PERU
LIMABUS TRANSPORT

Project Concept Document

Latin America and Caribbean Region
LCSFT

Date: January 15, 2002 **Sector Manager/Director:** Jose Luis Irigoyen **Country Manager/Director:** Marcelo Giugale **Project ID:** P035740 **Lending Instrument:** Specific Investment Loan (SIL)	**Team Leader:** Paulus A. Guitink **Sector(s):** Roads and highways (70%), Sub-national government administration (30%) **Theme(s):** Administrative and civil service reform (P), Access to urban services for the poor (P), Pollution management and environmental health (S), Environmental policies and institutions (S), Other social protection and risk management (S)
Global Supplemental ID: P074021 **Sector Manager/Director:** Jose Luis Irigoyen **Lending Instrument:** Specific Investment Loan (SIL) **Focal Area:** G **Supplement Fully Blended?** Yes	**Team Leader:** Pierre Graftieaux **Sector(s):** General transportation sector (60%), Sub-national government administration (30%), Health (10%) **Theme(s):** Access to urban services for the poor (P) , Other urban development (P), Gender (S), Pollution management and environmental health (S), Regulation and competition policy (S)

Project Financing Data

[X] Loan **[ ] Credit** **[ ] Grant** **[ ] Guarantee** **[ ] Other:**

For Loans/Credits/Others:

Total Project Cost (US$m): $133.93 **Cofinancing:** Yes

Total Bank Financing (US$m): 40.00

Has there been a discussion of the IBRD financial product menu with the borrower? ☐ **Yes** ☒ **No**

Borrower Rationale for Choice of Loan Terms Available on File: ☐ **Yes**

Proposed Terms (IBRD):

Commitment fee: 0.85% **Front end fee (FEF) on Bank loan:** 1.00%

Financing Plan (US$m): Source	Local	Foreign	Total
BORROWER	46.00	0.00	46.00
IBRD	40.00	0.00	40.00
INTER-AMERICAN DEVELOPMENT BANK	40.00	0.00	40.00
GLOBAL ENVIRONMENT FACILITY	7.93	0.00	7.93
Total:	133.93	0.00	133.93

Borrower/Recipient: GOVERNMENT OF PERU
Municipality of Metropolitan Lima (MML)
Responsible agency: PROTRANSPORTE LIMA
Address: Avenida Aramburu No. 166 - 5, Miraflores, Lima
Contact Person: Julio Pflucker, Executive Director
Tel: 51 1 421 7473 Fax: 51 1 421 8512 Email: Jpflucke@Protransporte.org.pe
Other Agency(ies):
FONAM (Fondo Nacional del Ambiente), implementation unit for the GEF project
Address: Calle Hermanos Quinteros 103.
Urb. La Castellana Surco. Lima 33.
Contact Person: Alberto Gonzales Director Ejecutivo, FONAM
Tel: 51 1 449-6200 Fax: 51 1 449-6200 Email: agonzales@fonamperu.org

Project implementation period: 4 years (2003-2008)

OPCS PCD Form: Rev. March, 2000

A. Project Development Objective

1. Project development objective: (see Annex 1)

The main objective of the project is to establish an efficient, reliable and safe mass rapid transit system by implementing and operating high capacity buses in segregated bus corridors – COSAC -, which will improve public transport of Metropolitan Lima population, especially for the low-income population of the peri-urban poor neighborhoods.

To achieve this, its specific objectives would be to: (i) help strengthen the Municipality of Lima's planning, regulatory, administration, and operation capacity of public transport provision for Lima and Callao (Metropolitan Lima) in the medium and long-term; (ii) rehabilitate and improve the existing road infrastructure, with emphasis on rehabilitation/construction of segregated bus corridors and feeder bus roads; and (iii) enhance transport and environmental conditions by improving traffic management and safety, reducing air pollution and improving conditions for vulnerable road users, such as pedestrians, bicyclists and mobility constrained persons.

The objectives of this operation will be achieved through physical road infrastructure interventions, rationalization of road space, and through technical assistance for institutional strengthening of the Municipality of Lima to reduce the oversupply of public transport which results: (i) in large inefficiencies in public transport provision; (ii) urban congestion and adverse environmental and safety impacts; (iii) irrational and inefficient use of scarce road space; (iv) predatory and counterproductive competition; and (v) low average speeds and long travel times.

The segregated bus corridor system, with larger and cleaner vehicles, operated through well-enforced private sector concessions will: (i) increase service efficiency and reduce GHG and local emissions per passenger-km; (ii) increase the service quality and reduce travel times; (iii) rationalize public space consumption by various transport modes; and (iv) prioritize public transport. It is expected that the proposed activities will yield significant benefits to the urban transport sector, including reduction of traffic congestion and improved traffic flow for all vehicles reducing emissions per vehicle-km; improved road safety by eliminating predatory driving behavior of public transport vehicles; improved financial sustainability of the public transport system; improved economic efficiency and competitiveness of the city through reduced travel times; and provision of better accessibility to low-income commuters.

2. Global objective: (see Annex 1)

The parallel GEF funds will help facilitate greenhouse gases 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. The project GEF specific objectives are: (i) rationalization of public transport capacity by providing financial incentives (Credit Guarantee Fund) to retire old buses; (ii) consolidation of the bikeways pilot project developed in Lima North Cone mainly through the rehabilitation and extension of the existing bikeways; (iii) delivery of an institutional strengthening program on sustainable transport, targeting municipalities and institutions dealing with environmental issues and/or transport planning; and (iv) to assess and monitor the GEF project global consequences. In addition to GHG, the transport sector contributes to the emission of air pollutants like SOx, CO, PM2.5 and NOx. NOx together with VOCs lead to the formation of smog or tropospheric ozone (O3). SOx and NOx contribute indirectly to ambient PM2.5. Reductions in vehicle-km will reduce emissions of urban air pollutants and reductions in fuel-use per passenger km will significantly reduce emissions of urban air pollutants from uncontrolled or poorly controlled vehicles, as are the majority of public transport units.

3. Key performance indicators: (see Annex 1)

To ascertain whether or not the project has achieved its development objectives, the following indicators would have to be achieved (more specific performance indicators are included in Annex 1, Project Design Summary):

Limabus Transport IBRD/IDB loan

- Creation of an efficient segregated bus corridor system for Metropolitan Lima with a length of 24 km.
- Improved quality of feeder (access) roads to the bus corridor system.
- Improved level of comfort for passengers, to be monitored by biannual scorecards (see section E.6).
- Reduced average travel times for low-income commuters using public transport in the area of influence of the mass rapid transit system (in hours/person/day).
- Reduction of operating costs in traffic corridors (in soles/bus-km or preferably soles/passenger-km).
- Improvement of the bus system energy-efficiency (in liters of diesel per bus-km or preferably passenger-km).
- Reduced road accident rate in the segregated bus corridors.
- Integrated tariff feeder-trunk structure at competitive level.
- Introduction of public transport emission standards.
- Improve air quality in the areas served by the project.
- Establishment of air quality monitoring mechanism.
- Improved accessibility for poor and very poor households to job opportunities, social services, etc.

- Effective traffic management and enforcement measures planned and designed by ML.

GEF Grant

- Public policies incorporate themes of air pollution reduction by influencing on policy decision makers, strengthening government technical teams on air pollution and sustainable transport issues, and establishing alliances with the civil society.
- Establish modes of surveillance and monitoring to measure the effectiveness and facilitate the dissemination of the project.
- Reduction in life-cycle GHG emissions from the transport sector compared with the baseline.

More specifically:

On the public transport capacity rationalization component:

- At least one Limabus concessionaire has used the Credit Guarantee Fund option
- At least 350 aged and polluting public transport vehicles retired by the 4th year of project implementation through the Guarantee Fund
- Inclusion and compliance with the environmental guidelines for vehicle retirement set in the operation manual
- Pilot Retirement Program has established technical and budget processes through a real life experiment on at least 200 vehicles
- Displaced bus operators have been retrained and have received technical and economic support to opt for new employments or new business outside the transport sector.
- 3,200 training and technical assistance vouchers supplied to displaced transportation workers.
- By the 4th year, 80 courses realized, 400 people have received technical training, 50 micro-enterprises granted financial support through micro-credits

On the non-motorized transport (NMT) component

<u>Physical improvements and extension of the bikeways network</u>

- 32.5 kms of bikeways rehabilitated in 12 months
- 6.1 kms of bikeways extension to connect Lima's two main universities, built in 12 months

<u>Sustainability and attractiveness of the network</u>

- 38.6 kms of bikeways with appropriate maintenance, security and cleaning.
- Five *"ciclomódulos"* in operation, after 18 months

<u>Credits granted for bicycles-purchase in the targeted-population (Plan Bici)</u>

- 3 modules of credit suppliers in operation
- Credits awarded for the purchase of bicycles and for small bike-related amount to at least a full rotation of the revolving fund at the end of project implementation.

Increased use of the bicycle in the target population of the project (schoolchildren, universities, local companies, women's groups) and in the general population

- Doubling of the number of trips in bicycle triples in the area of influence of the projects pilot in comparison to the base line
- At least 2 "safe routes to schools" implemented at the end of the 4th year
- At least 10 local companies support the use of bicycle, by providing infrastructure (bathrooms, lockers and bike parking facilities) in their premises for their workers
- At least 1 university supports bicycle use by means of promotion activities and safe parking inside the campus
- At least 2 women grass root-organizations are involved in the project

Adoption of bicycle-use policies at the municipal and central government level.

On the Institutional Strengthening Component :

- 11 local governments and FONAM have strengthened their capacities (training of human resources, technical assistance and equipment received)
- 500 people among local authorities, civil servants, community leaders, civil society groups and general population are informed about sustainable transport options and their effect on air quality, GHG emissions and the environment in general
- Willingness and capacity of the members of the government organizations, municipalities and the civil society to continue with the above-mentioned objectives beyond the life of the project

B. Strategic Context

1. Sector-related Country Assistance Strategy (CAS) goal supported by the project: (see Annex 1)
Document number: 24205-PE **Date of latest CAS discussion:**

The Country Assistance Strategy report for Peru, dated August 19, 2002, spells out the priorities of the President Toledo's administration to attack poverty: competitiveness and employment generation, access to health, education, culture and basic services; and creation of a public administration that serves the people. The Bank will assist the government to achieve these goals making safety nets more efficient and creating growth opportunities targeted to the poor, and will strengthen governance and institutions. Towards this end, a key development objective is the improvement of Lima Urban Infrastructure. The principal strategy elements of this CAS are:

- Support to policy and institutional reforms through a combination of AAA and technical assistance loans (TALs), with programmatic loans in support of a reform program; priority issues include public sector management and decentralization; addressing barriers to growth and competitiveness, and continued work on the reform of social sectors;
- Financing investment programs that have a direct impact on the productive lives of the poor, through a combination of rural and urban development programs; and financing to support the institution of reforms in the social sectors;
- A renewed focus on environmental issues especially as linked to health, sustainable use of natural resources, and management of biodiversity; and

- Continued emphasis on partnership with civil society, addressing inclusion within Bank operations of specific groups such as youth, women, indigenous peoples and Afro-Peruvians.

The proposed lending program for FY04 includes six operations for a total of US$235 million, focusing on two poverty targeted projects, the Sierra Rural Development Project and Lima Urban Transport Project, both of which will address barriers for economic development of the poor, one in the poorest areas and the other in the area with the greatest concentration of urban poor in the peri-urban neighborhoods of Metropolitan Lima.

The IBRD implemented (1994-1997) has rehabilitated essential national transport infrastructure, assisted Government in implementing institutional reforms in the road and railway sub sectors and strengthened road management and increased private participation. Rural roads are also being rehabilitated and integrated into the national road network through the Peru Rural Roads I and II projects.

As per the CAS progress report, the current status is that 11,000 km of rural roads have been rehabilitated and most of the approximately 3,500 km of community tracks have been improved for non-motorized transport to reach the poorest communities. In terms of transport sector institutional reforms, progress has been made through the establishment of the National Road Safety Council and the Transport Council for Lima and Callao and through provision of technical assistance for various concession programs and contracts in the transport sector.

In Peru, years of terrorism in the early 90s, low investment and poor maintenance left infrastructure badly deteriorated, hindering the integration of the national economy and competitiveness in the international market. The strategy that the World Bank has adopted for infrastructure rehabilitation in Peru includes the following aims and actions:

- To reduce intra-urban transport costs and delays in moving goods to markets and workers to jobs.
- To redefine the roles of the state and the private sector in infrastructure and adapt the legal regulatory framework.
- To enhance urban transport accessibility for the poor.
- To mitigate urban congestion and environmental degradation.
- To improve safety in rural and urban transport, and reduce traffic accidents.
- To continue rehabilitation and paving of highways connecting the major market towns and ports, and the rehabilitation of rural roads to achieve the economic integration of the country and open access to remote areas.
- To improve the provision of urban infrastructure services.

The Lima Urban Transport Project fulfills the above infrastructure sector goals which form part of the CAS for Peru. The Project Development Objectives listed in Section A of this PCD are responsive to the CAS objectives mentioned above. The approximately 24 km network of segregated bus corridors to be constructed as a first phase within the city of Lima would lead to an improved level of service provided to two million passengers from the peri-urban poor neighborhoods by reducing travel times as well as bus operating costs. In addition, the project is expected to reduce traffic congestion caused by private and public vehicles and to mitigate the negative environmental impact of vehicle emissions, including GHG.

The proposed project would also support the strengthening of the Municipality of Lima through technical assistance to PROTRANSPORTE and the *Dirección Municipal de Transporte Urbano* (DMTU), entities actually involved in the preparation and design of the project. These agencies will play a key role in implementing the project, formulating a medium/long-term urban transport strategy for Lima, regulating public transport operations, restructuring existing route licenses and facilitating COSAC route concessions to private operators.

Additionally, as part of a comprehensive program to improve transport conditions in Lima, the proposed project aims to construct two transfer stations or terminals, to improve and rehabilitate street paving in low-income areas to facilitate (feeder) bus access (95 km of feeder roads), to construct sidewalks and bicycle paths to improve accessibility to the COSAC system, to improve traffic management by installing new traffic and road signals along bus corridors and to improve the quality of bus services through the gradual renovation of the current bus fleet within the urban transport system.

1a. Global Operational strategy/Program objective addressed by the project:

The proposed GEF component is consistent with the objectives of the GEF Operational Program 11 on Transport, which states that "GEF will facilitate commitments to adopt sustainable low-GHG transport measures and disengagement from present unsustainable measures" and "facilitate modal shifts from personal transport to mass transit" and non motorized modes.

2. Main sector issues and Government strategy:

The population of Metropolitan Lima has grown from 1.8 million in 1961 to 7.7 million currently and is expected to approach 8 million by 2004. With approximately 110 inhabitants per ha. population density is low (Bogotá 200p/ha). It is the fifth largest metropolis in Latin America, and although the average yearly income is approximately US$2,200 per capita, more than half of Lima's population is considered poor.

In Lima, the number of cars, which had remained stable through most of the 1980's at about 270,000, increased to about 1,000,000 by 2002. Over the last ten years, the number of public transport vehicles has increased from 10,5000 units to an estimated fleet of over 60,000 units with an average age of 16 years – many exceeding 25 years – making Lima's public transport fleet the oldest in Latin America. As a result, Lima urban transport is characterized by traffic congestion, delays, inadequate traffic management, poor state of road networks, increasing air pollution problems and increasing the number of road related accidents involving deaths (accident fatality rate of three persons per day of which 80% involve pedestrians).

All urban transport in Lima metropolitan area is by road, private cars covering 20% and public transport covering 80% of the total transport needs. Public transport is privately owned and includes buses, combis (12-passenger buses), coasters (approx. 35-passenger), micros, taxis, collectives and moto-taxis and is operated in a deregulated environment. Together with private cars and buses, approximately 150,000 formal and informal taxis cause high congestion levels, air and noise pollution, accidents and operating costs. As a consequence, no reliable alternative is available to poor urban commuters who are concentrated on the periphery of Lima metropolitan area. The average round-trip travel time to work for the poor urban worker is often between 1.5 to three hours a day. Poor traffic management aggravates this situation.

Urban transport deregulation in Lima (of the 1990s) created an oversupply of public transport vehicles not subjected to minimum emission and noise quality standards, making air pollution and noise critical

environmental issues. It also created a culture named "Killer Combis" generating a daily high number of accidents due to lack of police enforcement and inadequate regulations and training and deficient traffic management.

In addition, the worsening of the quality of the public transport service is also a matter of a weak institutional framework and poor governance, which contribute significantly to infrastructure deficiencies. These limitations have generated the deterioration of accessibility and mobility, which affect commuters in different ways, especially low-income groups. Any proposed solution to the critical problems that Lima Metropolitan area is confronting with regard to the mobility of its more than seven million inhabitants will have to address these issues. Recent studies sponsored by the World Bank indicate that an estimated US$500 million are lost every year in man-hours and operational costs due to congestion and inefficiencies of the urban transport system. Over-combustion of 13.2 million liters of gasoline and over-emission of 1,000 metric tons of air pollutants by an obsolete fleet are a constant health threat and a large source of GHG emissions.

Today, growing traffic congestion in the Lima metropolitan area is impeding the functioning of the bus transport system. To re-establish a clean, efficient and reliable transport alternative, it is necessary both to separate public transport from general traffic in order to reduce both travel times and vehicle operating costs, facilitating the use of newer and larger buses which are far less polluting per passenger-km. The most cost-effective solution is to create segregated bus corridors dedicated to high capacity buses.

Last but not least, with over 70% of the national vehicle fleet concentrated in the Lima Metropolitan Area, the binomial oversupply-congestion prompts an excessive import of vehicle fuels, contributing significantly to the commercial balance deficit (*Municipalidad Metropolitana de Lima: Anteproyecto del Plan de Acción Municipal 2003*).

3. Sector issues to be addressed by the project and strategic choices:

1. Overview of Urban Public Transport Sector Issues in Metropolitan Lima

- **The 1980s: An Overly Regulated Period**

The migratory processes and the intense industrial centralization trend, along with rapid urbanization, contributed to the growth of the city of Lima, which in 1981 reached 4.6 million out of 17 million in Peru. The completely regulated urban transport services in Lima, in the 80s, were scarce, slow, unreliable, insecure and very badly maintained. Service was provided by large omnibuses (80 to 100 passengers), private microbuses (40 to 100 passengers), collectives (large cars that accommodate five or six passengers) and taxis. While buses had fixed stops along well-defined routes, micros made their stops trying to accommodate the needs of the passengers on board.

In July 1980, the registered fleet of vehicles was 1,574 buses, 7,101 microbuses, 560 collectives and 718 taxis, plus an unknown number of private cars (estimated to be higher than that of registered units) that also operated as taxis. As of 1985, public transportation accounted for 74% of motorized trips, with an average of six million trips daily, of which 4.4 million (three out of every four trips) were served by public transportation..

The largest buses belonged to the largest state-owned bus firm, ENATRU, which operated more than 600 units with a single driver-collector. These buses were generally in better condition than the other types of units. Most of the microbuses were small units, and more than 70% had 26 seats or less. They also tended to be older vehicles: 35% were more than 15 years old. The physical condition of these units was

inadequate. Taxis also played an important role in public transportation and taxi tariffs were negotiable, as the cars were not equipped with meters. In terms of service, several slums *("pueblos jovenes")* in the periphery Metropolitan Lima were not served by public transportation, forcing users to use mototaxis or to walk considerable distances to board the buses, and from the bus stops to their homes.

Urban transport routes were conceived in terms of connecting the slums with the economic centers where most formal employment was located (businesses, industrial district), rather than connecting these residential areas to the places where services (health, education, etc.) were provided.

- **The 1990s: Deregulation and New Challenges**

In the 1990s, the Lima-Callao metropolitan area further consolidated its status as the critical hub of Peru's economic, political and social life. It currently concentrates about one third of the country's total population (about 7,700,000), half of the national production, and 68% of the motorized vehicles.

The trade liberalization and economic recovery measures adopted in 1992-93 brought about a shift towards the privatization and de-regulation of the transport sector. This change, along with the lifting of the imports ban (which limited new vehicles imports) and the massive layoff of public sector workers, caused mixed results in the provision and quality of public transport services.

Between 1990 and 1999, the number of motorized vehicles in the city doubled, and the trips in public transport units lowered from 89% to 81%. Still, more than nine million trips were made daily on motor vehicles in Lima, of which 80% were made using public transportation. However, 98% of the public transport vehicles were independently owned and operated, at a ratio of 1.25 vehicles per owner.

In a parallel fashion, the number of units dedicated to provision of taxi service jumped from 10,000 to approximately 150,000 cars and 45,000 moto-taxis, most of which offer this service informally, and are not registered or licensed in any way. From the perspective of the user, the general effect of the de-regulation has been perceived as an improvement in many areas of the public transport service. Whereas in the 80s and early 90s large crowds of people were observed at the bus stops, the increase in the number of units and routes caused waiting times to be reduced to 5-8 minutes.

Almost all buildings are now within 500 meters of a bus stop, and more than 80% of passengers reach their final destination without transferring. Most of the large buses of the past have been replaced by small minivans *("combis")* which have small capacity, drive over the speed limits, provide low quality service in terms of comfort, and lack periodical vehicle maintenance due to reduced or limited profitability. ENATRU no longer exist as a single company, and its large units were sold to individuals and transport micro-enterprises that now operate independently.

Finally, the peri-urban slums of Metropolitan Lima that were previously disconnected from the network of public transportation are now served but with severe limitations and issues. It is important to mention that these slums are now large cities with populations of over one million people who require an adequate and efficient urban transport system. The current public transport system in Lima has the following sector characteristics that will be addressed by the project:

Weak Institutional Arrangements for the Management the Urban Transport System

Within the Municipality of Metropolitan Lima (MML) organizational environment several entities have partial and often overlapping urban transport mandates: (i) Municipal Directorate for Urban Transport (DMTU), in charge of regulation, management, supervision and control of the urban transport and transit system; (ii) Metropolitan Investment Fund (INVERMET), a decentralized enterprise, responsible for the

management of infrastructure investment projects; (iii) Municipal Enterprise for the Management of Lima highways tolls (EMAPE), in charge of collecting tolls and providing road highway maintenance; (iv) Metropolitan Planning Institute (IMP), a decentralized agency in charge of overall city planning and classification of urban roads; and (vi) Special Project for the Metropolitan Area Environmental Recovery (PRAAM) linked to the Municipal Directorate for City Services and responsible for monitoring air quality, among other issues. All of these institutions create an overlapping and unclear definition of responsibilities for public transport strategy for Metropolitan Lima area in general. This is translated into weak urban transport management and inefficient enforcement of the inconsistent regulatory framework.

