities foreseen included reinforcing the surrounding perimeter, building walkways, better signing and others (ICR, page 44).

#### **Cultural Resources :**

Responding to a request by the Municipality of Barranco, Management provided as part of the Action Plan technical assistance to incorporate an analysis of Barranco 's historical buildings and monumental areas into the District 's Development Plan. The assistance also included recommendations on measures to preserve historical sites and buildings.

GEF Grant: No formal framework was prepared to deal with the design and construction impacts of bikeways . The Grant shared a common Environmental Impact Assessment with the Loan, which did not consider the potential social and environmental impacts of the Grant 's bikeway component. Consequently, safeguard aspects in the implementation of the bikeway component related to noise, dust, access restrictions, traffic interruptions, and some replanting of grass, bushes and trees, followed a “learning-by-doing” process. Bikeway work contracts included a budget for environmental mitigation and clauses that required contractors to follow adequate environmental practices in accordance with local rules . The ICR reports that compliance with these clauses was improved over time .

In the initial stages of project implementation, social communication was limited . After a successfully handled complaint by a group of neighbors due to the removal of bushes and small trees, the Grant engaged in ongoing communication, consultation and mitigation activities . These activities accompanied all physical interventions during the last two years of project implementation .

#### **b. Fiduciary Compliance:**

**Financial Management :** The ICR reports that financial management of the project was administered in accordance with the arrangements agreed upon in the Loan Agreement . “A formal external audit of the Project, with the support of the Comptroller-General of Peru, for both loans (IDB and IBRD) was carried out on an annual basis, stating the adequacy of the accounting system and internal controls, and compliance with covenants of the Loan Agreement ”

(ICR, page 14). There were some delays in achieving the agreed deadlines for submission of audit reports .

**Procurement:** As *Protransporte*, the project implementing agency, lacked the capacity to procure goods, works and services, the Bank requested the agency to hire two procurement specialists with good track records and experience in Bank procurement rules, especially in preparing bidding documents on civil works, among others . During the first three years of execution, the procurement processes followed Bank and IDB procedures, but with shortcomings such as lengthy consulting service processes (over a year) and a prolonged procurement bidding process for civil works (over 16 months) in order to grant an award. The Bank diagnosed these issues, which were promptly addressed, and then prepared an action plan in this area to reduce the bidding process periods (including reducing the Bank's response time no-objection requests. After this, the performance of *Protransporte's* procurement team improved considerably and the elapsed time was shortened . Four ex post procurement reviews were conducted by the Bank during project implementation. These reviews and the Supervision Aide-Mémoires included recommendations that helped improve the management of procurement processes .

**GEF Grant:** According to the ICR, fiduciary aspects under the Grant were handled in a satisfactory manner despite some minor shortcomings in financial management and procurement during the initial implementation period due to project staff's limited experience with Bank operations . Financial management reports and auditing reports were by and large submitted on time, and were considered satisfactory . None of the audit reports had a qualified opinion .

**c. Unintended Impacts (positive or negative):**

**d. Other:**

<b>12. Ratings:</b>	<b>ICR</b>	<b>IEG Review</b>	<b>Reason for Disagreement /Comments</b>
<b>Outcome:</b>	Satisfactory	Moderately Satisfactory	The project was highly relevant to the needs of urban transport users in the Lima Metropolitan area, in particular to poor urban commuters concentrated on its periphery. Design relevance was substantial. The project-supported construction of the first bus rapid transit (BRT) system in Lima improved mobility and accessibility in the 28 km bus corridor, especially for the peri-urban poor neighborhoods. Efficiency, however, was rated modest, mainly as a result of major cost and time overruns.
<b>Risk to Development Outcome:</b>	Negligible to Low	Moderate	The main risk to development outcome is the bus system's financial sustainability. The implementation of Lima's bus rapid transit system is not yet generating returns that would allow it to be self-sustaining.
<b>Bank Performance :</b>	Moderately Satisfactory	Moderately Satisfactory	
<b>Borrower Performance :</b>	Moderately Satisfactory	Moderately Satisfactory	
<b>Quality of ICR :</b>		Satisfactory	

**NOTES:**

- When insufficient information is provided by the Bank for IEG to arrive at a clear rating, IEG will downgrade the relevant ratings as warranted beginning July 1, 2006.
- The "Reason for Disagreement/Comments" column

could cross-reference other sections of the ICR Review, as appropriate.

### 13. Lessons:

The ICR has identified a number of lessons, of which the most important are listed below with some adaptation of language:

- **Strengthen project implementation agency 's capacity for mainstreaming environmental and social management into urban transport project preparation and supervision** . A dedicated full-time and well-equipped environmental and social management team should be set up in the project implementation agency to ensure due diligence in terms of: (i) quality assurance of EIA/EMP and social mitigation plans, (ii) supervision of the implementation of environmental and social management plans, (iii) sound legal analysis to establish the local environmental authority and find any legal vacuum in the local legislation, and (iv) timely and systematic reporting of main findings to agency's senior management and the Bank team .
- **Focus on how to achieve the target ridership (and hence financial sustainability ) prior to operation of the system or during the first year of operation** . Experience shows that the passengers will not use the rapid transit system right away or during the first year of operation . Future rapid transit project design should consider allocating resources for a communication campaign on a modal shift as early as possible prior to operations, enforcement of rationalization of bus routes and implementation of bus scrapping, analysis of competition for feeder routes and taxis, careful analysis of service demand at bus stations to adequately design access to the BRT system, study of fare integration to attract more users, among others .
- **Consider at appraisal key elements that are likely to facilitate the successful implementation of complex BRT projects** . These include basing cost estimates on thorough feasibility studies prepared before implementation, consideration of the costs of interference with utility networks, careful analysis of the procurement plan for civil works, analysis of models and contracts to be used for private sector participation, and strengthening of both Bank and Borrower teams in environmental and social safeguards management
- **Modal shift requires a complex cultural change and thus a long -term engagement** . Successful bicycle-use promotion requires a long-term engagement, which cannot be ensured through a single financed project.
- 

14. Assessment Recommended?  Yes  No

### 15. Comments on Quality of ICR:

The quality of evidence provided in the ICR is adequate, but it describes the GEF Grant as blended whereas the PAD refers to it as parallel funding (see Section 2c). The ICR offers a good discussion of factors that positively and negatively influenced the project. The lessons are based on experience. The ICR, however, could have been more structured in its analysis of various aspects, in particular of social safeguards issues that triggered an Inspection Panel investigation. The information had to be culled from different parts of the report .

**a. Quality of ICR Rating** : Satisfactory