There is also a lack of coordination on urban transport matters also outside of MML between the relevant authorities of the national government (Ministry of Transport, Communications, Housing and Construction – MTC, Ministry of Finance – MEF, and the Ministry of the Interior –MI which controls the police) as well as with other provinces (Provincial Municipality of Callao – MPC – and Huarochiri). There is optimism that the recently elected new Mayor will be able to improve communications and cooperation: he recently has demonstrated good synergy with Government officials and with the Mayor of the Municipality of Callao.

Operational Inefficiencies of the Urban Transport System

The urban transport system for Metropolitan Lima can be characterized by the following operational inefficiencies:

a. Licensed route operations by micro and small enterprises that do not own the vehicles operating on the assigned routes.

b. Over-supply of transport services on urban routes, caused by unlicensed informal transport providers. As a result, there is a cut-throat competition with individual units having difficulties in making any profit leading to deferred, deficient or no maintenance of the units, poor social conditions for drivers and conductors, and poor quality of service.

c. An estimated 300,000 people are directly employed in public transportation in Metropolitan Lima and an additional 50,000 are indirectly involved, making any policy change an employment issue with political underpinnings.

d. Obsolete public transport units, with an average age of 19 years for omnibuses, 15 years for smaller buses, and 11 years for *"combis"*.

e. Imperfect market conditions resulting in fares that are among the most expensive in real terms in Latin America, with an adult fare between US$0.30 and US$0.40; and additional fares for transfers

1. Use of the bicycle as a transport mode

In 1990, the municipality of Lima began recognizing the bicycle as a transport mode, through its Metropolitan Program of Non Motorized Transport (PMTNM), created by Ordinance Nº 159-90. Its objective was to promote the use of the bicycle as an alternative transport mode. The PMTNM was later dissolved but has been very recently resuscitated by the newly-elected Mayor of Lima.

In 1994, with the support of the World Bank, the PNTNM built a pilot network of bikeways on Colonial, Tomas Valle and Universitaria Avenues. The bikeways connected the North Cone of the city with the industrial area of Lima and Callao. The target population of the pilot project was the workers in the lowest income brackets that resided or worked in the area of influence of the bikeways. The project also

contemplated an educational and promotional campaign concerning bicycle use as well as the provision of small credits for the acquisition of bicycles.

This pilot project has yielded lessons that will benefit the GEF project regarding the design of the bikeways, and the image of the bicycle as a transport mode in the Lima metropolitan area.
In the influence area of the existing bikeways in the North Cone, Callao and Lima, public transport is the most common travel mode, and very few people use the bicycle for transport. Most of those who use it do not have public transport stops close to their homes, or they do so because the nature of their work demands it.

The bicycle is mainly used for sport or recreational purposes. The most frequent users are children and young men. The areas most used for riding the bicycle are parks and internal routes that provide personal safety. Women use the bicycle in their own neighborhoods for shopping, visiting friends, medical purposes, or for taking the children to school.

In Metropolitan Lima, there is a dichotomy in relation to the bicycle. Some people associate it with pleasure and recreation of the medium and higher classes. Others associate it with the lack of other alternatives, and therefore with poverty and constraint.

The extensive focus group campaign that was carried out during Project preparation phase showed that, in the interviewees' opinion, the bicycle is extensively used in other countries (for example, Japan) for health and environmental reasons. Most of them consider the Peruvian customs to be less favorable to bicycle use, at least in the short term, due to lack of interest in environment.

One of the conclusions of the above quoted study shows that the most used mobilization mode in this area is public transportation, and that some people uses the bicycle as a transport mode. Quantitatively, a traffic count realized in the Universitaria avenue bikeway, in October 2002, showed that 11,000 cyclists used the bikeway in a single day.

The interviewees consider the North Cone bikeways as an interesting scheme that should provide more safety, allow for lower travel times, and contribute to pollution abatement and to money savings. However, they also feel that these bikeways are not adequately maintained, that part of them have been destroyed, that garbage is accumulating on the pavement, and that therefore the investment may be lost.

The main barriers to the use of the bicycle are considered to be

- lack of traffic safety: with regard to road safety, the bicycle is seen as a fragile and dangerous vehicle, easily exposed to traffic accidents. Moreover, many public transport operators, who generally consider the bicycle as an obstacle to traffic, are known to molest cyclists through intentionally aggressive driving.
- lack of personal security: Children and women have frequently been are the victims of robbery of their bicycles.
- long distances between home and work.
- a notorious absence of secure parking
- obscene treatment of women: bicycle use by young women is generally seen as a transgression against the usual and accepted behavior. The most common criticism is that a women on a bicycle is considered sexually provocative, and the “deserved” answer would be a rude, obscene, and aggressive behavior toward her.

The main advantages perceived in the use of the bicycle are:

- Speed
- Convenience on short trips.
- Positive impacts on health
- Positive impacts on the environment
- Low cost

In principle, the municipal districts are responsible for the cleaning and maintenance of the bikeways, a task that was managed until 2000 by the PMTNM. However, most of them have pointed out that they do not have enough resources for that purpose. As all existing bikeways in the Project Area are along metropolitan trunk avenues, the new MML administration will resume bikeway cleaning and maintenance, as it had done until 2002

The police is responsible for traffic regulations which, in principle, includes the enforcement of driving rules by motorized transport. The police is also responsible for preventing illegal parking on the bikeways.

1. Air pollution

Magnitude of the problem

Since Lima is among the most polluted cities in Latin America, dealing with air pollution and, as a collateral outcome, with greenhouse gases (GHG) emissions caused by the transport sector in Lima is starting to be seen as a priority task for the city.

The saturation study of pollutants conducted by the Clean Air Committee of Lima and Callao in year 2000 revealed that particles in suspension (PM10 and PM2.5) are the most acute cause of air pollution in Lima-Callao, as can be seen on the following chart:

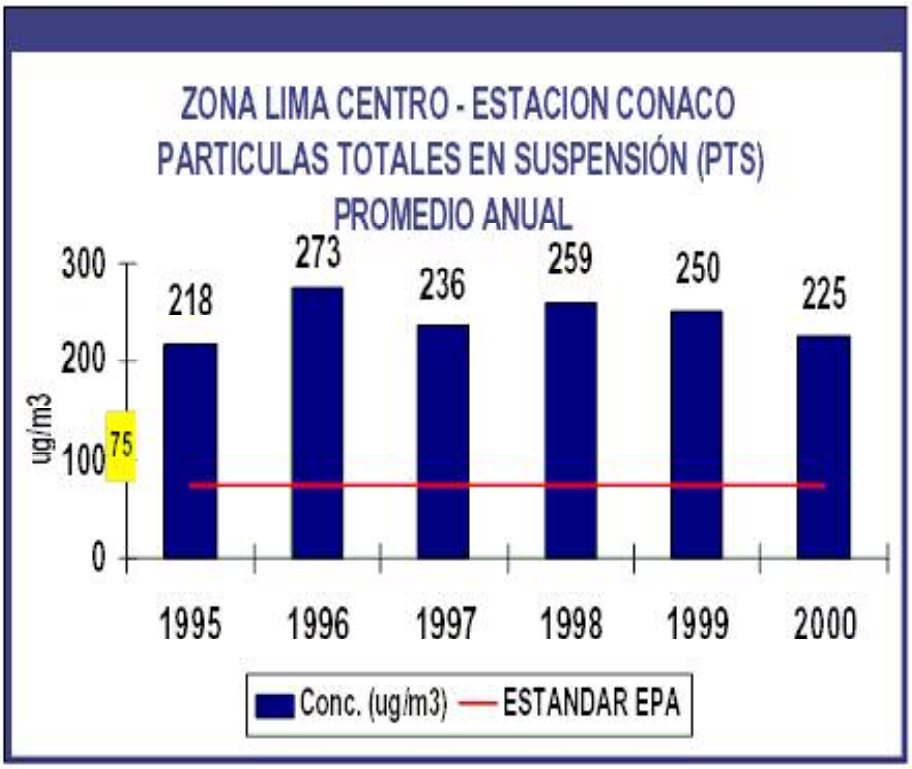


Fig 1: average PM concentrations in Lima, 1995-2000
source: Ing. Juan Narciso Chávez, Dirección general de Salud Ambiental

The exposure of the population is quite worrying as well, taking into account that EPA's standard is 75 µg/m3. In summer, 99% of the population is exposed to higher levels, and one third is exposed to levels more than three times as high as the EPA standard.

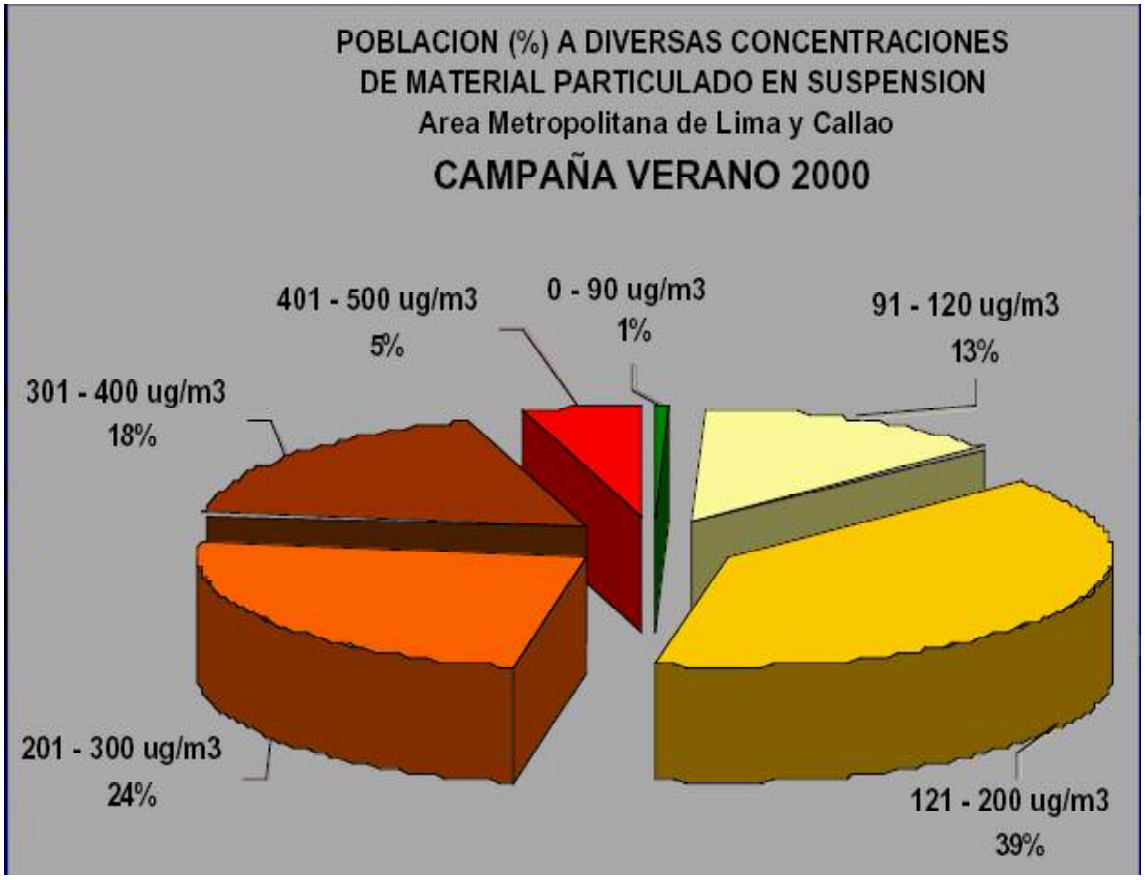


Fig 2: exposure to PM concentrations in Lima Metropolitana
source: Ing. Juan Narciso Chávez, Dirección general de Salud Ambiental

The topography, combined with the meteorological conditions, aggravates the pollution of Lima's atmosphere since the horizontal and vertical dispersion of the pollutants are contained by the Andes foothills. A thermal inversion acts as a cap over the city during fall and winter (April-August), inhibiting the dispersion of pollutants. In addition, absence of rain leads to the permanence of dangerous fine particles in the atmosphere.

Since air pollution gets trapped and accumulates in poor neighborhoods located along the Andes foothills, the air pollution burden falls disproportionately on the poor, and especially on the Northern Cone which will be served by both the Limabus segregated busways and the bikeways (see chart below) :

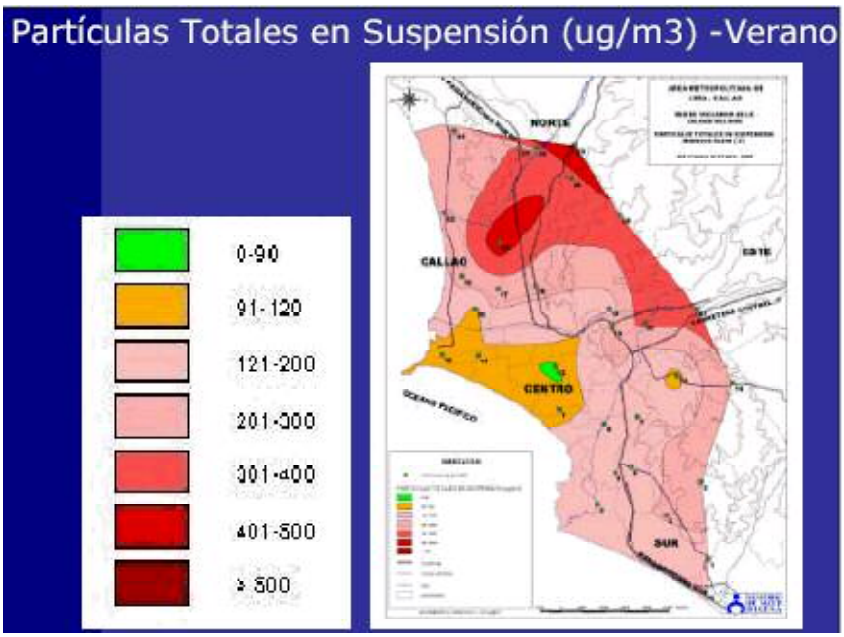


Fig 3: TPS concentrations in Lima, summer time
Source: Clean Air Initiative, Final Report, 2nd workshop

For the year 2000, the emissions of local pollutants from mobile sources were the following:

Pollutant	Total Emission (tons/year)	% of emission due to public transport
PM10	7,867	89 %
SO2	12,752	50 %
NOx	60,758	80 %
CO	215,659	20 %

On the other hand, transport contribution to Lima GHG emissions is 4,680,000 tons of CO2 per year, of which almost two thirds correspond to public transport, including taxis. Regarding local air pollution, the following table shows the predominant role played by this sector in terms of emissions :

Relative contribution to emissions by sector.

Source	**CO (%)**	**HC (%)**	**NOx (%)**	**PM10 (%)**
Mobile Sources	99.6%	98.8%	87.7%	67.6%
Point Sources	0.4%	1.2%	12.3%	32.4%
TOTAL	100.0%	100.0%	100.0%	100.0%

Source : Plan Integral de Saneamiento Atmosférico Lima - Callao, Lima, Perú 2002

Air Pollution Effects on Health

The exposure to high concentrations of atmospheric pollutants affects the respiratory system, mainly through "Acute Breathing Infections, ABI". According to the Ministry of Health, Lima – Callao registered 657,046 cases of ABI and 64,934 cases of Asthma and Obstructive Syndromes (AOS) in 1998. The following table shows the total particles in suspension (TPS) concentration levels, and the

percentage of sickness occurrences by area.

Area	TPS (µg/m3)	% occurrence ABIs	% occurrence AOS
North Lima	247	37 %	38 %
Center Lima	210	14 %	38 %
South Lima	200	24 %	7 %
East Lima	185	16 %	10 %
Callao	36	9 %	7 %

The information provided by the above table shows that the Northern area of Metropolitan Lima registers the highest cases of respiratory illnesses, and also possesses the highest index of contamination by TPS.

More specifically, due to the high levels of pollution and long times of exposure to exhaust gases, one out of two traffic policemen suffers asthma or other bronchial illnesses.

Clear Air Initiative Action

The air pollution problem in metropolitan Lima has been exacerbated over the past 15 years by transport-related measures, especially full deregulation, adopted regardless of their impact on the environment. Attempts by various central government agencies and by the Lima and Callao municipalities to tackle the pollution problem were both insufficient, ineffective and were not coordinated.

Aware of these shortcomings, the government of Peru established the Management Committee of the Clean Air Initiative for Lima- Callao, by Supreme Resolution No. 768-98-PCM of December 31, 1998. The committee is chaired by the Vice-Minister of Housing and Public Works and is composed of representatives of the Ministry of Transport, Communications, Housing and Public Works, the Ministry of Health, the Ministry of Industry, Energy and Mines and representatives of the National Environment Council, the Provincial Municipalities of Lima and Callao, and the National Confederation of Private Business Institutions, Confiep.

It is expected that this project will help to strengthen the institutional role of the Committee and will amplify its role in Lima and Callao for the benefit of the environment and the population.

4. Strategic choices

The Bank's current strategy, as documented in 'Cities on the Move: A World Bank Urban Transport Strategy Review' (published: October 17, 2001), proposes the following strategic choices to respond to the challenges of urban transport in the developing world:

- Intensified focus on poverty reduction;
- Decentralization;
- Increased private participation in urban transport supply;
- Enhanced safety and security;
- Increased concern with local and global environment.

The report mentions that in an effort to make the urban transport sector more environmentally sustainable for cities, the Bank supports the introduction or extension of rapid bus transit systems appropriately linked to reforming public transport supply and resulting in environmental improvement.

Furthermore, a major feasibility study finalized early in 1999 and financed by a PHRD grant, which is the basis for the proposed IDB-World Bank loans, recommended the following investment activities:

- To develop a high-capacity public transport system based on dedicated bus corridors to increase the efficiency of the public transport system. These bus corridors would be concessioned to the private sector on a competitive basis.
- To establish a comprehensive program to improve transport conditions through traffic management and engineering work.
- To restructure urban transport agencies and strengthen technical capacity.

Inclusion of GEF within this project

GEF funds have been brought in to support the Limabus project, which addresses the most pressing problems affecting urban transport and mobility in the city, through the implementation of high-quality segregated busways with a special emphasis on feeder routes to the main system and non-motorized transport, both bicycles and pedestrians. GEF funds will strive to facilitate the implementation of Limabus by concentrating on project components that simultaneously complement and contribute to abate GHG emissions both in the short and long term. A GEF contribution to the project is expected to pave the way towards climate-friendly transport options and to tilt the decisions towards more globally sustainable options.

Decrease in the oversupply of the public transportation vehicles for passengers.

Public Transport Capacity Rationalization

The oversupply of public transport vehicles that leads to alarming levels of pollution and congestion will be addressed through a scheme of financial incentives designed to entice future concessionaires of Limabus trunk routes to retire more vehicles than the minimum requirement demanded in the bidding documents as a sine qua non condition to qualify. Through offering access to softer credits to those concessionaires who agree to go beyond the minimum retirement requirements, this component is expected to maximize the removal of old and polluting public transport units made possible by the implementation of a more space and energy-efficient bus transit system.

To support mitigation plans targeting those impacted by the rationalization component

The issue of public transport oversupply is two-fold: the most visible part of the problem is the oversupply of vehicles. The most difficult to deal with, and the one which is sometimes forgotten about, is the oversupply of " human resources". During the last decade, the public transport system has been perceived as some sort of refuge for those that the crisis made lose their jobs. Many of those persons who ended up unemployed invested their small savings or their redundancy payments in purchasing a low quality imported second-hand vehicle, often a LDV (Light Duty Vehicle) retrofitted into a makeshift minivan, in order to provide public transport services. These persons did not enter the transport sector by vocation, and according to the focus groups carried out during the project preparation phase, they are willing to leave that sector as long as they can find as or more interesting an alternative in another sector. Consequently, in order to avoid a situation where those persons whose buses will be retired continue working in the same sector and buy again similar vehicles this components aims at removing from the streets of Lima, it is necessary to help those affected either to be retrained in some other technical area

or/and to get access to micro-credits to launch a small business and be offered technical assistance on business management.

Consolidation of the Bikeways Pilot Project in the North Cone, Lima Cercado and Callao.

As perceived by the population and as reflected in the focus groups, the current problems related with bike use are the following:

- Widespread association of this transport mode with poor personal (mugging, bicycle thefts) and traffic safety.
- Poor maintenance of the infrastructure that refrain bicycle use: bikeways are not in good shape, the pavement is often in very poor conditions, bikeways are often covered by garbage and used as parking lots by cars, traffic signals are inadequate.
- There is no guarded parking facilities for bikes.
- Cyclists are often threatened by aggressive driving behavior and lack of respect to traffic regulations from public transport drivers, whereas these same drivers consider cyclists as obstacles that force them into reducing speed and that steal from them "their" road space to maneuver. Due to the combination of delinquency and traffic accidents, added to the police inability to cope with these problems, potential cyclists refrain from riding their bicycles in Lima and specifically in some areas well-known for being unsafe.

To address these issues and based on lessons learned from the existing bikeways, the GEF component aims at consolidating an existing NMT project rather than starting from scratch a brand-new project, making the most out of existing infrastructure and assessing NMT perspectives in Lima through a comprehensive approach that acknowledges that good-quality infrastructure is not enough to ensure the increased use of bicycles, and has to be accompanied by a cultural change process which will be catalyzed by a multi-pronged promotional strategy.

Lack of technical capacity within the municipal teams, and the different institutions involved in the GEF project, and lack of sensitivity to global issues.

This will be addressed through a capacity building program targeting municipal districts, provincial municipalities and national institutions (such as FONAM, the PIU) involved in environmental and transport issues. The objective of this component is to root the concept of sustainable city development within the municipal list of priorities (i) through educating the public sector about environmental problems and solutions; (ii) train people to be able to collect and analyze data and implement programs; and (iii) supply the equipment necessary to do this. This way, climate change and environmental considerations will be incorporated in Lima's decision making process, in order to assure GHG emission reduction, through the implementation of zero or low emission transport modes.

C. Project Description Summary

1. Project components (see Annex 1):

1. Project Components

The Project will finance a first phase, which includes a basic network of segregated high capacity bus corridors of more than 24 km that will provide service to the low-income population segments who need an efficient, low-cost and affordable transport service. The basic high capacity network consists of bus corridors with operational and functional compatibility with follow-up phases, and will be using existing

road corridors, while bus-stops and feeder-trunk route transfer terminals will be newly constructed. Apart from compatibility between phases, each of the sections is expected to be functionally, economically, and operationally self-sustainable.

The Project will also invest in the construction of access routes to terminals, focusing on accessibility for pedestrians and bicycles. Along the high capacity corridors horizontal and vertical road markings will be rehabilitated, including an overhaul of the traffic lights. While road safety improvement forms a separate component, implementation of road safety audit recommendations will be included under various civil works. Monitoring of air quality will take place through the establishment of an air quality monitoring network which includes operation and maintenance. The Project will also prepare the business plan for the bus service concession; develop the fare collection system and its adjustment conditions; support the creation and strengthening of an operations entity; and assist in the development of an efficient organizational structure for the municipal management of urban transit and transport. Within the framework of the latter, the project will also provide support to MML's transport agencies to develop well-defined responsibilities, coordinated management and resource utilization, as well as transport performance monitoring and control mechanisms.

It is foreseen that the physical infrastructure to be provided under the first phase will be financed by MML and by the project while private concessionaires will provide vehicles, bus parking facilities and maintenance facilities for the buses on terrains acquired by MML. The terminals could be given in concession, providing public and commercial services to the users. The fare collection system will be developed and operated privately. It is also foreseen that system management will be self-sustainable through a percentage of the user fares (for Transmilenio S.A. this is 4%). This fare will cover the investment, operation and maintenance costs of the operators and of the collection system; it will also cover the operation, monitoring and control costs of PROTRANSPORTE. An analysis will also be made regarding the generation of a basic infrastructure maintenance fund (main corridors, bus-stops and terminals).

1.1. Investment in Infrastructure (US$106.5 million)

Investments in infrastructure include: (i) construction of three public transport segregated corridors with a total length of 24 km, with operational and functional compatibility; (ii) bus-stops and terminals; (iii) horizontal and vertical road markings along the selected corridors; (iv) paving and/or improvement of selected feeder roads, with an approximate length of 95 km, which will operate as an integrated network with the main corridors; (v) construction of sidewalks and bicycle paths to improve access to non-motorized means users. This will complement the GEF's non-motorized transport investments. (vi) works for the improvement of pedestrian and vehicle circulation in five selected sensitive areas; (vii) road safety measures along the buscorridors, its feeder roads, and the streets in its area of direct influence; (viii) recovery of public space, with emphasis on the interface between corridors, walkers and users of the system; and (ix) supervision of the works. The proposed physical works will be based on 'inclusive designs' that take into account the needs of vulnerable (e.g., women, children) and mobility constrained (e.g., handicapped, visually impaired) road users.

US$ 1 million will be specifically dedicated to bikewaysand which focuses on connecting poor outlying neighborhoods to the bus corridor end terminals. This amount will be spent on terminal feeder bike facilities; improvements to pedestrian facilities at the 2 end terminals (such as ramps and guard railings); and bike parking facilities. The GEF contribution and the World Bank contribution have been bundled together in the consolidated budget table at the end of this section under the "Bikeway Component" heading.

1.2. Institutional Strengthening (US$5.3 million)

The coverage of this component includes Project management as well as the strengthening and coordination of regulatory, monitoring, and control functions of urban public transport for the whole city. Thus, it provides support to: (i) the development and implementation of a uniform public transport policy in the city, its regulatory and policy-setting framework, as well as its administration, operation, monitoring and control; (ii) the creation (design, formalization and establishment of policies), technical assistance and training of the entity in charge of Project management-PROTRANSPORTE; (iii) training and technical assistance to DMTU, focusing on public transport service regulation, and its monitoring and control; (iv) training and strengthening of the new private operators; (v) implementation of an air quality monitoring system; (vi) development of a road safety strategy; (vii) a pilot project that will enhance the introduction in Peru of more environment-friendly vehicle scrapping methods (co-finenced with the GEF) and (vii) follow-up and assessment of the system operation and the Project.

1.3. Social and Political Feasibility (US$3.2 million)

This activity, which is critical for the success of the Project, will support two activity areas: (i) community participation; and (ii) participation of actual public transport operators. As for community participation, this activity aims to include public consultation processes, such as: (a) a campaign for consultation, sensibilization and social participation; and (b) public transport use and road behavior educational measures. With regard to public transport operators it will consist of: (a) a consultation and negotiation strategy with the people affected; (b) measures to mitigate the negative social impact of the sector rationalization in coordination with the corresponding GEF component, and (c) organizational strengthening of the public transport operators.

1.4. Technical and Environmental Studies (US$3.9 million)

This includes economic feasibility and environmental studies as well as the final designs required to expand the integrated public transport network in a second phase beyond the 24 kilometers funded by the Project.

1.5. Administrative Expenses (US$5.5 million)

This includes the operational expenses of the institution responsible for the system implementation and operation, most likely PROTRANSPORTE. This component also includes the cost of a comprehensive monitoring and evaluation mechanism that will use qualitative and quantitative indicators for each of the sub-components. Techniques to be applied include user scorecards to measure public transport performance; beneficiary assessments using structured interviews and focus group discussions; poverty impact assessments using household surveys and linked to qualified data from the aforementioned methods.

1.6. GEF Components (US$ 7.930 million)

The GEF-financed components will : (i) support the reduction in the public transport fleet oversupply, (ii) consolidate the bikeways pilot project developed in Lima North Cone, (iii) carry out an institutional strengthening program on sustainable transport, targeting municipalities and institutions dealing with environmental issues and/or transport planning, and (iv) assess and monitor the GEF project performance.

For more details on each component, see Annex "GEF Project Detailed Description".

1.6.1 To support public transport capacity rationalization (US$ 1.7 million)

The activities to be developed in the framework of this first component aim at supporting the

WB-IDB-financed Limabus Project, which will rationalize public transport services and provide opportunities to reduce the size of the current fleet operating in Lima (more than 55,000 buses, most of which are extremely polluting and obsolete). This component can be divided into three sub-activities:

- Provide financial incentives through a Credit Guarantee Fund (and hence low-cost loans) to bus concessionaires to encourage them to scrap additional obsolete and pollutant public transport vehicles
- Support programs aiming at mitigating the social impacts of this program in terms of employment (training programs, access to micro-credits) in coordination with existing social programs such a those promoted by Prompyme.
- Support a pilot project that will enhance the introduction in Peru of more environment-friendly vehicle scrapping methods and that will build the local capacity required to make sure that the adoption of those new methods will be sustainable.

1.6.2 Consolidate and expand Lima bikeway network (US$ 4.180 million)

Through this component, the project will aim at resolving the problems identified in the context of the WB-financed non-motorized transport pilot program (1994) and that are seen as the explanatory variables of the still low levels of use of the North Cone bikeways. These problems are mainly linked to traffic and personal safety, low quality of the engineering design in some places, and lack of information and communication on the issue. This component can be divided into four sub-activities:

- Realize the required physical improvements on the existing network and extend it by 6 km of "missing links" to increase its connectivity, provide bike parking facilities and install "ciclomodulos" to improve the attractiveness of the bikeways (see Annex "Ciclomodulos"). This program covers both low-income areas (North Lima) and middle- to high-income areas (Avenida Arequipa in Miraflores), providing a critical opportunity to broaden the bicycle market segment and to target a wide range of socio-economic levels through a more visible program, thus achieving much greater momentum for cultural change toward bikes in Lima,
- Finance one year of bikeway maintenance during which municipalities will benefit from a hands-on training,
- Carry out a promotion campaign on bike use,
- Restart the dormant credit program called Plan Bici for bicycles acquisition, by making it more flexible and applicable to the financing of small bike-related businesses.

This component will be supported through a US$1 million investment plan from the infrastructure component (1.1) to be financed by the World Bank loan.The GEF contribution and the World Bank contribution have been bundled together in the consolidated budget table at the end of this section under the "bikeways pilot project" heading.

1.6.3. Carry out an Institutional Strengthening Program on Sustainable Transport (US$ 1.1 million)

This component will be targeting municipalities and institutions dealing with environmental issues and/or transport planning. It aims at incorporating climate change and environmental considerations into decision making processes, but will also strengthen the technical capacities of the municipal teams currently in charge of transport planning and that are stakeholders of the project. This institutional strengthening program, designed as an outcome of a diagnosis and capacity assessment exercise carried out jointly with the expected beneficiaries, aims at laying the groundwork for the success of the project and ensure it can be sustainable over time once those institutions will take over when the project is closed.

The following institutions will benefit from the program : two provincial municipalities, Lima and Callo and seven municipal districts, Los Olivos, Independencia, San Martín de Porres, Comas, Rimac, Bellavista, Carmen de la Legua – Reynoso, along with FONAM which is the Project Implementation Unit.

1.6.4. Management, Monitoring and Evaluation, Replication Strategy and Administrative Costs (US$ 950,000)

The project includes a comprehensive monitoring and evaluation component based on qualitative and quantitative performance indicators for each of the sub-components. These indicators will include public transport and bicycle user surveys and impact assessments, public transport ridership data, road safety data, general traffic counts on trunk routes and bus counts on public transport routes given in concession. This data will be used in turn to estimate project-related GHG emission reductions.

The monitoring strategy for this project aims at tracking the changes towards the adoption of new transport patterns and behaviors. The methodology opted for is probably quite time-consuming and might require some more efforts than regular monitoring processes but the objective of the exercise is to provide the GEF with the necessary information it needs regarding GHG impacts of sustainable transport projects to decide whether expanding their support to similar measures is justified from a climate change perspective.

At that point, a very important factor to assess will be evaluation the change in perceptions, attitudes and behaviors within the different segments from the population vis-à-vis sustainable transport. This change will be measured against the results of the various focus groups carried out in during the GEF project preparation phase. The final evaluation will be repeated two years after the project conclusion in order to examine sustainability and medium and long term impacts. The source of financing of this last activity has yet to be defined which is not an easy task since it will take place after project closing. One option is to use part of the uncalled capital in the Credit Guarantee Fund, another being to commit the Borrower to do this through the loan agreement.

A replication strategy will be designed in the first half of the project implementation period and carried out in the second half. Mayors and technicians of secondary Peruvian cities will be invited to Lima for field visits and discussion with their Lima counterparts while seminars on sustainable transport will be organized in their cities, with the participation of stakeholders of the Lima project.

Component	Indicative Costs (US$M)	% of Total	Bank financing (US$M)	% of Bank financing	GEF financing (US$M)	% of GEF financing
Investment in Infrastructure	105.50	78.8	31.00	75.6	0.00	0.0
Institutional Strengthening	6.40	4.8	3.00	7.3	1.10	13.9
Social and Political Feasibility	3.20	2.4	1.40	3.4	0.00	0.0
Technical and Environmental Studies	3.90	2.9	1.60	3.9	0.00	0.0
Administrative Costs	6.45	4.8	3.00	7.3	0.95	12.0
Financial Costs	1.60	1.2	0.00	0.0	0.00	0.0
Reduction in the public transport fleet	1.70	1.3	0.00	0.0	1.70	21.4
Bikeways Component	5.18	3.9	1.00	2.4	4.18	52.7
Total Project Costs	133.93	100.0	41.00	100.0	7.93	100.0
Front-end fee	0.00	0.0	0.00	0.0	0.00	0.0
Total Financing Required	133.93	100.0	41.00	100.0	7.93	100.0

NB: additional financing is expected from the private sector to purchase the new articulated buses, build the terminals, maintenance workshops and depots and buy back and scrap the old polluting buses through the scrapping program. The private sector contribution will be estimated further prior to appraisal but the order of magnitude of their contribution will be around US$ 80-100 million.

2. Key policy and institutional reforms to be sought:

The main reform supported by the project is the pioneering of a public-private partnership in establishing Limabus where the public sector will provide the road infrastructure whereas the private sector will invest in the operational aspects, such as buses, workshops, parking facilities, and the fare collection system. Another key policy reform to be supported by the project will be the development of a comprehensive medium term urban transport strategy which will form the backbone for the social and economic development of Metropolitan Lima. Apart from policies that improve sectoral coordination, development of an urban transport strategy requires compatibility with land use and social development policies. Institutional reform will focus on strengthening the role of PROTRANSPORTE, which was created in response to the declared (*Consejo* MML 05-99) emergency situation in urban transport and transit in Lima. PROTRANSPORTE was established with administrative and economic autonomy by *Decreto de Alcaldia* (DA35 of 18/03/02) to coordinate all transit and transport studies and projects proposed/prepared by MML agencies, as well as to coordinate related activities with other agencies (e.g., Transport Council for Lima and Callao, in order to align all sector efforts towards the proposed Limabus project. The project will also strengthen the role of DMTU as the regulatory and supervising entity in public transport in Lima.

In relation to the GEF component of public transport capacity rationalization:
The current public transport oversupply can be attributed to two main factors : the economic crisis (public transport seems to be perceived as the only employment source left) and the regulatory framework which is lax enough to have made the present chaos possible. The economic crisis is clearly out of the project influence area (although a reliable and quicker public transport system is expected to have positive impacts on economic growth) but the regulatory framework can directly affect the success of the bus scrapping component for the following reasons :

i. the current legislation does not allow the importation of second-hand passenger vehicles with more than 9 seats (those imports used to be the main factor of increase in the public transport vehicles fleet during the total deregulation period), but many lighter second-hand vehicles still enter Peru as utility vehicles and are then retrofitted into low-capacity public transport vehicles. It is then necessary to find a way of better enforcing the present legislation whose spirit is not respected, to sustain the scrapping component over time. A solution may come from a draft law, about to be discussed in Congress, which aims at prohibiting in the next three years the importation of second-hand vehicles altogether, for different reasons which range from environmental concerns to custom tax evasion. This being said, in the worst-case scenario where the owner of each old bus scrapped would replace it by an imported one, the oversupply issue would not be addressed but the bus scrapping component still would have a positive impact on air pollution, since those 20-year old buses would be replaced by vehicles no more than 5-year old (older vehicles are not allowed to enter Peru). The component would at least enhance the renewal of the fleet, which has positive impacts as well in terms of GHG reduction and traffic safety.

ii. the Lima metropolitan municipality has agreed to freeze temporarily the numbers of vehicles in the public transport sector until April 30, 2003 (to be extended very likely on an open-ended basis), until decisions are taken as to prevent definitely any further registration of drivers / conductors. Although this is good news, this does not solve the problem of the informal sector. Political will is required to tackle the issue of informal transport, not

necessarily through their suppression but through the insertion of part of them in the regular system and the further freezing of the legal fleet.

iii. Other provincial municipalities than Lima are allowed to deliver licenses to operate public transport routes. The municipal provinces of Huarochiri and Callao can award licenses to bus operators who then serve Lima as long as one end of their routes is located in Huarochiri or Callao. It happens that norms in those two provinces seem less stringent than in Lima and that there is little to no cooperation between those and Lima : as a consequence, the streets of Lima are flooded with vehicles on which the Municipality of Lima has little or no control. An institutional reform to be sought would be the harmonization of the different municipal norms regarding public transport operation and the setting of a coordinating body that avoids this malfunctioning and clearly defines responsibilities for routes that serves more than two provincial municipalities. It seems that along with the recent changes in the local political landscape, pespectives to reach an agreement on this are bright and the Consejo de Transporte Lima Callao, which has been established as the embryo of this coordinating body, is expected to become fully operational henceforward.

To put it briefly, one of the reasons for the oversupply stems from the flooding of the Peruvian motor vehicles market by cheap imported second-hand vehicles (qualified of "environmental dumping" by some). It had initially been envisaged to put the prohibition of those imports as a conditionality to approve the bus scrapping component. It was decided to change this for two reasons : (i) these imports are only one of the reasons that explain the current situation, (ii) even though there is already a draft law aiming at banning the imports of second hand vehicles, its approval might take quite a long time, delay the project and is influenced by factors which go beyond this intervention.

The conclusion is to go for an alternative strategy whereby the conditionality for disbursement against the GEF bus scrapping component would be to receive from the Municipality of Lima a draft document defining their overall strategy vis-à-vis urban transport, indicating how they plan to tackle the oversupply issue, and describing how. They are expected to do it at least through a three-fold approach : (i) reach an agreement with the provincial municipality of Callao which issues licenses to operators who then run their buses on Lima's streets, so that the licensing process is coordinated between Lima and this municipality, (ii) turn the current fixed-term freeze on the number of vehicles authorized to provide public transport services into an open-ended freeze, (iii) impose and enforce inspection and maintenance standards on public transport vehicles. Those three items are considered to be highly desirable to ensure the success of the bus scrapping component, and putting them in place is feasible in a reasonable timeframe that would not exceed the project implementation period.

The ban on second-hand vehicles could then come as one of the objectives of the project, or, and it would be still better, instead of a ban, the project team will push for the adoption and ENFORCEMENT of stricter environmental standards for these vehicles.

In relation to the NMT component

To be sustainable, the non-motorized program needs to be built on solid institutional foundations, i.e. on the existence of a technical unit at the Lima provincial municipality level specifically in charge of NMT. This unit, as mentioned before, did exist during the implementation of the NMT pilot project (1994) but was dismantled and the responsibility for NMT issues got dissolved into the wider responsibilities of DMTU. The newly-elected mayor has reestablished this unit, but recent history shows how fragile are those units whose existence merely depends on political good will. The project will aim at strengthening this newly resuscitated institution through providing it with both technical assistance and capacity building, to survive future political turnovers and so that NMT issues will be taken care of perpetually,

especially bikeway maintenance. The existence of a relatively extended, rehabilitated, good quality network, and the expected changes of mentality and raising expectations amongst citizenry vis-à-vis NMT, should further contribute to the long-term sustainability of this entity.

3. Benefits and target population:

Limabus

The beneficiaries of the proposed project are the users of public transport, primarily the poor and very poor living in the northern and southern cones of Lima. However, there is a direct relation between the expected benefits and the tariff policy applied under the new Limabus system. Other potential beneficiaries include the residents and businesses along the new corridors who are likely to see an increase in property values because of better accessibility and improved mobility options. Last but not least, the rationalization of the bus routes combined with a better enforcement is expected to reduce congestion along most transport corridors, benefiting all road users.

GEF component of public transport capacity rationalization

Benefits will accrue to the residents of Lima Metropolitan Region since all inhabitants are affected by air pollution and almost all have to travel in the city. The major benefits will show in emission reductions of local and global pollutants, which translate into health improvements for the target population, positively impacting school attendance to school, better performance, and improved productivity. Also, shorter travel times and less congestion offer better quality of life for Lima Metropolitan area, and put more opportunities within reach of its inhabitants.

Non-motorized transport

The population of the districts served by the bikeways amounts to almost 1.5 million people, most of them low-income citizens. The core market of the bikeways is expected to originate from the following segments : (i) university students (some 5,000 students that live in a radius of 5 kilometers around the San Marcos National University and some 2,000 people that live near the Catholic University), (ii) about 10,000 workers of 62 industrial companies located in the catchment area of the bikeways, (iii) around 25,000 students of some 30 schools located in the bikeways area, (iv) some 20,000 daytime households residents and independent workers.

Middle-income residents will also benefit from the program through the rehabilitation and extension of the Avenida Arequipa bikeway, the purpose being to reach a wider range of social classes to break the stigma attached to bike use as being the mode of the poor.

Bikeway users will benefit from a safer infrastructure and the whole vicinity will enjoy a more pleasant urban landscape since the bikeways will be rehabilitated following high quality designs and green areas will be developed next to them. The so-called “ciclomodulos” are expected to become some sort of local landmarks around which activities will flourish, providing the neighborhoods with more leisure opportunities.

From an household expenses perspective, bike users will save on bus fares. On the basis of the present bus fares levels and of average per capita incomes in the area, using a bicycle twice per day will allow savings of approximately US$ 7.6 per month, i.e. 9 % of the average per capita income. This is the order of magnitude of what these households spend on their energy bill.

Some permanent and provisory jobs will be created, mainly due to the bikeway rehabilitation, their maintenance, to the services to be offered in the vicinity (cycle-modules, outlying business), in some small bicycle repair businesses, etc..

Reductions in social costs associated with bus travel (accidents, pollution, congestion) are expected as well.

4. Institutional and implementation arrangements:

4.1 World Bank - IDB loan

PROTRANSPORTE, an agency of MML, has exercised strong leadership and has collaborated with the Bank during the preparation of the project through its Steering Committee and its project executing unit staff. This agency will implement the project as well as monitor and evaluate project development and performance. Adequate specialized expertise to carry out the project will be also provided through the hiring of international consultants from similar projects. PROTRANSPORTE will be able to draw on the experience of the Transmilenio Project in Bogotá and its staff. Key Transmilenio staff is currently assisting PROTRANSPORTE in the formulation of the project. The administrative and financial management capacity of PROTRANSPORTE will be strengthened during the preparation phase and will be a condition for effectiveness to have a fully operational financial system.

4.2 GEF Components

The executing agency for the GEF component will be FONAM, which will be in charge of coordination with other local or national agencies, such as municipal districts, ProTransporte, CONAM, SENATI, etc.

Different project executing arrangements are envisaged depending on the component considered :

4.2.1. To support public transport capacity rationalization.

This component will be co-implemented with FONAM and PROTRANSPORTE, which is the implementation unit of the Limabus project. The bus scrapping pilot project will be executed by SENATI, under FONAM's supervision.

4.2.2. Consolidate and expand Lima bikeway network.

This component will be carried out by FONAM and the NMT unit reestablished between the Municipality of Lima, the provincial municipality of Callao, the Secretaria Tecnica del Consejo de Transporte de Lima y Callao (Technical Secretariat of the Lima and Callao Transport Council) and the municipal districts served by the bikeways.

4.2.3 To carry out an institutional strengthening program on sustainable transport, targeting municipalities and institutions dealing with environmental issues and/or transport planning.

This component will be carried out by the implementing agency in coordination with the Secretaria Tecnica del Consejo de Transporte de Lima y Callao and the institutions which will benefit from it.

4.2.4 To assess and monitor the GEF project performance.

This component will be carried out by FONAM and ProTransporte, since some of the indicators and objectives of the GEF components are shared with the lending components.

D. Project Rationale

1. Project alternatives considered and reasons for rejection:

Choice of Transport Mode and Alignment

In the late 1980s, the national Government initiated the construction of a heavy rail line *(tren eléctrico)* in southeastern Lima. A 10-km long stretch of that line became operational in 1993, but could not be opened for passenger service as the travel demand was too low to justify the operating subsidies that would have been necessary. The rail line was transferred in 2001 to the municipal government which

initially considered to implement a "MetroBus" system, in which three high-grade-bus services would have linked up with the tren eléctrico to feed passengers into the rail line. This option was discarded because it was not economically feasible and would have required a substantial operating subsidy.

Between 1996 and 1998, the Peruvian Government and the World Bank collaborated in the preparation of a Lima Urban Transport Project, a process that was terminated in 1999 because of increasing political disagreements between the national and municipal governments. The project envisaged segregated busways, somewhat similar to the proposed Limabus Transport Project. However, there are significant changes in the current project: (a) another corridor was chosen in the city center and to the north to cater for a higher demand and eliminate the need for resettlement; and (b) the new operational scheme is fundamentally different, taking account of the experiences acquired under Bogotá's innovative TransMilenio system which started operation in late 2000.

PROTRANSPORTE studied the alternatives which ended in the selection of the basic network that serves the sub systems in the north and south of Lima, based on the representative indicators of the construction aspects (cost, construction facility and the need for expropriation and relocation), operational (demand, operators affected, economic feasibility, and functionality), social and environmental impact, and integration with other urban development and environmental protection plans and projects. The option of connecting the Northeast Sub System in the first phase was discarded primarily because of a lack of viable options to cross the Rimac river. An economically viable option relies on the use of the planned *Puente de Confraternidad* – a Japanese gift to Peru: however, as to date exact location and time schedule for construction of this bridge are unknown. The option of connecting the Southeast Sub System in this phase was discarded because of access problems to the Atocongo terminal which requires significant expropriation/resettlement.

GEF Public Transport Capacity Rationalization Component

Several alternatives to the guarantee fund have been considered. The following table summarizes the scope of these options and the reason why they have been eventually discarded:

Nature of the benefits that bus owners willing to retire their oldest and dirtiest vehicles would have benefited from	**Reasons for being eventually discarded**
Tax reductions or exemptions on the purchase of new vehicles, on sale taxes or on the purchase of inputs necessary to the operation of a public transport company, such as diesel or spare parts.	➢ Lack of support from the Ministry of Finance who was reluctant to give clearance to a measure likely to reduce its already shrinking fiscal revenues. ➢ Implementation complexity, high transaction and supervision costs. ➢ Risk that measure was perceived as socially unfair.
Direct purchase of the old vehicles or payment of a fixed share of their market price to stimulate their removal.	➢ Limited impact considering the price of the old units to be purchased and the amount available. ➢ Non sustainable, meaning that needed additional funds would be needed every purchase round, whereas the loan

	guarantee fund is always there to guarantee loans. ➢ Generation of a market distortion. ➢ Complex price determination.
Revolving Fund dedicated to provide public transport operators with low interest rates loans to purchase **new** vehicles.	➢ Limited impact considering the price of the new units to be purchased and the amount available. ➢ Creation of a distortion in the credit market.
Legal benefits such as the regularization of informal operators or the cancellation of their unpaid fines.	➢ Would be perceived as a sort of premium given only to those who infringe the law. ➢ Would not be an attractive incentive for legal operators or those with no unpaid fines.
Free or subsidized access to training programs that would allow those impacted by the vehicle retirement to get training and find a job outside the sector.	➢ This option was seen as complementary to the Guarantee Fund but not sufficient as a stand-alone incentive. It was consequently decided to associate it with the Guarantee Fund.

To conclude, the ultimate benefit of the chosen option lies in a lower interest rate (essentially, the elimination of the "risk premium") and no collateral requirements, because the GEF funds would be used to guarantee the loans. Without this financial instrument, it would be possible to simply require the retirement of a certain number of vehicles, and let the bidders decide how best to finance that, but then the bidders would have access only to relatively high-cost loans and might resist this requirement or may not be willing to go beyond the minimum requirement and refuse to retire additional buses, in spite of the incentives offered through the evaluation methodology of the bidding proposals. The chosen option in essence makes low-cost loans available.

Non-motorized transport component

The alternative was to focus on the extension of the current network, mainly to extend its catchment area rather than to rehabilitate the existing network. The results of the focus groups emphasize that the low rate of bike use is explained by the lack of personal and traffic safety and the unappropriate shape of the existing infrastructure. As a consequence, it was decided to focud efforts on rehabilitation rather than building more. Nevertheless, some small extensions will be built in order to increase the connectivity of the network and complete it with crucial short missing links.

2. Major related projects financed by the Bank and/or other development agencies (completed, ongoing and planned).

Sector Issue	Project	Latest Supervision (PSR) Ratings (Bank-financed projects only)	
		Implementation Progress (IP)	Development Objective (DO)
Bank-financed			

Rehabilitate essential transport infrastructure and assist in institutional reforms to strengthen transport management	First Transport Rehabilitation Project	S	S
Rationalization of urban transport in Bogotá	Colombia Urban Transport (Transmilenio)	HS	HS
Impact of Line 4 on Poverty in the Sao Paulo Metropolitan Region	Sao Paulo Metro Line 4 Project	S	S
Rationalization of urban transport in Santiago (planned)	Santiago Urban transport, associated with GEF		
Rationalization of urban transport in secundary cities of Colombia (planned)	Columbia Urban Transport		
Rationalization of urban transport in Méxcio, DF	MX-Air Quality Management And Sustainable Transport Project associated with GEF		
Other development agencies			
Inter-American Development Bank	Development of sustainable transport program in Arequipa, Peru		
IDB	Transport Concessions, MIF		
GEF-PNUMA	Environmental Citizenry in Lima		
GEF-MONDER	Biofuels in Lima		
JICA	Elaboración del Diseño Detallado para el proyecto Construcción del Puente Con-fraternidad Perú-Japón (Ministerio de Trans-portes, Comunicaciones, Vivienda y Cons-trucción)		
Swiss Cooperation	Air Quality Study		
Canton Zurich, Swiss	Donation of air monitoring equipments		

IP/DO Ratings: HS (Highly Satisfactory), S (Satisfactory), U (Unsatisfactory), HU (Highly Unsatisfactory)

3. Lessons learned and reflected in proposed project design:

To build upon the experience of previous urban transport and urban projects around the world, an analysis of Implementation Completion Reports and Performance Audit Reports (ICR/PAR) was undertaken. This review recognized the trends and changes in project design after the ICRs/PARs were completed. The main lessons identified and incorporated to the design of the proposed project are:

3.1. Institutional Strengthening. As demonstrated by the Curitiba and Bogotá bus rapid transit (BRT) systems, important sector reforms and operational improvements as proposed under the Limabus Transport project require visionary leadership with a willingness to take risks, long-term commitment and continuity. By prioritizing the project preparation – stopping competing civil works - and allocating adequate preparation resources, the newly elected Mayor of Lima has already shown his leadership and commitment. The key organizations dealing with urban transport at the municipal level must be reorganized and strengthened, and dialogue assured. To this extent, studies included in the institutional component must be carefully monitored and translated into action plans, which the Borrower must implement. The proposed project already has a fully operational entity named Protransporte, which is monitoring and evaluating the completion of critical studies required by the project as well as supervising the work of international consultants, gaining ample experience to manage the project.

3.2. Lack of Timely Counterpart Funding. Lack of counterpart funding has greatly influenced the pace of project implementation in several projects and in some cases has even led to cancellation of components. An effort must be made to ensure that the adequate provision of counterpart funds is included in the annual budget of Metropolitan Municipality of Lima. PROTRANSPORTE is preparing a mechanism that will create a special account to obtain the local counterpart funds in a timely manner from the different sources of income that the Municipality, on a yearly basis, receives. The design of this mechanism will be analyzed during the appraisal mission and implemented during the execution of the project.

Apart from the lack of counterpart funds, several projects in Peru suffer from the disbursement capacity ceiling, agreed upon between MEF and the IMF. Basically, all projects have to compete under this ceiling – currently US$450 million - for their annual disbursements, which may result in insufficient disbursements to adhere to the project implementation schedule.

3.3. Slow Implementation. This has been a frequent theme. Apart from the disbursement capacity problem, reasons have included a lack of familiarity with Bank procedures, overoptimistic scheduling at appraisal, lack of final engineering designs at appraisal, changes in political commitment, and lack of counterpart funds. These problems would be mitigated in the proposed project by such measures as:

i. Strengthening financial management capacity of PROTRANSPORTE and provision of training on Bank procedures;

ii. Requiring the submission of final engineering design for the first year of project works prior to negotiations; and

iii. Providing technical assistance as needed.

3.4. Monitoring and Evaluation mechanism in place. Although most projects included a set of project monitoring indicators and targets, frequently implementation units did not use them for project management or as a monitoring tool as an “early warning device”. This constrained effective implementation of the monitoring process and reduced ability to measure fulfillment of the development objectives or the performance of the other project executing agencies. The project is including a monitoring and evaluation investment component and will propose to create a specific unit within PROTRANSPORTE to be in charge of monitoring and evaluation tasks.

The Bank has a long-standing involvement in the sector of air quality management, in general and its interrelationship with urban transport in particular. The first loan of that nature was approved in 1992,

and it had the objective of reducing traffic-generated air pollution in Mexico City. Stemming largely from that participation, the Clean Air Initiative in Latin American Cities was set up in 1997, which has been highly successful in disseminating experiences among major cities, including Lima. Similar clean air initiatives have now been started in Asia and Africa. In addition, recent strategy papers on Pollution Management Masami Kojima and Magda Lovei, *Urban Air Quality Management – Coordinating Transport, Environment and Energy Policies in Developing Countries*, World Bank Technical Paper 508, 2001. and Urban Transport *Cities on the Move*, a World Bank Urban Transport Strategy Review, 2002. discuss extensively the effects of urban traffic on air quality. Urban transport operations in Bogotá, Buenos Aires, Lima and São Paulo include air quality management components in their design. Some of the lessons learned include:

3.5. Air quality management and urban transport development involve long-term issues that require long-term responses

Changes in personal travel behavior – a key element to reduce traffic-generated air pollution – are unlikely to occur unless there is a long-term government commitment to sustainable transport. Similarly, improvements in air quality require a long-term vision such as has been spelled out in Mexico City with the publication of the Air Quality Management Plan for 2002-2010.

3.6. Planning for the long term, however, requires flexibility

Mexico City experience has shown that, despite the best planning efforts in the preparatory stage, the need for adjustments in air quality activities becomes evident only during the plan implementation. Similarly, the Implementation Completion Report for the Bogotá Urban Transport Project states that "flexibility should be encouraged in some subcomponents, procedures or new technology areas. This occurred in the case of the Transmilenio components where adaptations had to be made in various areas (platforms, bike paths, bridges, surfacing materials, etc, and with very satisfactory results). Therefore, while each component of the proposed project has been defined in considerable detail, the Grant Agreement should leave room for modifications during its implementation.

3.7. The Bank's involvement should support an overall Government strategy

This applies to most World Bank operations. The more successful urban transport and air quality projects, such as those of Bogotá and Mexico City confirm this maxim. The proposed GEF components would complement the overall project which supports the objectives of the Urban Transport Strategy of the Municipality.

3.8. Community Participation is Vital For Success

The PAD for the recently approved GEF grant to support the introduction of climate friendly measures in transport of Mexico City stresses that a "participatory approach, incorporating public opinion in the project, is required to establish legitimacy of the project". Similarly, the Bogotá experience demonstrates the importance of community involvement which contributed to the public acceptance, even pride, for several "project outputs, notably TransMilenio and the bike paths". The proposed project – especially the components aiming at increasing bicycle use and at reducing public transport oversupply– was prepared in close consultation with civil society; this collaboration would continue during project implementation.

3.9. More construction of bikeways does not ensure the increased use of bicycles

In 1996, about 46 km of Bank-financed bikeways were successfully implemented in Lima, connecting an industrial area with low-income residential zones. However, the number of cyclists did not increase significantly, as the project did not include a coherent strategy to overcome the cultural barriers inhibiting bicycle use. Even in Bogotá, where over 200 km of bikeways were built in the last four years, the growth in cycling has been modest, and the local Government intends to implement – under the next Bank-financed project – a promotional strategy to raise bicycle use. Therefore, an important component of the proposed project would start the cultural change process through a multi-pronged promotional strategy aimed at making bicycle use more attractive in the minds of the population.

4. Indications of borrower and recipient commitment and ownership:

The Municipality of Lima has demonstrated its commitment to and ownership of the project by creating the PROTRANSPORTE project-executing unit with autonomous financial and administration, a unit that reports directly to the Mayor of Lima. The main functions of this unit are to establish urban transport policies within the Municipal Corporation, to execute the proposed project, and to coordinate the different internal and external institutions related to urban transport sector. PROTRANSPORTE has an assigned budget for project preparation of US$2.1 million for the years 2002 and 2003.

Another commitment to the project was the cancellation of IDB loan for Lima Historical Center ready for IDB board approval in August 2002, after spending US$1 million in project preparation. The cancellation of this proposed loan was agreed upon between MML and IDB. Due to the limited indebtedness capacity of the Municipality, it became evident from several financial capacity studies that MML could not absorb new credits based on current and projected financial situation including the proposed Limabus Transport project. Focusing on more immediate urbna transport issues was agreed as the highest priority.

Newly-elected municipal authorities have shown interest in the GEF project. Only a few days after the election outcome was known, the mayor of Lima asked for a presentation of the GEF project and was quite supportive of its objectives. As part of his electoral campaign, he, himself a cyclist, visited the bikeways and identified the poor public transport quality as one of the top priorities of his agenda. One of his first decisions as a mayor was to reestablish within the municipal technical units the non-motorized transport unit that had been dissolved by his predecessor. This unit will include a high-profile personality, a former well-known Peruvian champion cyclist, that already has a lot of experience in NMT promotion and bikeway implementation.

At the national level, the Ministry of Finance was involved in the design and preparation of the GEF aspects through its inclusion in the GEF project Consultative Committee, which resulted in active participation that helped fine-tune the project concept.

5. Value added of Bank and Global support in this project:

The Bank has extensive experience in supporting projects on urban transport system. For example, in projects in Brazil and Chile the Bank supported the concept of physically separating buses from worsening traffic congestion. In Bogotá, the Bank is supporting a second phase of separated bus corridors as part of the very successful TransMilenio bus rapid transit system, which was first introduced in Curitiba. The proposed project for Lima has been designed along the lines of the TransMilenio in Bogotá. The experience gained in Brazil and Colombia in this sector will be key in assisting MML's efforts to improve the urban transport system. Bus Rapid Transit systems are being introduced rapidly all over the world as a low cost, effective mass transport alternative. Latin America remains the leader in

applying this technology, with BRT's under preparation in Santiago, five secondary cities in Colombia, Mexico City and San Salvador.

The Bank has assisted the Municipality of Lima since 1995 to resolve the transport chaos in the city, but a previous proposal for a separated bus-corridor (Corredor Vitrina) was stranded because of lack of central Government support. It is worth mentioning that this is the first project granted to a municipality in Peru since the 80s and therefore, it so represents a first step toward empowering and strengthening local governments toward sector development in strategic planning, and improving intra-governmental relations. This fits well within the decentralization strategy adopted by the Government of Peru.

The World Bank is presently administering three other GEF transport projects, based on OP 11, two of which are located in Latin America (Mexico and Santiago, the other one being in Manila). The sum of these project represents a valuable knowledge bank and experiences from these other cities will be quite useful in Lima, and vice-versa, since the overall objectives are the same and some of the components are similar. "Technical and political cross-fertilization" between those cities is already taking place through events sponsored by the World Bank, either at the decision-making level (official encounters between mayors) or at the technical and operation levels (meetings between bus operators from those different cities, seminars on BRT, etc.).

E. Issues Requiring Special Attention

1. Economic

☒ Summarize issues below ☐ To be defined ☐ None

Economic evaluation methodology:

● Cost benefit

○ Cost effectiveness

○ Incremental Cost

○ Other (specify)

A cost-benefit analysis is being performed estimating the economic rate of return of the project as a whole. The quantifiable benefits to justify the physical investments are in terms of reduced vehicle operating costs, time saving benefits through reduced traffic congestion and mitigation of current environment degradation generated by old bus fleet through replacement by cleaner and efficient buses. The poor population will also benefit from the bus corridors as well as from road paving and consequently, the project will improve public transport accessibility to this low-income population. An international consulting firm has been hired by the IDB to perform an overall cost-benefit analysis of the project considering the benefits and costs mentioned above. On the basis of the ex-post economic evaluation of Bogota's Transmilenio project (IERR of 34%), it is expected that the proposed Limabus project will be highly justified from an economic viewpoint.

2. Financial

☒ Summarize issues below ☐ To be defined ☐ None

2.1. Long-term financial capacity of MML

Peru is among the countries that show a high degree of concentration of fiscal expense and tax collection at the central government level. However, it is expected that government policy will change with the government's new decentralization strategy and the recent election of regional governments. At present, the financial situation of the provincial municipalities is generally weak due to the fact that the collection of property taxes benefits district municipalities and additional sources of funds are lacking. The main

source of income comes from Municipal Compensation Fund (FONCOMUN), a limited funding mechanism from the Government to municipalities for operating expenses and investments within a fiscal year (3% of National Income Product shared among 2,000 municipalities).

In this context, MML, responsible for managing a city with almost 8 million inhabitants, has an annual income of approximately US$120 million (an average of US$15 inhabitant/year), from central government's transfers through FONCOMUN, from the collection of tolls from an urban beltway and from some local taxes. Its main source of income is the beltway toll (EMAPE) given for administration and use to the Municipality by the Ministry of Transport through an inter-institutional agreement. The current income-expenses structure shows that MML has a limited debt investment capacity, which restricts the possibility of implementing larger projects that are essential to the development of a city of that size. MML, for example, has recently invested around US$25 million in an urban motorway financed through a short-term loan from the local bank system. This short-term repayment period of the loan affects the debt service capacity of MML for the next three years. However, it is important to mention that this debt will be fully repaid before the initiation of the repayment period of the proposed Bank loan.

The long-term financial capacity of MML is being analyzed in-depth by the IDB and the Bank, as it is a critical element for the proposed project feasibility and sustainability. The preliminary studies undertaken by the Bank show that MML would have adequate financial capacity to assume a long-term debt in the proposed amounts. A mechanism to repay the debt on time and to make the counterpart contributions is being prepared by PROTRANSPORTE, to ensure not only a fluent and orderly implementation of the Project but also to guarantee the repayment of the loan and avoid using the Government guarantee. The Bank loan will have the guarantee of the Ministry of Economy and Finance in case of a loan default by MML; however, the preliminary studies predict that this scenario will not occur. An international consulting firm has been contracted by IDB to perform this analysis and to propose a mechanism to secure the repayment of the Bank loans in a timely manner (e.g. via establishment of a trustfund fed by an annual percentage of EMAPE's toll revenues).

2.2 Exit Strategy for GEF-funded Financial Instruments

The GEF program includes three financial instruments, (i) the Credit Guarantee Fund to secure low-cost loans to buy and retire old buses, (ii) the micro-credits to support the creation of small businesses and (iii) the Plan Bici to provide credits to purchase bicycles. Except for the latter, which will use remaining funds from the previous Plan Bici, they will be financed by the GEF through a revolving loan, which means that a strategy has to defined regarding the destination of those funds once the GEF project is closed. Regarding the Credit Guarantee Fund, the related loan maturities should not go beyond project closing in order to have the funds available and decide jointly with the PIU on what to use them for. The grant agreement, whose draft will be discussed with the country team lawyers before appraisal, would stipulate that the Credit Guarantee Fund, if not requested again at the end of the operation in the context of a new retirement program, will be reused in projects that are consistent with the objectives of the GEF and/or OP11. Even though the scheme aims at establishing a revolving fund that could keep backing up loans taken by concessionaires in response to bus retirement triggered by the extension of Limabus, this clause will establish an alternative use of the funds in case there is no more demand for this kind of financial services at project closing. Regarding the funds to be dedicated to the micro-credit scheme for small businesses, a similar arrangement will be included in the grant agreement, which will make sure as well that the related loans are repaid before project closing. This way, if those funds are not of any use at then end of the project because the objectives for which they have been granted have been reached and/or that no similar segregated busways project is planned in the foreseeable future, they will be destined to projects such as bikeway extensions, pedestrian facilities, low-emission transport technologies, coordinated land-use and transport planning, etc. The ultimate exit strategy of the GEF Credit Guarantee Fund will be determined on last year of project implementation. At that time, projections of default coverage will more reliable, and the PIU will be able to estimate the amount of funds remaining in the Credit Guarantee Fund after client loan retirement, and decide on what could be done with those amounts.

2.3 Counterpart Funds from Municipal Districts on the NMT Component

Even though substantial counterpart funds have been identified to back the NMT component such as the US$ 600,000 available in the Caja Municipal for the Plan Bici, the US$ 1,000,000 from the IDB-WB loan assigned to bikeways and the operating budget for the Programa de Transporte No-Motorizado, counterpart funds from the municipalities to maintain the bikeways have not been identified yet since the municipal budgets are being discussed as this document is being written, especially in constituencies where mayors changed. A current campaign to convince distrital mayors into supporting the NMT agenda is currently ongoing, whereby members of the project implementation unit are visiting every district to inform staff and newly-elected decision-makers about the project. An international seminar, where the mayor of Bogotá will be the guest of honour, will be held on April 9, 2003 on the GEF aspects of the project and sustainable transport more generally, targeting national congressman and local politicians, in order to secure additional support for the project. This seminar will build on the existing political momentum which recently showed for example, in Miraflores and San Isidro, two middle-income districts being served by Arequipa Avenue, where bikeways were part of the electoral platforms of those eventually elected. The mayor of Miraflores has expressed his enthusiasm for NMT and the GEF project and said he would consider support for the project. Another factor that was taken into account to include Avenida Arequipa into the program was that counterpart funds from municipal districts such as middle-class Miraflores will be more substantial than from the Northern Lima municipal districts, since they are in a better financial situation.

3. Technical

☒ Summarize issues below ☐ To be defined ☐ None

With financial assistance from a Spanish Trust Fund, the IDB contracted in mid-2002 a consortium of engineering firms, whose work is expected to be substantially completed by April 2003. While most aspects of busway planning and design are available in preliminary form, more work is required to resolve such issues as: (a) circulation planning and traffic engineering at locations through which the busway will pass; (b) details of pedestrian access to the Limabus stations which, in their majority, will be located in the center of major arteries; (c) location of bus depots near the northern and southern ends of the busway; (d) level of engineering detail that is needed for tendering the civil works; and (e) selection and design of feeder roads in the districts of Comas/Independencia and Chorrillos/Barranco. Moreover, upon the lobbying of manufacturing companies interested in selling new buses, MML has received requests to issue new bus route concessions which would be in conflict with the Limabus concept; missions of the Bank and IDB have expressed their concern about this possible development and expect that MML will postpone any decisions in this regard, for the time being.

The GEF components do no envisage using new or unproven technologies. The building designs of the bikeways has benefited from the supervision of renowned experts and will integrate lessons learned from the previous pilot project. The public transport capacity rationalization component does not pose technological difficulties but special attention will be paid to the scrapping techniques to be sure they comply with the norms set by the environmental management plan. One part of the bus retirement program is a pilot project to test various retirement methods and is intended to investigate some technical and financial options associated with vehicle retirement.

4. Institutional

4.1. PROTRANSPORTE is a newly formed entity

The entity responsible for the implementation of the project will be PROTRANSPORTE. As such this entity will be in charge of monitoring and coordinating all project activities and will provide timely feedback on project progress, problems and other matters to both Banks. Since there is no previous experience with Bank projects within MML, and in addition PROTRANSPORTE is a newly formed entity, procurement and financial management capacity assessments form part of project preparation. Necessary adjustments in actual procedures and recommendations for improvement will be included in the project design.

4.2. Coordination PROTRANSPORTE-FONAM

The Lima Urban Transport Program obviously requires a very close cooperation between the two implementation units, PROTRANSPORTE for the loan and FONAM for the GEF grant. This is all the more true that some components are co-funded by both loan and grant resources, such as the social mitigation program. It is therefore necessary to reach a co-management agreement between the two entities that is acceptable to the Bank. Some others components, even though not co-financed, need a total coordination such as the bus scrapping component in general : for example, PROTRANSPORTE has to include in its methodology to evaluate concessionaires bids incentives to encourage the retirement of additional vehicles ; the same environmental norms regarding physical destruction of buses have as well to be adopted by both entities.
So far, this coordination has been satisfactory, even though there were some hic-ups mainly due to changes in the PROTRANSPORTE team but however it remains an issue. The issue has been addressed so far through the inclusion of PROTRANSPORTE within all discussions held on each components for which both institutions share responsibilities.

4.3 FONAM's needs for technical support on preparation of bidding documents

The writing of some bidding documents will require some specific skills on financial issues that FONAM does not have, namely the bidding documents to select the financial institutions in charge of administering (i) the Credit Guarantee Fund, (ii) the micro-credits to start new businesses as part of the social mitigation plan and (iii) the operators in charge of administering the Plan Bici. To address this need, the project includes the financing of some technical assistance from experts specialized in micro-credits and financial management to back up FONAM to prepare the corresponding terms of reference and bidding documents, evaluate the proposals, choose the winners and negotiate with them.

4.1 Executing agencies:

4.2 Project management:

4.3 Procurement issues:

The project is being designed for joint WB/IDB financing, which requires several joint procedures in procurement and supervision (e.g. no objections) that need to have the approval of both Banks. The team has the support of the World Bank Regional Procurement Adviser (RPA) to develop such arrangements for ICB for Civil Works, as it will be an excellent pilot for a uniform Standard Bidding Document that is being developed by a joint WB/IDB Taskforce. However, the Bank guidelines for the selection of consultants and the supply and installation of equipment are incompatible at present with the IDB procedures. Procurement specialists from both Banks will jointly prepare a proposal how to address the differences, which will be send to the RPA for review and approval.

4.4 Financial management issues:

5. Environmental

5.1 Summarize significant environmental issues and objectives and identify key stakeholders. If the issues are still to be determined, describe current or planned efforts to do so.

The project is expected to positively affect the local and global environment through rationalization of key bus routes and traffic corridors, and retirement of highly-polluting vehicles. First of all, reduction in air pollution will have a direct positive affect on public health. In 1998, more than 90% of medical admissions of children under 5 was due to respiratory infections, many of which can be attributed to air pollution and specifically to transport sector emissions. Secondly, the project will result in a reduction in GHG and more specifically in CO2 emissions. Recent trends in Lima show an increase in used vehicle imports, a significant increase in the taxi and small bus fleets, and a reduction in the public transport modal share. The project will address many of these underlying issues through policy reforms. Impacts from the policy reforms and the program as a whole are being studied in a Strategic Environmental Assessment. The Strategic Environmental Assessment has a regional focus, focusing on social and environmental consequences of the program, the involvement of civil society, and development of an environmental and social management plan.

Since construction will occur in already-existing roadways, no impacts on natural habitats are expected. Construction of bus lanes in an urban environment needs careful planning. Specific impacts related to the dedicated bus lanes are being addressed through a site-specific Environmental Impact Assessment. Environmental guidelines for contractors will be included in the Environmental Management Plan and all bidding documents. These guidelines will include measures to ensure public awareness, dust and noise reduction, proper disposal of waste, maintenance of equipment, etc.

Environmental considerations will be built into the physical process of the bus scrapping to ensure proper procedures and disposal. The feasibility consultant for the GEF specific components has developed basic guidelines, which will be turned into a detailed operational manual prior to implementation of the component. The guidelines include provisions for site preparation, liquid waste handling and disposal, worker safety, and recycling of parts.

The analyses to be completed during project preparation also address social impacts, such as those on employment, resettlement, market values, effects on the informal sector, displacement of bus routes, affordability, etc.

No major environmental issues are expected from the GEF components. Removing older buses from the roadways will reduce the amount of air contamination both locally and globally, resulting in widespread benefits in local health and climate change. The operators and associated employees of the retired buses are the most negatively affected population, and a social program is being developed for them.

Environmental considerations will be built into the physical process of the vehicle retirement to ensure proper procedures and disposal. The feasibility consultant has developed basic guidelines, which will be turned into a detailed operational manual prior to implementation of the component. The guidelines include provisions for site preparation, liquid handling and disposal, worker safety, and recycling of parts.

Good environmental practices will be part of the bidding documents for the contractors undertaking the bikeway rehabilitation. These guidelines, applicable to all civil works, are being developed under the PROTRANSPORTE loan.

5.2 Environmental category and justification/rationale for category rating: **B - Partial Assessment**

The project is rated as category B. Any possible negative environmental impacts from the project are easily predicted and can be adequately managed. The environmental impacts are expected to be wholly positive, given the planned operational manual to manage the vehicle retirement and disposal process. The social impacts are being mitigated through a social management program.

5.3 For Category A and B projects, timeline and status of EA

EA start-up date: 09/2002
Date of first EA draft: 03/2003
Expected date of final draft: 04/2003

As stated above, the environmental impacts of the GEF components are limited to those associated with the bus retirement and the rehabilitation of the bikeways, and these can be easily managed through the proposed detailed guidelines. Therefore, the proposed EA for this project consists of the environmental guidelines for the scrapping and for contractors. Extensive environmental assessment of the impacts of the IBRD loan (PROTRANSPORTE) is being done through a site-specific EIA of the corridors and a Strategic EA of the transport plan as a whole. Any recommendations that result from these analyses regarding the bus retirement will be included in the environmental guidelines. However, we propose not to use the EAs in their entirety, as the EAs for the GEF aspects, as most of the analysis is not directly applicable.

5.4 Determine whether an environmental management plan (EMP) will be required and its overall scope,

relationship to the legal documents, and implementation responsibilities. For Category B projects for IDA funding, determine whether a separate EA report is required. What institutional arrangements are proposed for developing and handling the EMP?

The EMP will consist of a composite of recommendations from the site-specific EIA, the Strategic EA, and the social studies. The responsibilities for implementation will be clearly delineated in the EMP. For example, contractors will be required to follow environmental good practices; concessionaires will be responsible for good environmental management of the bus parking and maintenance areas; and the municipality will be responsible for implementing measures to quell inappropriate displacement of bus routes.

As far as the GEF project is concerned, the EMP will be the operational manual, to be developed prior to the bidding of the retirement contract. Adequate implementation of the environmental provisions will be part of the bidding documents. Implementation will be monitored by the PMU. The operational manual will outline the reporting requirements.

5.5 How will stakeholders be consulted at the stage of (a) environmental screening and (b) draft EA report on the environmental impacts and proposed EMP?

Both the draft site-specific EIA and the SEA will be consulted publicly and will be available on the PROTRANSPORTE website prior to appraisal.

The GEF-component specific guidelines have already been discussed with relevant government and civil society groups during a workshop held in November, 2002. The guidelines will be posted on the website of FONAM prior to appraisal, as will the operational manual, once finished.
The key stakeholders of the GEF aspects are FONAM (Fondo Nacional para el Medio Ambiente), which is the PIU, CONAM, the provincial municipalities of Lima and of Callao, the municipal districts served by the bikeways, the Lima Clean Air Committee, the Ministry of Transportation, DMTU (Dirección Metropolitana de Transporte Urbano), Protransporte (Implementing Agency of the associated WB-IDB financed loan), NGO's (Ciclored, CIDATT), bus operator syndicates such as ASETUP, SENATI (Servicio Nacional de Adiestramiento en Trabajo Industrial). Most of these stakeholders have been consulted since the concept of the project was launched, and involved in the project concept definition as well in the different stages of project preparation, through the constitution of a Committee that held meetings and workshops about the project developments on a regular basis (approximately once per month). Other stakeholders were repeatedly given the opportunity to participate in different workshops that have been conducted to help shape the final proposal and to involve the citizenry and the transport sector in the decision-making process. Finally, various focus groups were carried out with samples of citizens on bike use and with more than 700 drivers/owners/conductors of combis and buses regarding the vehicle retirement component and its likely social impacts, in order to better understand the main stakeholders' opinions, feelings and expectations vis-à-vis the project.

5.6 Are mechanisms being considered to monitor and measure the impact of the project on the environment? Will the indicators reflect the objectives and results of the EMP section of the EA?

Environmental objectives are built into project design, as indicated by the specific objective to enhance transport and environmental conditions by improving traffic management and safety, reducing air pollution and improving conditions for pedestrians; and the development indicator of reduction of vehicle emission through the application of pollution control measures. The EMP will include monitoring indicators for specific environmental issues identified in the EAs.

The GEF-component specific indicators are focused on the reduction in air contamination resulting from vehicle retirement. A Monitoring Plan and an Operating Plan have already been prepared by local consultants to define the guidelines to be followed by FONAM during project implementation. Those guidelines include the monitoring of the environmental issues and impacts. Their scope will be further discussed prior to appraisal.

6. Social

6.1 Summarize key social issues arising out of project objectives, and the project's planned social development outcomes. If the issues are still to be determined, describe current or planned efforts to do so.

The social development objective of the project is to promote economic and social development of the urban population by establishing an efficient, reliable mass rapid transit system specifically suited for the economically deficient sections of the population. A preliminary beneficiary rapid impact assessment undertaken justifies the need for an efficient, affordable and safe public transport to address the socio-economic needs of the urban masses in Lima, where a large percentage of population are poor and very poor.

Based on the findings of the preliminary beneficiary rapid assessment, a larger scale social assessment is being prepared to establish a quantitative and qualitative baseline for beneficiary and poverty impact assessment. Apart from this, an environmental impact assessment of the proposed corridors will be completed in February 2003. If any adverse social impacts such as potential small-scale land acquisition, (as informed through environment impact assessment) and presence of indigenous population and /or cultural property in the project location, are identified through BIA, mitigation plans will be developed according to the Bank guidelines **before appraisal.** Specifically, in the instance of:

i. involuntary resettlement, detailed census and screening of the proposed roads under the project will be undertaken to provide more information on the likely costs and impacts of land acquisition. All involuntary resettlement will comply with World Bank (OP/BP4.12);

ii. large scale excavations, movement of earth, surficial environmental changes or demolition, the Bank staff will determine what is known about the cultural property aspects in the proposed project site and comply with World Bank (OP4.11); and

iii. ethnic minorities in the project area, the project will comply with World Bank (OD 4.20).

Following the beneficiary impact assessment, a beneficiary and poverty impact assessment is planned to be implemented during FY03-04. The assessment is aimed to develop an integrated strategy to incorporate participation of categories of relevant stakeholders to monitor implementation of the LimaBus Transport Project, thereby increasing the stakeholder accountability and well-being of the beneficiaries. The assessment will: (i) formulate a participatory program of periodic workshops and interviews with relevant stakeholders to seek the public's views regarding the LimaBus project. In conjunction, it will also define the methodology according to which those data will be analyzed, and the contents of the reports to be delivered periodically; (ii) design engendered report cards to record user perceptions on the quality, efficiency and adequacy of the LimaBus project. Report cards, segregated by gender, are proposed to exact public accountability, by soliciting user perceptions on the quality, efficiency, and adequacy of the LimaBus services; and (iii) provide baseline information against which subsequent findings could be compared. The qualitative tools proposed for the assessment are semi-structured interviews, focus group discussions, scenario workshops and stakeholder workshops. In order to compliment and validate the findings of qualitative assessment, a series of household surveys will be implemented as part of the proposed assessment.

During preparation, extensive work was done on assessing the affected groups. The following table gives the results of the analysis:

Table: Number of Transport Sector workers affected by the new transport system

Level of Impact	Jobs per vehicle type			
	LDV	MICROBUS	OMNIBUS	Total
Existing services eliminated by new service	711	488	1,982	**3,181**
Existing services to be redeployed or shortened	11,252	10,797	10,045	**32,094**
Overall Total	**11,963**	**11,285**	**12,027**	**35,275**

As shown above, around 35,000 transit service workers and their families are more or less affected by the introduction of the new system. To ensure program success, measures have to be taken in order to reduce the risk of internal opposition of the directly affected people in the transport sector. Some migration of the affected vehicles to other routes will need to be permitted. Therefore a strategy for the whole transport sector has to be planned before the introduction of the new system and the vehicle retirement program.

The workers earning a living from the transport sector system can be differentiated as follows :

	LDV	Microbus	Omnibus	Total
Owner	15%	23%	19%	19%
Driver-and-Owner	8%	4%	2%	5%
Driver	32%	32%	39%	34%
Drivers - Conductors	1%	1%	2%	1%
Conductors	41%	37%	35%	38%
Worker / Technician	3%	3%	3%	3%
Overall Total	100%	100%	100%	100%

The most vulnerable population consist of those that don't have capital and who have little or no education or technical capacity, i.e. the conductors. Then come those drivers who have to rent the vehicle they operate. Since they will not benefit from the selling of the vehicle, special attention will be paid to these workers so that their access to the retraining program and to the micro-credit scheme will be ensured.

6.2 Participatory Approach: How will key stakeholders participate in the project?

Participatory approach will be followed by the project to ensure involvement of relevant stakeholders based on each one's capacity to absorb and deliver.

Government Agencies: Ministry of Transport, Ministry of Finance, Ministry of Economy and Finance at the national level and their regional and/or district counterparts, local government ministries, and municipalities

Transport User Groups: community members (women, elderly/pensioners, students, ethnic communities

(if any in the project areas), population below poverty line, redundant labor force (if any in the project areas), squatters, encroachers, street vendors and sidewalk hawkers, shop owners , and petty traders in the Limabus corridor) from project influence areas, and transport associations. Transport Provider and Supplier Groups**:** NGOs, media, community organizations, private sector (transport suppliers, including informal operators), and labor unions (if any Project preparation and implementation include extensive use of participatory techniques to involve all above stakeholders through sharing information, consultation and collaboration leading to their empowerment.

During preparation, collaborating with the government agencies, information has been shared and will continue to be shared and consultations have been and will continue to be carried out among all categories of stakeholders including the government through structured interviews, semi structured interviews, focus group discussions and stakeholder workshops.

During implementation, collaborating with the government and possibly civil societies and NGOs, participation of all categories of stakeholders will be facilitated by sharing information and consultation through periodic workshops and focus group discussions. In addition, engendered report cards will be implemented to ensure public's views regarding the quality, efficiency, and adequacy of the LimaBus transport project are continuously addressed.

Stakeholders which have been involved in project preparation include bus owners, private transport associations, local government and central government officials. The social program will ensure that all affected populations are adequately dealt with. Different workshops have been conducted to shape the final proposal and to involve the transport sector in the decision-making. To understand the opinions and the feelings vis-à-vis a change in the public transport sector and the vehicle retirement program, a specialized company carried out two focus groups with drivers of combis and buses.

In a two half-day workshop, representatives of the private sector, provincial government and central government were briefed on the findings of the consultant's initial report and various forms of incentives for removing the obsolete vehicles. Based on the results, the consultants developed the complete incentive system, which was presented in a second workshop with representatives of the transport sector. The final and here presented version has been exposed to public opinion a third time. After the delivery of the first report it turned out that regular meetings with the two key-players of the public transport sector PROTRANSPORTE and DMTU would an indispensable asset to the work of the consultants. Therefore a weekly meeting was agreed during which all latest developments have been discussed. A similar methodology has been adopted regarding the other components. Various focus groups have been carried out on bike use (24 focus groups with workers, cyclists, students, women, bus drivers, inhabitants of the zones served by the bikeways, in-depth interviews with municipal authorities and traffic policemen), on the bus scrapping program (first on a small sample of bus drivers and owners in the context of the bus retirement design study) then on a much wider number of stakeholders in the context of the design study of the social impacts mitigation program (more than 700 interviewees), on the bike promotion campaign (workshops with municipalities, interviews with university deans, schools managers, factories bosses), on the institutional strengthening component to define its scope (municipalities, DMTU), etc.

Table: Workshops and Presentations

Date	Event
May 13, 2002	Presentation in presence of PROTRANSPORTE Technical proposal: Design of a financial incentive scheme to promote to promote public transport capacity rationalization
May-July 2002	Focus Groups on bike use with workers, cyclists, students, women, bus

	drivers, inhabitants of the zones served by the bikeways, etc.
July, 10, 2002	First workshop with representatives of private operators in the public transport sector and governmental institutions : design of a financial incentive scheme to promote public transport capacity rationalization
July 2002	FONAM workshop: Presentation of the preliminary results of the focus groups with current drivers and owner
July, 08. 2002	First presentation to the Peru GEF project Consultative Committee of the financial incentive scheme to promote public transport capacity rationalization and of the bus physical retirement process
July-September 2002	Continuous consultative process with the municipal districts and other beneficiaries of the institutional strengthening component to assess the needs and design the training program.
August, 21, 2002	Second workshop with representatives of private operators in the public transport sector and governmental institutions : design of a financial incentive scheme to promote public transport capacity rationalization
August, 27, 2002	Second presentation to the Peru GEF project Consultative Committee of the financial incentive scheme to promote public transport capacity rationalization and of the physical retirement process
October 2002	Focus groups with more than 700 bus drivers, owners and conductors on the bus retirement scheme and their expectations vis-à-vis the social impacts mitigation program.
October, 28, 2002	Proposal of the Incentives to promote the removal of old obsolete vehicles - FONAM
November, 2002	Workshop with the municipal districts served by the bikeways on bike use promotion.
November 8, 2002	Presentation of the expected environmental benefits to the GEF project Committee
December, 10, 2002	Last presentation : design of a financial incentive scheme to promote public transport capacity rationalization - FONAM
April 9, 2003	International Seminar on the GEF aspects and sustainable transport to raise awareness among national and local decision makers to secure support to the project
July, 2003 (date to be determined)	Seminar to discuss the findings of the GEF preparatory studies at the technical and at the citizenry level.

6.3 How does the project involve consultations or collaboration with NGOs or other civil society organizations?

While specific involvement with NGOs or civil society organizations has yet to be determined, it is envisaged that they could be potentially involved in two areas:

1. as stakeholders during consultation and workshops while preparing and implementing the project:
2. as possible partners for collaboration to involve local populations during implementation of the project.

6.4 What institutional arrangements are planned to ensure the project achieves its social development

outcomes?

PROTRANSPORTE project-executing unit with autonomous financial and administration rights will be responsible for ensuring participation of relevant stakeholders during project implementation and for monitoring and evaluating social development outcomes identified within the project. PROTRANSPORTE will draw experiences from similar projects such as Transmilenio project and will be supported by international consultants hired under the project, to ensure effective development and application of operational manuals and procedures prepared under the project and work with local authorities and other contracted staff. The responsibilities for implementation of the GEF-related social program will be detailed prior to appraisal and will be shared between PROTRANSPORTE and FONAM. The conclusions of the study which has designed the social impact mitigation program have already been discussed between FONAM and PROTRANSPORTE.

6.5 What mechanisms are proposed to monitor and measure project performance in terms of social development outcomes? If unknown at this stage, please indicate TBD.

The proposed beneficiary and poverty impact assessment will gather baseline information against which subsequent findings from qualitative assessment will be evaluated. Specific qualitative tools proposed for monitoring social development outcomes are: periodic workshops, focus group discussions and consultations among all relevant categories of stakeholders. Additionally, engendered report cards will also be implemented to ensure public's views regarding the quality, efficiency, and adequacy of the LimaBus transport project are continuously addressed.

A GEF components monitoring plan which includes the indicators related to social development outcomes has already been defined in the framework of the GEF project preparation grant ; some of those indicators are common to both the loan and the GEF grant and will be monitored by both PIUs.

7. Safeguard Policies

7.1 Do any of the following safeguard policies apply to the project?

Policy	Applicability
Environmental Assessment (OP 4.01, BP 4.01, GP 4.01)	● Yes ○ No ○ TBD
Natural Habitats (OP 4.04, BP 4.04, GP 4.04)	○ Yes ● No ○ TBD
Forestry (OP 4.36, GP 4.36)	○ Yes ● No ○ TBD
Pest Management (OP 4.09)	○ Yes ● No ○ TBD
Cultural Property (OPN 11.03)	○ Yes ● No ○ TBD
Indigenous Peoples (OD 4.20)	○ Yes ● No ○ TBD
Involuntary Resettlement (OP/BP 4.12)	● Yes ○ No ○ TBD
Safety of Dams (OP 4.37, BP 4.37)	○ Yes ● No ○ TBD
Projects in International Waters (OP 7.50, BP 7.50, GP 7.50)	○ Yes ● No ○ TBD
Projects in Disputed Areas (OP 7.60, BP 7.60, GP 7.60)*	○ Yes ● No ○ TBD

7.2 Project Compliance

(a) Describe provisions made by the project to ensure compliance with safeguard policies which are applicable.

The Strategic Environmental Impact Assessment as well as the Environmental Impact Assessment for the BRT corridors will be completed before project appraisal. Environmental Management Manuals which

apply to the proposed works are under preparation and will be completed before appraisal. In addition, within the bidding procedures, documents and contracts, there are specific clauses which clearly spell out the obligations of the contractors and supervising consultants to ensure compliance with the applicable environmental requirements.

(b) If application is still to be determined, describe current or planned efforts to make a determination.

8. Business Policies

8.1 Check applicable items:

☐ _ Financing of recurrent costs **(OMS 10.02)**
☐ _ Cost sharing above country 3-yr average **(OP 6.30, BP 6.30, GP 6.30)**
☐ _ Retroactive financing above normal limit **(OP 12.10, BP 12.10, GP 12.10)**
☒ _ Financial management **(OP 10.02, BP 10.02)**
☐ _ Involvement of NGOs **(GP 14.70)**

8.2 For business policies checked above, describe issue(s) involved.

F. Sustainability and Risks

1. Sustainability:

a. The project serves as a pilot project in Metropolitan Lima to create behavioral changes in people's mobility patterns, and therefore a strategy will be developed for dissemination at regional/global level, using electronic knowledge transfer instruments (CD ROM, Website, etc.), international conferences, cooperation with national and international NGO's, workshops, etc.

b. The sustainability of the program is expected to be guaranteed by the participation of formal private bus companies, which should be secured owing to the rationalization of public transport supply, which will eradicate predatory competition, increase ridership and farebox revenues and reduce operating costs. Rationalization of public transport supply will be achieved through the concessioning of bus routes on the separated bus corridors. This will make the public transport activity more profitable and should logically secure private sector involvement in the sector, thereby improving chances of financial sustainability.

c. The strengthening of the local authorities will complement the rationalization of public transport operations and institutions responsible for regulating public transport operations, improving enforcement of concessioned routes and eliminating informal operations on these routes.

The GEF components sustainability depends on three conditions :

- **Early involvement and strengthening of the municipalities**

Since the beginning and the preparation phase, this project has been in touch with municipal districts and provincial municipalities to make sure they would be involved in the definition of the components that they will benefit from and to ensure their commitment to the objectives of the project. The project outcome depends on the endorsement of these local governments, and its sustainability will be guaranteed as long as the objectives of the project are integrated in municipal policies. The strategy to be used will be to initiate the execution of the project through FONAM, in co-management with the municipalities and progressively to let the municipalities responsible for the next implementation stages

regarding the NMT component. In parallel, the institutional strengthening component will provide those municipalities with the technical capacities required to perform these tasks and will simultaneously raise awareness amongst municipal servants vis-à-vis sustainable transport issues. This should allow the municipalities to take over in a satisfactory and sustainable way the programs promoted by the GEF project when the project closes.

- **Civil Society Involvement**

Sine qua non conditions for this project to be successful include ownership and commitment to its goals at the citizenry level. The preparation phase of the project included several focus groups, in-depth interviews, etc. (more than 1,000 persons participated in those interviews) to identify the citizenry expectations vis-à-vis the transport system, so that the project would be designed in such a way that the likelihood of public adhesion to it be as high as possible. Then, during the project implementation period, local stakeholders will continue to be closely involved : citizen participation in the maintenance of the bikeways and neighboring green areas will be encouraged, at least through micro-enterprises conformed of workers living in the area, a neighborhood watch scheme will be installed to ensure personal security on the bikeways, and some promotion actions will be entirely carried out specifically in the neighborhoods served by the bikeways. Once the citizenry has changed its attitude vis-à-vis NMT and assimilated its advantages regarding air quality, the creation of citizens committees will be encouraged to keep reminding the municipalities that their constituents expect them to promote NMT.

- **Communication, Outreach and Advocacy actions.**

During project implementation, communication programs will target a variety of high-level actors (municipal authorities, local community leaders, the Church, local employers, etc.). in order to build support to the program at the decision makers level. The removal of cultural barriers towards sustainable transport needs support from both ends of the social ladder so that all push in the same direction. Targeting executives and public authorities should raise the likelihood that the GEF-promoted actions will be replicated in some other parts of Metropolitan Lima and Peru.

1a. Replicability:

Public Transport Capacity Rationalization Component

Segregated busways and public transport capacity rationalization component has an enormous potential for replication in other cities of Latin America, Africa, Eastern Europe and Asia. Many of these cities suffer from a chaotic public transport system, clogged by an oversupply of transport vehicles that is due basically to the same reasons as in Lima. Some cities like Bogotá have already implemented segregated busways which has proved to be an overwhelming success. This project, if successful, will offer to many other cities which are now looking at options inspired by Transmilenio, an example of how to implement segregated busways and complement them with a socially fair and optimized vehicle retirement scheme. During presentations at the Transport Research Board (Jan 12-16, 2003) and in the Bogotá seminar on Human Mobility (February 6-9, 2003), the concept to be developed under this project raised a lot of interest from representatives of other cities from Latin America, who understand the necessity of tackling the problem of low-quality public transport services engulfed in dramatic oversupply, but who are reluctant to act because of the complexity of the issue. This shows that this experience will be of high interest as an inspiration to other cities faced with the same problem.

Non-motorized transport component

Many bike advocacy groups are popping up in Latin America and are in the process of lobbying municipalities so that they start thinking about the possibilities offered by non-motorized transport. The

successful example of Bogotá's bikeways is looked at as a best-practice case and is attracting more and more visitors from municipalities all around Latin America. Through two operations currently under preparation (this one and the Santiago's Transport and Air Quality), the GEF will offer to those municipalities interested in following Bogotá's steps, two very interesting pilot projects with two different, but complementary approaches : (i) in Lima, the project aims at providing NMT facilities mainly to low-income neighborhoods (except in Avenida Arequipa where users are expected to be better-off) and to address the needs of citizens who might be interested in using bicycles for financial reasons; (ii) in Santiago, the objective is to create an attractive network of bikeways in relatively trendy and wealthy neighborhoods, in order to target the upper classes which are more likely to generate a cultural change and to change the image of the bicycle which in many places is still viewed as the transport mode of the poor. Thanks to these two projects which to a certain extent will turn Santiago and Lima into "NMT laboratories", decision makers all around Latin America will be offered two experiments to look at, based on different philosophies but sharing some basic principles as the acknowledgement that communication campaigns have to accompany infrastructure building. This should guide them in their own projects and help them to fine-tune their approach of NMT for their cities and to respond better to the growing demand for NMT facilities currently witnessed all over Latin America.

2. Critical Risks (reflecting the failure of critical assumptions found in the fourth column of Annex 1):

a. The proposed project requires well-functioning institutions at a time when many responsibilities are being decentralized from the national to the local level. MML thus faces many new challenges, and its agencies, particularly the recently created PROTRANSPORTE, will take time to become established. Moreover, future phases of the busway system must involve Lima's sister city Callao, which accounts for about 10% of the metropolitan population but which is not currently included the program. The project thus places great emphasis on the aspects of institutional strengthening and training of technical staff, such as traffic engineers and traffic police, and will support the development of mechanisms aimed at improving inter-municipal coordination.

b. Counterpart funding could prove a risk from two aspects. Firstly, the Municipality of Lima has limited financial capacity. Secondly, changes in political commitment at the municipal level could influence the availability of counterpart funds and thus implementation. For this too, it is important that intra-governmental relations be strengthened, including the roles and responsibilities of central and local governments, the process of decentralization, and the overall fiscal relations between the central government, Provincial Municipality, and District Municipalities of Lima-Callao.

c. There are policy risks; it is accepted that lack of realistic tariffs will contribute to (i) a decline in the public transport fleet/supply and (ii) costly subsidies to urban transport by government. It is imperative that the integrated fare system be implemented so that the poor, for whose benefit this project is targeted, do not have to spend increased portions of their income on changing buses more than one time in order to travel on origin-destinations not served by a single bus route. Fare collection must be done pre-boarding and for this, users and operators have to be imparted basic training in the procedures in order to ensure quick and efficient service.

In view of the considerations outlined, the risks are expected to be manageable. Offsetting these risks are the benefits expected from the project and particularly from its institutional strengthening components. If these components are successful, the benefits in terms of improved resource allocation would go well

beyond the direct benefits estimated.

Public Transport Capacity Rationalization

There is a substantial risk related to the social and political underpinnings of this component. It might be seen at first sight as a program that will exacerbate the bleak employment situation in Lima. Faced with possible demonstrations or social pressure, politicians may be discouraged to implement this component. Those who will be directly affected may think the compensation they will receive does not balance fairly the negative impacts they will suffer, or may try to put pressure on local authorities to get more and drive the process into an impasse. The Limabus project will put upside down the current bus operation business model and the vehicle retirement component is not the least troubling bit of the overall program. The acceptance of this component depends on a clear understanding by the actors involved, both the future concessionaires and those whose old buses will be retired, of the new rules of the game and of what benefits they can obtain from the option that they will be offered.

Keeping all stakeholders informed during implementation, making sure compensations are adequately determined and training programs are easily accessible and interesting, and consulting stakeholders regularly, as was done in the preparation phase, will help mitigate these risks. In addition, some other problems may arise, and solutions to them lie either outside the influence area of the project or derive directly from the current transport system organization and are to be seen as a given : (i) first, the financial incentive system is by nature only accessible to bus owners, and not to those who might drive or collect fares without owning the bus. This being said, bus owners will be asked to provide the names of those who work for them so that these persons can benefit as well from the retraining vouchers and can get access to the micro-credit program if so they request (ii) second, a delicate decision is to be made about whether it will benefit only those who abide by the law, i.e., those operating on a route licensed by DMTU. On one hand, one does not want to encourage informality through allowing unlicensed operators to benefit from this, on the other hand, choosing the other option might mean that a substantial part of the people involved in the transport sector may oppose to the project. This has to be decided upon during the Limabus project preparation (iii) third, further economic stagnation might increase unemployment levels in the coming years and make the public transport system uncontrollable; the impact of this component might end up totally diluted by the arrival of a plethora of jobless workers turned into improvised bus operators. (iv) fourth, depending on how positively private banks react to the borrowing needs of the future concessionaires, the incentive system might not be attractive enough for the bidders. It might happen as well that the supplier of the new bus fleet offers a financing package including the vehicle retirement-related expenses that might end up more attractive than the conditions the credit guarantee fund offers.

To mitigate those risks, various surveys, focus groups and workshops were held with stakeholders to make sure that the design incentives make sense from a bidder or a bus owner perspective. Then, a lot of emphasis will be put on the communication phase around the available options offered by the Credit Guarantee Fund, once those options are defined for good and put in place. Finally, disbursement arrangements are such that no GEF money will be released unless a formal agreement is reached with an interested bidder, and moreover, the revolving nature of the Fund further minimizes the overall risk in the sense that no money would be formally spent on this. Once the corresponding loan has been repaid, the guarantee funds are available again.

In spite of those substantial risks, the value-added of the GEF intervention in this process is crucial: assuming that the retirement program as part of the segregated busway bidding will take place anyway, since local authorities are willing to follow Bogotá’s example, where the implementation of the first phase of Transmilenio provided an opportunity to start tackling the oversupply issue, the GEF will play at least three different key roles : (i) it will help make the most out of this opportunity offered by Limabus and maximize the number of old polluting buses removed from the system, (ii) it will make sure vehicle retirement is handled properly from an environmental point of view and will lay the groundwork

for still cleaner retirement processes and (iii) it will, in coordination with the loan, address the social problems that the process might unfetter, through programs of reinsertion in the job market, without which the sustainability of the vehicle retirement process would be seriously jeopardized.

Promotion of Bicycle Use

Co-financing of the GEF bikeway program by municipal districts is not yet assured, since municipal budgets were still being elaborated as this PCD was being redacted, due to the recent elections. Municipal Districts officials have pointed out that they lack financial resources and that they can not coordinate actions with the Provincial Municipality. They also voiced their concerns about the police lack of support regarding NMT traffic safety. The police has emphasized as well those coordination difficulties, and they consider that municipal technical teams officials are not well prepared on these topics. For this reason, they stated their concern that traffic management responsibility had been given to municipalities. This being said, some of the re-elected municipal teams have already shown their support and interest in the project prior to the elections (the new teams are in charge since January 1, 2003) and the new mayor of Lima is clearly supportive of NMT.

Through a two-pronged approach which simultaneously addresses the hard (infrastructure) and the soft (institutional strengthening, information campaigns) issues, this GEF-supported bicycle promotion component is expected to address those issues and give a much-needed impetus to what will hopefully be a more ambitious Lima-wide program.

Risk	Risk Rating	Risk Mitigation Measure
From Outputs to Objective		
The local authorities and institutions responsible for regulating public transport operations have insufficient institutional capacity to implement the project.	S	Assist the recently elected local authorities with institutional strengthening, training programs for technical staff, traffic planners and traffic police, and include technical assistance and training to affected municipalities in a climate of decentralization of responsibilities.
Inter-institutional and intra-governmental cooperation does not continue throughout the project.	M	Inter-institutional and intra-governmental relations strengthening to maintain the actual commitment and secure the availability of local counterpart funds as well as adequate annual disbursements.
The current bus-operators do not accept the relocation of their work routes and the rationalization of the transport system.	M	Demonstrate win-win situation by providing basic training and technical assistance in business administration to displaced operators in order to optimize revenues and service provision.
Unrest among (informal) operators forced to leave the sector because of route rationalization and stricter enforcement.	S	Develop impact mitigation programs for operators and other affected personnel leaving the profession.
The benefits of the vehicle retirement component are offset by the continous entry of additional public transport	M	Commit the Municipality of Lima to coordinate with the other provincial municipalities with regards to route licensing, to freeze the number

vehicles		of licenses and to enforce Inspection and Maintenance standards
From Components to Outputs · Lack of continuity in PROTRANSPORTE management.	N	· Strong private sector participation expected to ensure the implementation of the operational aspects of the project and the operation by reliable and qualified private operators.
· Changes in commitment to project implementation at the municipal level.	N	· Implementation of efficient and effective institutional structure and strengthening of fiscal capacity to improve MML's financial sustainability.
· Weak client commitment to and participation in implementation.	N	· Strong program ownership and active participation to protect and care for the system.
Overall Risk Rating	M	

Risk Rating - H (High Risk), S (Substantial Risk), M (Modest Risk), N(Negligible or Low Risk)

G. Project Preparation and Processing

1. Has a project preparation plan been agreed with the borrower (see Annex 2 to this form)?

☒ Yes - date submitted: 01/29/2003 ☐ No - date expected:

2. Advice/consultation outside country department:

☒ Within the Bank: Mexico and Chile GEF Project Teams
☒ Other development agencies: Interamerican Development Bank
☒ External Review Transmilenio staff, bus operators and NMT experts from Bogotá

3. Composition of Task Team (see Annex 2):

Paul Guitink, Task Team Leader
Pierre Graftieaux, TTL for GEF grant
Gerhard Menckhoff, Urban Transport Consultant
Oswaldo Patino, Financial and Institutional Management Consultant
Kirsten Oleson, Environmental and Safeguard Policies Specialist
Meenakshy Santhadeevi, Sociologist
Sophie Sirtaine, Financial Specialist
Judy Baker, Peer Reviewer
Edward Dotson, Peer Reviewer
Walter Vergara, Peer Reviewer

4. Quality Assurance Arrangements (see Annex 2):

The Project Team is highly qualified in the fields of urban transport. The GEF grant Project Team Leader in involved in the Santiago GEF project and in the Limabus project, as well as the main Transport Consultant. Due to the high environmental impacts of the project, the project team includes an environmental specialist. Finally, to address the numerous financial issues of the project, a financial specialist has been included from the preparation phase in the project team.
It is envisaged to continue with the same scheme as during the preparation phase, where international consultants had been hired to supervise the studies about issues on which the PIU needs to be strengthened or supported.
In addition, the Sector Manager will provide overall quality control.

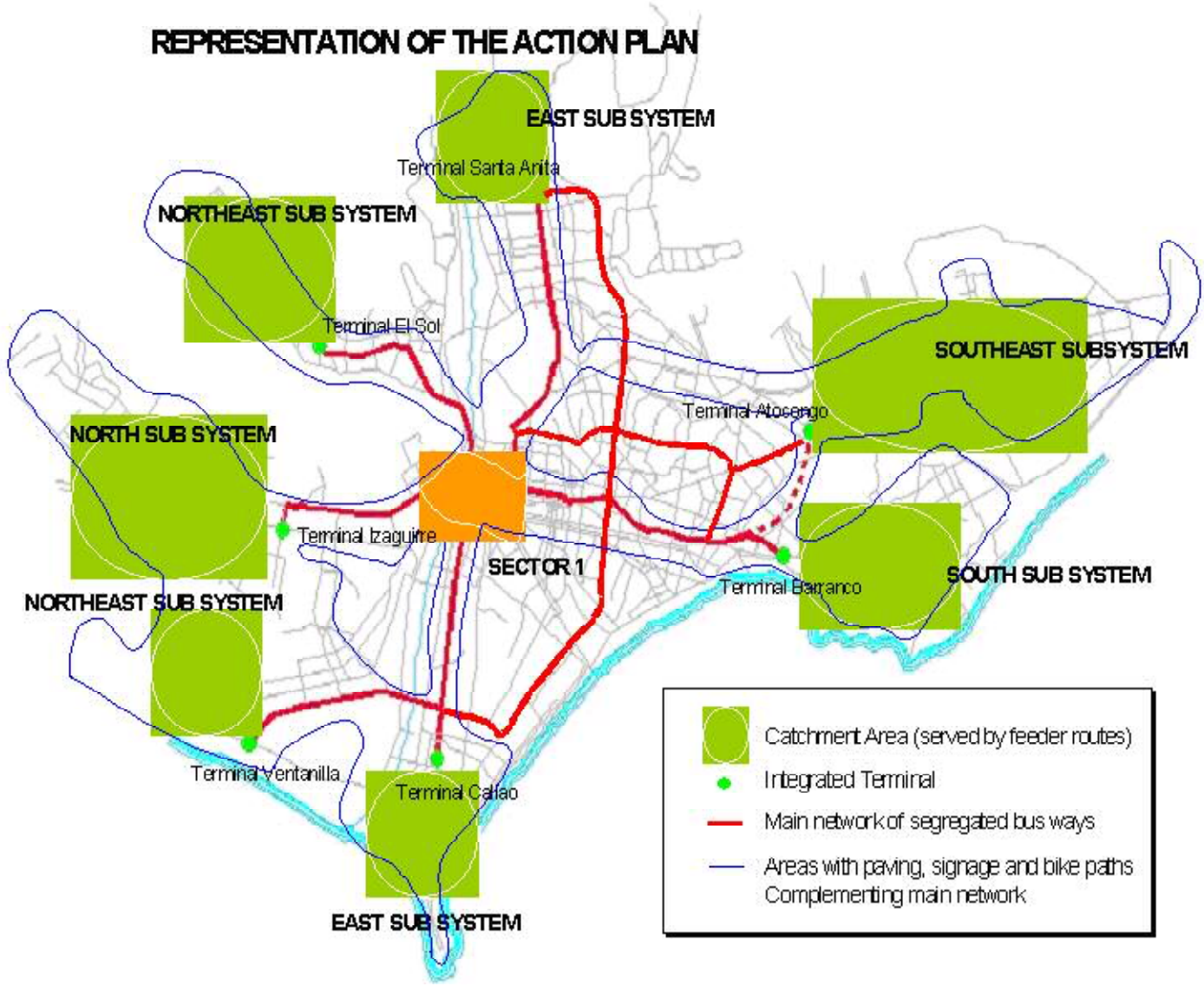
5. Management Decisions:

Issue	Action/Decision	Responsibility
Joint IDB/WB financing of the project requires streamlined procurement procedures	Standard bidding docs and procedures acceptable to both Banks	WB and IDB Regional Procurement Advisors

Total Preparation Budget: (US$000) US$270,850 **Bank Budget:** US$162,850 **Trust Fund:** US$108,000
Cost to Date: (US$000)
☐ **GO** ☐ **NO GO** **Further Review** [Expected Date]

Paulus A. Guitink	Jose Luis Irigoyen	Marcelo Giugale
Team Leader	**Sector Manager**	**Country Manager**

Map of the Proposed Network



The first phase of the Limabus system, to be financed through the proposed project, will connect the North Sub System –Terminal Izaguirre – with the South Sub System – Terminal Barranco.

Annex 1: Project Design Summary

PERU: LIMABUS TRANSPORT

Hierarchy of Objectives	Key Performance Indicators	Data Collection Strategy	Critical Assumptions
Sector-related CAS Goal: ● Financing investments programs which have a direct impact on the productive lives of the poor, through a combination of rural and urban development programs; and support the institution of reforms in social sectors; ● Renewed focus on environmental issues especially as linked to air pollution and health, sustainable use of natural resources, and management of biodiversity.	**Sector Indicators:** ● Increase of the mobility of the poorest people through an environmentally friendly and sustainable transport mode to foster their access to employment and better incomes ● Accomplish that the public policies incorporate themes of air pollution reduction by influencing on policy decision makers, strengthening government and local institutions and establishing alliances with the civil society ● Establish modes of surveillance and monitoring to fulfill the effectiveness and dissemination of the project ● Improved perception of efficient public transport service infrastructure and management at Lima Metropolitan level.	**Sector/ country reports:** ● Impact evaluation ● CAS, ESW, surveys ● Sector report and updates	**(from Goal to Bank Mission)** ● Effective policy dialogue and project execution guided by the stable macroeconomic situation at the country.
GEF Operational Program: OP11 : to facilitate greenhouse gases reduction from ground transport in Lima.	**Outcome / Impact Indicators:**	● GHG emissions inventory ● Transport plans and reports	Government remains committed to promoting the adoption of sustainable (low-GHG emitting) transport options

Project Development Objective:	**Outcome / Impact Indicators:**	**Project reports:**	**(from Objective to Goal)**
Establish an efficient and reliable mass rapid transit system by implementing and operating high capacity buses in segregated bus corridors, which will improve public transport of the Metropolitan Lima population, especially for the low income population of the peri-urban poor neighborhoods.	Improved level of public transport service provided to the low-income population living in peri-urban areas. Improved administrative operational and planning capabilities of the participating institutions, measured through financial and operational indicators and through proved capacity to serve an increasing demand.	• A representative sample of Project beneficiaries stratified by income segment, geographical location, and compared with a baseline control group to be established during the Project.	• The Municipality implements dependable and sustainable mechanisms to honor its commitment to repay. • Inter-institutional coordination continues throughout the project.
To facilitate greenhouse gases reduction from ground transport in Lima through 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. To facilitate local air pollution reduction : the transport sector contributes to the emission of air pollutants like SOx, CO, PM and NOx, which together with VOCs lead to the formation of smog or tropospheric ozone (O3). As the project will improve the energy-efficiency of the transport sector and reduce the number of vehicle-km traveled along with fuel use per passenger-km, it will also address local air pollution.	• Reduction of CO2 emissions from the transport sector compared with the baseline • Improvement of air quality in the areas served by the project and over all Metropolitan Lima	• Field measurements of air quality with future WB-IDB funded monitoring stations • Ex-post assessment of CO2 emission reductions based on diesel/gasoline combustion from the public transport sector.	• Favorable National Regulatory Framework (especially regarding used vehicle imports and how bus routes are awarded) Completion of the Limabus segregated busways and successful bidding process for the bus concessions. • Community empathy towards the project • Inter institutional Agreement
The project GEF specific objectives are: (i) to support the reduction of the public transport fleet oversupply, (ii) to consolidate the bikeways pilot project developed in Lima North Cone, (iii) to carry out an institutional strengthening program on sustainable transport, targeting municipalities and institutions dealing with environmental issues and/or transport	• Reduction of the public transport fleet operating in the areas affected by the project and at the metropolitan Lima level. • Successful reintegration in the job market of those (bus drivers, bus owners) affected by the scrapping program. • Increase of bicycle use as a transportation mode.	• Government agencies report • Bank supervision reports • Mid-term evaluation • Completion Reports • Public opinion surveys	

planning, and (iv) to assess and monitor the GEF project performance	• Increase of bicycle acceptance as a transportation mode, in the population in general, and amongst women in particular. • Existence of bicycle-use policies at the municipal and central government level. • Willingness and capacity of the members of the government organizations, municipalities and the civil society to continue with the objectives of the project.		

Hierarchy of Objectives	Key Performance Indicators	Data Collection Strategy	Critical Assumptions
Output from each Component:	**Output Indicators:**	**Project reports:**	**(from Outputs to Objective)**
● Rehabilitate and improve the existing road infrastructure, with emphasis in segregated bus corridors and feeder bus roads. ● Enhance transport and environmental conditions by improving traffic management and safety, reducing air pollution. Help strengthening the Municipality of Lima, its planning, regulatory, administration and operation capacity of public transport provision for Lima and Callao. <u>Project Components:</u> *A. Infrastructure* ● Construction of segregated bus corridors and feeder bus roads. ● Improvement of wide avenues netword, road geometry at intersections and critical points. ● Provide larger and cleaner vehicles, reducing the old ones. ● Improvement of proper signals and road demarcation. ● Construction of bike paths feeding bus terminals, pedestrian facilities, bus stops and terminals	● Decrease average travel times and vehicle operating costs. ● Reduced accident rates. ● Reduction of air pollution and respiratory diseases through the implementation of pollution control measures within the project area. Setting up units responsible for management of the transportation system (for supervision, tax collection, payments) and traffic (police) in the newly created and operating corridors. ● 24 km. of bus corridors, 3 terminals, and bus stops. ● Signals and demarcation lines through the newly bus corridors.	● Analysis by PROTRANSPORTE Management Unit every six months, using regular reporting statistics of Government agencies, Project monitoring and evaluation system, and independent impact evaluations. ● Monitoring System of PROTRANSPORTE Management Unit, Executive Committee of the DMTU, and the World Bank Supervision.	● The timing of investments and reforms is carefully planned and executed. ● Transit fares compatible with the population level of income. ● Citizens participate actively in the project, assuming ownership, protect and care for the system. ● Provide adequate packages for restructuring of small and medium enterprises of current transport system. ● The existence of reliable and qualified private operators. ● The Project is completed in the next 3-year period. ● The existence of technical, financial and human resources to support the Program. ● The citizens are patient during the inconvenience of construction.

B. Transport and Environment Operations ● Rationalization of the space consumption, by the concession of the existing transportation routes. ● Environmental operations for monitoring air quality in the bus corridors. ● Social Participation programs in transport education.	● ● Fines or infraction for laws pertaining to traffic, transport and the environment.		● The management procedures and the institutional capability help to the execution of the Program. ● The operators accept the relocation of their work routes and the rationalization of the transport system.
C. Institutional Strengthening ● Implementation of the legal and institutional structure.	● Legal framework implemented	Project Management Reports	● Continuous political commitment to sustainable transport options.
● Provision of technical assistance, training programs and high quality development.	● Number of hours/person of technical assistance per year.		
● Unification of technical assistance, training programs and high quality development.	● PROTRANSPORTE and DMTU obtain institutional strengthening.		
● Institutional strengthening program on sustainable transport, targeting municipalities and institutions dealing with environmental issues and/or transport planning,	● 11 local governments and FONAM have strengthened their capacities (training of human resources, technical assistance and equipment received) ● 500 people among local authorities, civil servants, community leaders, civil society groups and general population are informed about sustainable transport options and their effect on air quality, GHG emissions and the environment in general		
D.. Reduction of the	● At least 350 aged and polluting public transport	● Report of the number of scrapping certificates	● Public opinion is favorable to the operation

public transport fleet oversupply achieved in an environmentally and socially acceptable way	vehicles retired by the 4th year of project implementation through the Guarantee Fund ● Compliance with the environmental guidelines for scrapping set in the operation manual ● Bus Retirement Pilot Project has systemized its technical and budget processes through a real life experiment on at least 100 vehicles ● Those displaced by the project and willing to participate in the mitigation plan have been retrained and have received technical and economic support to opt for new employments or new business outside the transport sector. ● 3,200 training and technical assistance vouchers supplied to displaced transportation workers. ● By the 4th year, 80 courses realized, 400 people have received technical training, 50 micro-enterprises were granted financial support through micro-credits	emitted ● Reports from the Guarantee Fund ● External consultancy reports on the environment friendliness of the bus scrapping process. ● Reports from SENATI regarding the Bus Retirement Pilot Project ● Monitoring reports on the social mitigation component	● Legislators support ● Public transport operators support ● Municipal governments political support ● Transport unions favorable to the project ● Those displaced by the beginning of the project are interested in the re-conversion proposals. ● The market supports the insertion of those displaced
E. Consolidation of the bikeways pilot project developed in Lima North Cone	Physical improvements and extension of the bikeways network ● 32.5 kms of bikeways rehabilitated in 12 months ● 6.1 kms of bikeways extension to connect the UNMSM and PUCP universities, built in 12 months Sustainability and attractiveness of the network	● Project reports ● Origin-Destination surveys ● Field evaluation ● Public opinion surveys ● Traffic Accidents Registers ● Reports of the financial entities in charge of the Plan Bici implementation ● ICR	● Favorable regulatory framework ● Municipal Districts commitment to bikeway maintenance ● Budget availability for maintenance at the municipal level ● Community awareness and interest ● Assignment of traffic police(wo)men (serenos) to bikeways safety

	• 38.6 kms. of bikeways with appropriate maintenance, security and cleaning. • Five “ciclomódulos” in operation, after 18 months Credits granted for bicycles-purchase in the targeted-population (Plan Bici) • 3 modules of credit suppliers in operation • Credits awarded for the purchase of bicycles and for small bike-related amount to at least a full rotation of the revolving fund (US$ 600,000) at the end of project implementation. Increased use of the bicycle in the target population of the project (schoolchildren, universities, local companies, women's groups) and in the general population • The number of trips in bicycle triples in the area of influence of the projects pilot in comparison to the base line • At least 2 “safe routes to schools” implemented at the end of the 4th year • At least 10 local companies support the use of bicycle, by providing infrastructure (bathrooms, lockers and bike parking facilities) in their premises for their workers • At least 1 university supports bicycle use by means of promotion activities and safe parking inside the campus • At least 2 women grass			

	root-organizations are involved in the project		

Hierarchy of Objectives	Key Performance Indicators	Data Collection Strategy	Critical Assumptions
Project Components / Sub-components:	**Inputs: (budget for each component)**	**Project reports:**	**(from Components to Outputs)**
WB-IDB loan Investments			
Infrastructure	**106,500,000**		
Institutional Strengthening	**5,300,000**		
(incl. Bus retirement Pilot Project)	**3,200,000**		
Social and Political Feasibility	**3,900,000**		
Technical and Environmental Studies	**5,400,000**		
Administrative Expenses	**1,600,000**		
Financial costs			
TOTAL IBRD-IDB loan	**US $ 126,000,000**		
GEF Grant Investments			
To support the reduction of the public transport fleet oversupply	Financial incentives for scrapping old and pollutant units (Revolving Fund): **US $1,000,000** Mitigation plans : - Training, technical assistance **US $ 350,000** - Promotion and organization of micro enterprises, provision of credits to small businesses **US $ 350,000** Scrapping Pilot Project **US $ 100,000**	Supervision report Audit reports, financial report, quarterly and annual progress reports, and Bank mid term review	• Implementation of Lima Bus Project • Favorable Public opinion to the operation of the project • Legislators support the operation • Collaboration of the transport stakeholders • Favorable municipal policies
To consolidate the bikeways pilot project developed in Lima North Cone	Physical improvements and extension of the bikeway network **US $ 2,750,000** To carry out maintenance of the bikeways during the first year **US $ 280,000** To build cycle-modules (see annex "Ciclomodulos") **US $ 50,000** Bicycle use promotion program **US $ 950,000**	Supervision report Audit reports, financial report, quarterly and annual progress reports, and Bank mid term review	Budget Assignment at the municipality level

	Bikeway safety audit **US $ 100,000** Bike parking facilities at Limabus stations **US $ 50,000** Micro credit program for bicycles acquisition and bicycle-related small businesses **US $ 0** (will use remaining funds from the previous WB loan but the strategy to revive this program was funded by PDF-B funds)		
To carry out an institutional strengthening program on sustainable transport, targeting municipalities and institutions dealing with environmental issues and/or transport planning	To develop the training programs and technical assistance for the officials of the central and local government agencies: **US $ 992,750** To develop awareness and communication programs addressed to the authorities and public in general **US $ 88,250** To develop and distribute project diffusion material **US $ 19,000** Replication Strategy **US $ 100,000**	Central and local government agencies and grass root organizations administrative reports	• Maintenance of political inter-institutional Agreement • Favorable Regulatory framework • Budget Assignment
TOTAL GEF **TOTAL**	**US $ 7,930,000** **US $ 133,930,000**		

Annex 2: Project Preparation Plan
PERU: LIMABUS TRANSPORT

A. Core Project Preparation Team

Name	Bank Unit	Borrower Agency	Role/Responsibility

B. Project Preparation Activities

Key Outputs	Prepared by	Responsibility	Cost	Appraisal Requirement	Target Date
Feasibility Studies					
Environment Assessment					
Social Assessment					
Institutional Assessment					
Project Implementation Plan (PIP)					

C. Specialist Tasks

Specialist Area	Level of analysis /Tools	Skills Needed	Key Output Document	Bank Review Target Date

Annex 3: Project Processing Timetable

PERU: LIMABUS TRANSPORT

Project ID: P035740		Key Dates	
Timetable step	Original	Plan	Actual
Concept Review	20-Sep-95	20-Sep-95	20-Sep-95
RVP/ROC/OC Sign-off	-	-	-
PID to Infoshop	04-Oct-98	04-Oct-98	04-Oct-98
ISDS to Infoshop	-	-	-
PID Received by Infoshop	-	-	17-Oct-95
ISDS Received by Infoshop	-	-	-
Begin Preparation	06-Jan-99	06-Jan-99	11-Dec-01
Decision Meeting	12-Mar-00	01-Oct-02	-
Auth Appr/Negs (in principle)	20-Mar-00	25-Oct-02	-
Updated PID to Infoshop	20-Mar-00	21-Jun-02	-
Updated ISDS to Infoshop	-	-	-
Updated PID Received by Infoshop	-	-	11-Aug-97
Updated ISDS Received by Infoshop	-	-	-
EA Received in Infoshop	-	-	-
Begin Appraisal	15-Apr-00	27-Jan-03	-
Send Notice/Issue Invt Neg	01-Jun-00	28-Feb-03	-
Begin Negotiations	15-Jun-00	17-Mar-03	-
Obtain Clearance of Docs	-	-	-
Bank Approval	22-Aug-00	17-Jun-04	-
Completion Note	-	-	-

Project ID: P074021		Key Dates	
Timetable step	Original	Plan	Actual

Additional Annex 5: Incremental Cost Analysis for the GEF Project
PERU: LIMABUS TRANSPORT

A Concept and Baseline

In accordance with OP 11, significant CO2 emission reductions can be achieved through the rationalization of the public transport system accompanied by a reduction in the public transport oversupply and a modal shift towards low or zero-emission modes of transportation.

A.1 Optimization of the public transport vehicles fleet size

Other Latin American cities plagued with the proliferation of public transport services have already tried to address the problem through bus retirement programs, which in their majority were camouflaged blanket subsidies to the operators, through the purchase of their units at above-the market prices. The Bogotá example is quite different in the sense that the bus retirement scheme was framed into a wider project of segregated busways, which allowed the rationalization of public transport services and made easier the implementation of a bus retirement program, of which bus concessionaires were made financially responsible (for each new articulated bus introduced in the system, bus concessionaires were asked to buy back and scrap x old vehicles to be awarded the concession).
The Municipality of Lima has decided to make an investment in improving urban transport through a segregated busway project for which IDB and WB support has been required. This project will finance 24 km of segregated busways which will be concessioned out to the private sector. As in Bogotá, the future concessionaires will be asked to buy and scrap a predefined number of old buses before being formally awarded the concession. The proposed GEF grant will support the whole scheme and contribute to the optimization of the public transport vehicles fleet size.
The GEF fleet size optimization component builds on the Bogotá experience but tries to maximize the number of buses eliminated through providing financial incentives which should entice bus concessionaires to go beyond the minimum number of buses to be scrapped required in the bidding documents. The additionality of the GEF component lies in the difference between the number of buses that would have been eliminated according to the minimum requirements (baseline) and the total number of buses which will be eventually eliminated. The additional environmental impact will stem from a reduction in GHG emissions from those additional buses to be scrapped thanks to the GEF-financed financial incentive scheme.

A.2 Promotion of Bike Use

As far as the NMT component is concerned, bike use in Lima is refrained by several factors which include the poor quality of the present bikeway maintenance, some flaws in the engineering design of those bikeways, traffic and personal safety problems, preconceived ideas against bike use, lack of bike-parking facilities, and the absence of a few missing links that affect the connectivity of the current network. The project, through a multi-pronged approach that will address every one of those aspects, is expected to raise substantially bicycle use and to leverage additional funds from the local municipalities to be dedicated to NMT, and to secure a NMT component currently envisaged in the framework of the World Bank loan. The additionality of the GEF component lies in the expected additional number of bike trips between the current stable numbers counted on the bikeways during the preparation phase and the final numbers at project closing. The additional environmental impact will stem from a reduction in bus trips and hence bus emissions due to a modal shift to NMT.

B Proposed GEF case

B.1 Bus Retirement

B.1.1 Emissions from the public transport sector in Lima

On the basis of the emissions factors per vehicle type for both CO2 and PM This analysis focuses on CO2 for its role in climate change and hence its prime importance in the eyes of the GEF, and PM because it is now considered as the most dangerous of all air pollutants in Lima. The same calculation can be carried out for any other pollutant, the fleet composition in Lima and the average number of km per bus and per month, the emissions that can be attributed to public transport are the following :

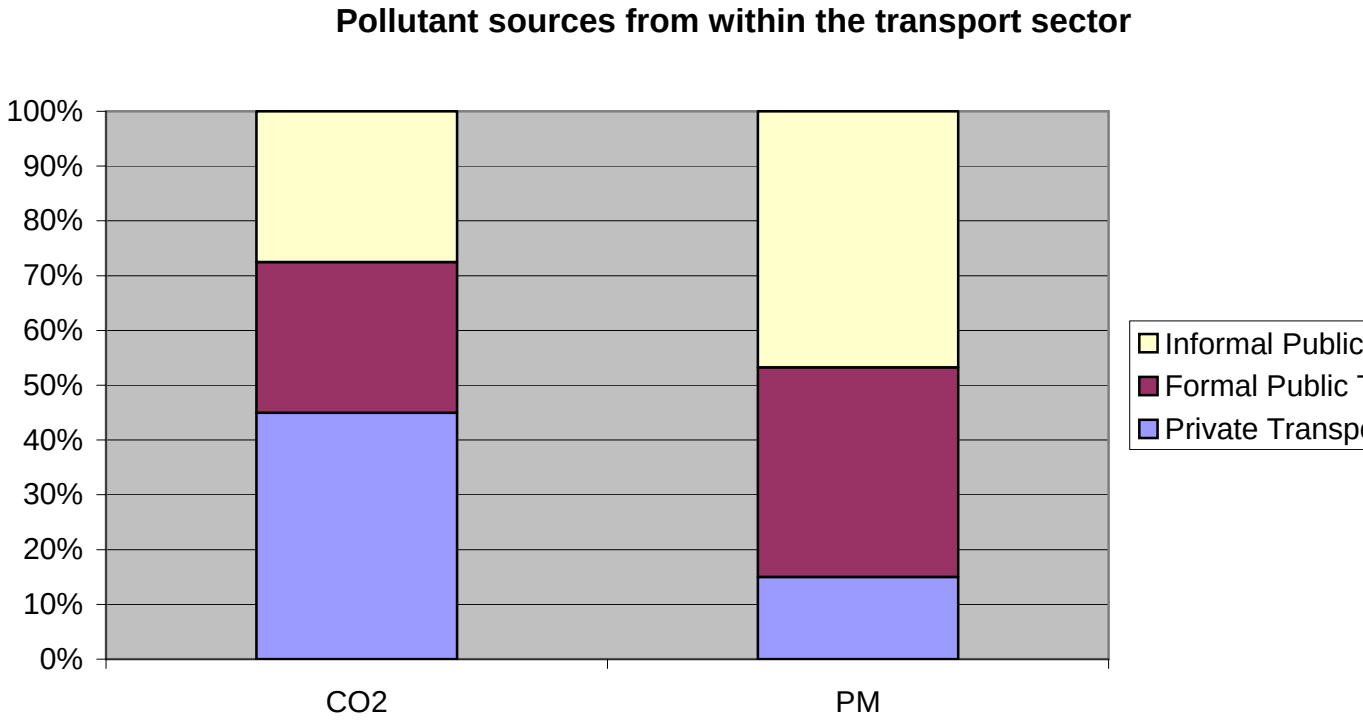
CO2

	number of vehicles	gCO_2 / veh-km	km / month	tCO_2/year
LDV	32,357	383	4,849	721,391
Microbus	11,577	604	4,904	411,420
Regular Bus	14,605	1,208	6,190	1,310,261
	58,539			2,443,071

PM10

	number of vehicles	gPM/ veh-km	km / month	tPM/year
LDV	32,357	1.23	4,849	2,316
Microbus	11,577	1.51	4,904	1,029
Regular Bus	14,605	2.01	6,190	2,181
	58,539			5,525

Around 55% of CO2 and nearly 85 % of PM emissions from the general transport sector come out from the public transport in Lima. From these values 50% of CO2 and 45% of PM are caused by the vehicles authorized by DMTU, as illustrated in the graph below :



B.1.2 Emissions reductions expected from the bus public transport fleet optimization component.

According to the financial analysis carried out regarding the capacity of the guarantee fund, the corresponding GEF component will trigger the additional removal of either 837 light-duty vehicles (camionetas rurales), 384 microbuses or 335 regular buses or a combination of the three types As long as C = ax + by + cz, C being the Guarantee Fund capacity, a the number of light duty vehicles to be scrapped, x the average market price of those light duty vehicles, b the number of microbuses to be scrapped, y the average market price of those microbuses, c the number of regular buses to be scrapped, z the average market price of those microbuses. This assumes the following market values :

- Light-duty vehicles : US$ 3,000
- Microbuses : 6,500
- Regular Buses : 7,500

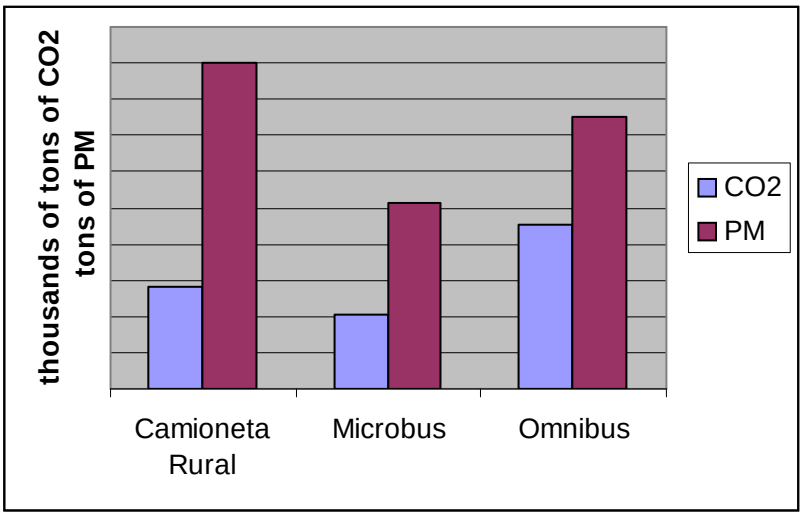
This raises several comments :

(i) First, how to maximize the amount of CO2 (PM10) emission reduction? This depends on the price, and the amount of CO2 (PM10) emitted per each type of vehicle. As far as reducing pollution is concerned, the optimal option is to focus on those vehicles which maximize the ratio : CO2 (PM10) emitted per year / market price.

The following table shows the results of this analysis :

	Market Price	gPM/ veh-km	km / month	kgPM/year	US$/kgPM
LDV	3,000	1.23	4,849	72	41.92
Microbus	6,500	1.51	4,904	89	73.15
Regular Bus	7,500	2.01	6,190	149	50.23
	Market Price	gCO_2 / veh-km	km / month	tCO_2/year	US$/ton$CO_2$
LDV	3,000	383	4,849	22	134.56
Microbus	6,500	604	4,904	36	182.90
Regular Bus	7,500	1,208	6,190	90	83.60

(ii) Second, maximizing CO2 emission reduction does not mean necessarily maximizing PM10 reduction, as shown in the graph below :



Regular buses emit twice as much CO2 as microbuses but only one third more PM. An explanation is that they usually belong to more formal companies (they represent a higher upfront investment) with better maintenance capacities, and hence a lower rate of PM emissions per liter of diesel. In the case of Lima, Regular Buses appear to be the best solution for CO2, and LDVs for PM.

(iii) Third, following up on the second point, GEF priorities might be conflicting with local priorities since PM is a much more worrying issue than climate change for Lima authorities due to its heavy health impacts. In addition to this, the bus retirement component aims at reducing congestion and from this perspective, the best option is to go for LDVs : in terms of urban road space use, it's more efficient to focus on the smaller vehicles since they are those who need most road space per passenger. At the same time, the LDV option is maximizing the negative social impacts because it would affect more drivers and bus owners. There is a very delicate and politically sensitive trade-off between those sometimes conflicting objectives (global pollution, local pollution, congestion, social impacts) that has to be carefully examined. At this stage, ProTransporte, the implementing agency of the Limabus project, has not decided yet which way to go but one option could be to let concessionaires choose between the different options, demanding that for each articulated bus introduced in the new system, they can either scrap 2 regular buses, or 3 microbuses or 6 LDVs. Then, actual market prices will orient their final

choice, very probably towards the oldest and hence most pollutant vehicles which are the cheapest ones.
(iv)The values calculated in the table above (US$/avoided ton of CO2) have to be handled with care. On one hand, the emissions avoided taken into account are those avoided on a yearly basis. Those buses are likely to keep operating still five or more years if the bus scrapping scheme doesn't materialize, which means that benefits per US$ can be five or more times higher. On top of that, those dollars are not "spent", they feed a revolving fund which will be set in such a way that it can be used over and over again. On the other hand, looking at the broad picture, the bus retirement component is viable only if the social impacts it will generate are taken care of through the social mitigation program. This adds to the total cost of the operation but will help those affected to find job opportunities outside the transport sector, i.e. it should avoid that those very same persons buy another vehicle and continue to provide public transport services with supernumerary old and polluting vehicles for years. To conclude, it is quite complicated to carry out in this context an analysis to check that GEF money is adequately spent and that the "climate-change related" rate of return of the operation (measured in US$ of GEF money / avoided ton of CO2) is in the range of what is expected or similar to the market price of CO2. The only dollars actually spent are those who finance the social impacts mitigation program and not those which feed the Credit Guarantee Fund.

Ultimately, the benefits on CO2 emissions and PM emissions expected from the GEF role are the following :

	Potential fleet reduction due to GEF (buses)	gCO2/veh.km	km/month	avoided tCO2/year
LDV	837	383	4,849	18,650
Microbus	384	604	4,904	13,656
Regular Bus	335	1,208	6,190	30,036
	Potential fleet reduction due to GEF (buses)	gPM/veh.km	km/month	avoided tPM/year
LDV	837	1.23	4,849	60
Microbus	384	1.51	4,904	34
Regular Bus	335	2.01	6,190	50

B.2 Promotion of Bike Use

B.2.1 Basic Assumptions :

The environmental assessment of the bikeway component is based on the following assumptions :

- Bicycle use will triple over the next four years along the bikeways that are part of the extension and rehabilitation program. This might sound overoptimistic but recent traffic counts showed that bike use is currently above 1995 levels event though those bikeways are in very bad shape and deemed dangerous. We believe that this increase that takes place in spite of the dire current bicycling conditions allows us to be quite optimistic regarding the impacts of the NMT component.

Bike use on the bikeways to be rehabilitated under the project is currently estimated to be around 3,600 trips per day. This environmental analysis assumes that an additional 7,200 bicycle trips will be

triggered by the GEF project.

- It is clear that most of future bikeway users will be diverted from buses and not from private cars (contrary to what is expected from the GEF Santiago Transport and Air Quality Project) since those bikeways are located in low-income neighborhood and that their use is often explained by economic reasons. In the calculations, it was assumed that all future bike users are former bus passengers. It might be that some will be diverted from cars (we in this case underestimate the impact), some others will be former pedestrians (in this case, we would overestimate the impact), but we assume that those numbers are quite small and would balance each other in the final results.
- We assumed that, if the average number of daily passengers per a given type of public transport vehicle is X, then once we attract X bus passengers on the bikeways, automatically one of those buses disappears from the market. This ignores the inertia of the system but seems to be a reasonable hypothesis on the medium term. Some may argue that this underestimates the impact since bus operators are making very marginal profits and hence that diverting a whole "busload" of passengers would affect many more buses than just one.

B.2.2 Emissions reductions expected from the Bike Use Promotion Component

The results are the following, for both CO2 and PM, on a yearly basis :

	share of total public transport passengers per vehicle type	Average number of daily trips (in passengers) per vehicle type	passengers of each vehicle type that would switch to NMT in 2006	number of vehicles that would have to stop operating	avoided ton of CO_2 emissions per year
LDV	43%	250	3118	12.5	278.1
Microbus	24%	380	1736	4.6	162.3
Regular Bus	33%	480	2346	4.9	438.4
			7200		**879**
	share of total public transport passengers per vehicle type	Average number of daily trips (in passengers) per vehicle type	passengers of each vehicle type that would switch to NMT in 2006	number of vehicles that would have to stop operating	avoided kg of PM emissions per year
LDV	43%	250	3118	12.5	231
Microbus	24%	380	1736	4.6	48
Regular Bus	33%	480	2346	4.9	59
			7200		**338**

C Some comments

In quantitative terms, it is tempting to compare the results yielded by the two main components, the bus retirement one and the NMT one. The benefits of the bikeways in terms of CO2 emission reductions are low compared to those of the bus retirement program but two caveats have to be made here : (i) first, the public transport fleet optimization component is made possible through the complementary infrastructure investments (IDB and WB loans + counterpart funds) which is a US$ 126 million project, and through the participation of the private operators who will have to finance the purchase of the old buses. This means that the benefits of the bus retirement cannot be attributed exclusively to the GEF component, even though it is the GEF money which will make possible the retirement of additional buses which otherwise would continue to circulate. (ii) second, the NMT project is expected to yield benefits probably more in the long and medium terms than in the short term, given that its success depends from a cultural change which cannot be achieved overnight. The long-term benefits have not been estimated here because they depend on so many factors that providing any estimate would be abusive from a scientific point of view.

To put it briefly, it might be deceiving to carry out a rapid cost-benefit analysis on both components and to compare the results per US$ spent.

D Incremental Costs

D.1 Caveat

A rigorous incremental costs analysis is quite a delicate exercise in the context of this project : since part of the grant will be refunded or redeployed (Credit Guarantee Funds, micro-credits), what is the real incremental cost of the project? Since some components do not have direct environmental impacts, such as the capacity building one, how to measure the GHG emission reductions they will trigger? What is the time period over which benefits are to be estimated? The following assumptions have been made to address this questions :

- The total incremental cost of the project is US$ 7.93 million, of which 1.0 is a credit guarantee fund and 0.35 will be used for micro-credits. It is worth mentioning here that depending on the exit strategy, these funds could be either refunded or redeployed to fund additional components which will generate additional GHG reductions, that were impossible to estimate here. The US$ 7.93 million include as well the capacity building component and the social mitigation plan, which are not per se directly responsible for GHG emissions reduction but which are considered as indispensable to the project sustainability and which are expected to pave the way for policies that will generate further GHG emissions in the long term.
- Therefore, no short-term emission reductions have been directly associated neither to the capacity building component nor to the social mitigation plan, even though those two components are essential to the feasibility and sustainability of the project, and hence to maintain CO2 reductions on a long-term basis.
- The annual benefits derived from the public transport fleet optimization component have been multiplied per five, under the assumption than on average those buses would have kept operating five more years without GEF intervention. This assumption might be conservative since it does not take into account the fact that some of the bus owners or drivers to be retrained under the social mitigation program will hopefully leave the transport sector, while they would probably have bought another old and polluting vehicle when the one they use now had “died” if the GEF had not offered them the possibility of working in another sector.

• The annual benefits of the NMT component have been multiplied by ten, without assuming a continuous increase in bike use but on the ground that NMT-related benefits have to been looked at on a much longer period since impacts are expected to be long-term. But this methodology might be overly conservative since it does not really take account of the long-term effects due to a cultural change vis-à-vis bike use and sustainable transport in general (but it seems to the team that any methodology trying to estimate the related long-term impacts would be quite vain and would lack any scientific basis. The monitoring process is expected to give an empirical answer to this problem. As a consequence, the estimated NMT related benefits represent between 3 and 6 % of the total estimated benefits.

D.2 Final Results.

Component	Baseline	Alternative	Incremental
Segregated Busways and Bus Retirement	- Building of the busways and feeder roads **US$ 105.5 M** (37 % municipal counterpart funds, 31.5% IDB, 31.5 % WB) - Social Feasibility and Studies **US$ 7.1 M** (37 % municipal counterpart funds, 31.5% IDB, 31.5 % WB) - Bidding docs demand bidders to scrap a predefined number of old buses. Private concessionaires expected to spend up to **US$ 4.75 M** on buying old buses and to invest overall in the range of **US$ 90 M** (terminals, workshops, depots and new buses) **US$ 112.6 M (apart from private sector)** **US$ 94.75 M (private sector)**	The bidding documents for the bus concessions include a "voluntary" bus retirement option on top of the minimum requirement. GEF funds feed a Credit Guarantee Fund to facilitate additional bus retirement along with a social mitigation plan for those affected by the bus retirement and a pilot bus retirement program to improve bus retirement procedures. The amount of the Fund has been calculated so that the number of buses to be scrapped could be increased by 50%, i.e. the private sector would put up to an **additional US$ 2.4 M** in this component. **US$ 114.3 M (apart from private sector)** **US$ 97.15 M (private sector)**	**Costs :** US$ 1.7 M (GEF funded) US$ 2.4 M (private sector funded) **US$ 4.1 M** **Benefits :** ▪ Up to 800 additional old public transport vehicles scrapped. ▪ Further reduction in congestion and in air pollution ▪ Additional GHG reduction of up to 30,000 tons per year ▪ Cleaner bus retirement procedures tested and monitored for Lima and Peru
Non-Motorized Transport	Business as usual, i.e no extension of the bikeway network and	▪ GEF funds allow for : rehabilitation of the existing bikeways (32.5 km)	**Costs :** US$ 4.180 M (GEF funded)

	poor maintenance of the existing bikeways. No attempt to trigger a cultural change vis-à-vis bike use	Network extension (6.1 km) Promotion campaign **US$ 4.180 M** (GEF) ▪ The Lima Municipality will restart the Plan Bici (**US$ 600,000**). ▪ Municipal districts finance bikeways maintenance (**US$ 750,000** during project life) ▪ Further extension through **US$1M** assigned to bikeways through the WB loan **US$ 6.530 M**	US$ 1.350 M (public funds) US$ 1 M (WB) **US$ 6.530 M** **Benefits :** ▪ Cultural change vis-à-vis bike use ▪ Groundwork laid for further extensions of the network ▪ Additional GHG reduction of up to 1,000 tons per year, to increase over time
Institutional Strengthening	**5.3 US$ M** (37 % municipal counterpart funds, 31.5% IDB, 31.5 % WB)	GEF funds amplifies the scope of the institutional strengthening component towards sustainable transport and NMT **6.4 US$ M**	**Costs :** **1.1 US$ M** (GEF) **Benefits :** Improved technical capacities at the municipal and national entities regarding sustainable transport. More sensibility to global and local environmental issues
Administrative Costs, Monitoring and Replication	**5.4 US$ M** (37 % municipal counterpart funds, 31.5% IDB, 31.5 % WB)	GEF funds finance the administrative costs related to the GEF-funded incremental components and co-finance the monitoring costs of the overall project. **6.35 US$ M**	**Costs :** **0.95 US$ M** (GEF) **Benefits :** The overall project is carefully monitored from a GHG perspective.
Financial Costs	**1.6 US$ M** (37 % municipal counterpart funds, 31.5% IDB, 31.5 % WB)		
TOTAL	**219.65 US$ M**	**232.33 US$ M**	**12.68 US$ M**
GEF Grant requested			**7.93 US$ M**

NB : the expected contribution of the private sector appears only in this incremental cost analysis and is not included in the total project costs elsewhere in the document. This contribution depends on several factors which are not yet determined and the numbers provided here are a reasonable estimate, which will be fine-tuned prior to appraisal.

Additional Annex 6: STAP reviewer comments
PERU: LIMABUS TRANSPORT

Response to External Reviews

a) **Response to Comments from the STAP reviewer**, Mark A.Delucci are in black, answers from the team are in red

The format of my review
I have submitted to the project team leader a copy of the PCD (dated February 6, 2003) and annexes with my detailed comments inserted throughout the text in red print. This document summarizes the major in-text comments. (More minor in-text comments are not summarized here but addressed in the revised version.)

General comment
Most of the proposed components of this project are adequately described (the annexes have good detail), appropriate, and reasonably likely to be at least partially effective. However, I do have some general concerns:

• There ought to be more extensive background information on transit, air quality, and GHG emissions. (I have made specific comments in the text of the PCD)
The merging of the two PCDs, the GEF one and the loan one, addresses this issue. Several charts dealing with air quality, ambient concentrations and population exposure have been added.
• Some material is repeated in several places; this makes it unnecessarily difficult to piece everything together. (However, I have noticed this problem in every GEF proposal I have reviewed, so it may be that the problem lies with the format required by the GEF.)

• The cycling-infrastructure component is not likely to generate large reductions in GHG emissions or air quality, although it may be cost effective per unit of pollutant abated.
We agree on the fact that the volume of emission reductions expected in the short term from the NMT component is not large. On the other hand, we do believe that Lima is he right place to try to trigger a cultural change vis-à-vis bicycle use (it is flat, it is neither hot nor cold, it does not rain, the new mayor is willing to push the bike agenda, and bike use is low but growing). We agree that this change may take quite a bit of time but the GEF is here to remove barriers on the way of sustainable transport and its intervention in this specific case is hoped to unfetter a gradual shift to bike use that might end up being substantial in the long run. It is worth a try.
• The issue of the “informal” (unlicensed) transit sector is difficult, and requires more thought.
This issue has been extensively discussed during project preparation and will be further discussed between the PCD and the PAD levels, in coordination with the loan preparation. The Municipality of Lima will be asked to send the WB a policy letter to define their strategy vis-à-vis urban transport in general and its informal part in particular. This letter will outline the proposed urban transport sector reforms and will be required before appraisal. It will be discussed at length with the Municipality. Some more thoughts about how to deal with the unlicensed transit sector are displayed in the main text (see “Key Reforms to be sought” and “Sustainability and Risks”).

Summary of main comments in the text

PCD, A.2.1.

You should express indicators as measures of the extent to which project objectives are attained. What you have written actually are desired outcomes, not indicators. Instead of saying “Increase in the mobility..,” which is a desired outcome, say something like “the mobility of the poorest people as indicated by access to employment...,” which is an indicator. Also, the indicators ideally should be measurable. Thus, your indicators might be something like:

• The mobility of the poorest people, as measured by access to employment.
(You need something more concrete here.)

<I am not sure what you intend to measure or accomplish with the second and third “indicators”. Do you propose to gauge the performance of government in efforts to improve public transit and reduce air pollution? If so, how specifically will you define and gauge this performance? >

• CO2 emissions (or lifecycle GHG emissions) from the transport sector compared with the baseline.
(You should measure lifecycle and not just end-use CO2 emissions; also, you should consider greenhouse-gases (GHGs) other than CO2; finally, you should define your baseline clearly.)

• Ambient urban air quality in the areas served by the project. (Name the pollutants, and the way in which they are measured, if possible)

You may want to list intermediate indices, such as modal shares of passenger-km (because one intermediate objective is to reduce veh-km of travel).

PCD, A.2.2
Again, express these as indicators, not as objectives:

• Some measure of the operation of the public transit fleet in Lima <incidentally, it is not clear at this point why it is desirable to “reduce” the public transit fleet; I gather that it has something to do with “oversupply,” but this should be expressed more clearly here, even in summary form>
• Indices of reintegration...
• Indices of bicycle use <the third, fourth, and fifth indices should be collapsed into one or one set of bicycling indices>
<I don’t understand your last one>
These comments have been addressed in the main text, where a set of quantitative indicators (which were so far only mentioned in the annexes) has been added. Some of the indicators suggested by the STAP reviewer are part of the loan indicators and noa appear in the updated version of the PCD.

I should say that at this point I am a bit leery of the emphasis on promoting bicycling as GHG-reduction strategy. The experience worldwide is that as people get wealthier, they stop riding bicycles and start driving cars. The result is that in the industrialized countries of the world, promoting bicycling will not significantly reduce urban air pollution or emissions of greenhouse gases.
It might sound ambitious to replicate what is currently happening in the Netherlands or in Denmark, but the very high modal share of the bicycle in those countries (up to 40 % of work-related trips in some urban areas) shows that yes, NMT might significantly reduce air pollution and GHG emissions.
Obviously, it can be only one part of a more global sustainable transport agenda but it will play a role. “I am a bit leery” of hearing that Denmark is such a special place. Why not trying to do the same in other countries? Closer to Peru, in Bogotá, bike use has been steadily increasing and reaches now 4% of all

trips, which is quite encouraging. The cultural change there is in progress since up to a third of the population rides their bikes on Sundays when come city streets are closed to motorized traffic. Why should it not work in Lima?

This of course does not mean that it is undesirable to promote bicycling, which is socially desirable for a number of reasons. The point is that when you rank strategies by their total impact on air pollution or climate change, bicycling usually is far down on the list. On the other hand, the cost-effectiveness ($/ton-pollution-abated) of cycling strategies may be good, even if the total tonnage abated is low.

PCD, B.3.1.1
I don't think we have yet had a single, clear statement of the problem, although bits and pieces can be found in several places in the document. I gather that the overall statement would be something like this:

Privatization and deregulation of urban mass transit in the early 1990s led to a proliferation of service providers. To save costs, many of these providers bought old, relatively small vehicles. Transit capacity factors dropped, and congestion and pollution increased. To address this, the government undertook the Lima Urban Transport Project, which among other things will create dedicated express bus corridors. These corridors will have new, clean, efficient, high-capacity buses operating on exclusive right of ways, which should help reduce congestion and pollution. However, even with this project, there still will be an inefficient oversupply of transit service in Lima. If those who supply the excess transit services could be induced to retire their vehicles, congestion and air pollution would be mitigated. Thus, this project proposes to provide financial incentives for early scrappage of urban transit vehicles. Because people will not retire their vehicles if they cannot find alternative employment, the financial incentive must include assistance in getting new work as well as actual monetary compensation for bus retirement.
We fully agree with this redaction. The PCD format does not allow for such a clear statement spelt out in one piece since "main sector issues", "strategic choices" to address them and "Project Description" are under different headings.

PCD, C.1.1
OK. This is the most concrete and reasonable of the project components. The third subpart here (testing bus retirement methods) is especially interesting. You should elaborate on this a bit more here (all you need to do is pull some of the material from Annex and put it here). Also, you should explain here that the proposed "financial incentives" are GEF-guaranteed (and hence-low cost) loans to buy and retire old vehicles. (Again, pull some of the material from the Annex.) You need to explain this here so that the discussion of alternatives a little later makes sense.
This was addressed in the last PCD version, even though a lot of information is still to be found in the annex since we have length constraints for our documents…

PCD, C.1.3
This is still rather vague, here. However, I see that the Annex does have more details. Much of the Annex material should be brought to the front here. (Note: material in the Annex should be secondary detail, and not critical for general understanding. For example, the details on the bicycle construction projects and bicycle loan funding are secondary, and not critical to our general understanding of the bicycling component. Hence, they are appropriate in the Annex. However, the information in the Annex on "institutional strengthening" is not detail, but rather an important elaboration of the main idea, and hence belongs in the main text.)
Idem
I would recast this as follows. It seems that what you really want to do is

i) educate public sector folks about environmental problems and solutions;
ii) train people to be able to collect and analyze data and implement programs; and
iii) supply the equipment necessary to do this.
This rewording has been included in the final doc.

PCD, C.1.4
This is OK, but could be focused a little more on finding out specific things. I believe that the overall objective is to be able to measure the environmental, economic, and transport impacts of the various project components. To do this, you should establish clearly just what you want to measure. You do have a general list here, but of course more thought must be given to this before one goes out and starts to collect the data. (Presumably, you will want to measure things related to the indices that you establish as yardsticks for evaluating the project.) You then will have to decide how best to measure things (before/after, cross-sectional, retrospective surveys...). I presume that all of this will be fleshed out more clearly.
A 122-page evaluation and monitoring manual was realized during the preparation phase and describe in details which data will be collected and in which way. This document is available on request.

PCD, C.2.1
<The following comments are from my response to Pierre's e-mail of 2/20, in which he proposes licensing limitations and vehicle standards instead of a vehicle ban>

I agree that banning a whole class of vehicles is too broad, heavy-handed, and politically infeasible. It is better instead to address specific problems with specific measures. For example, to address emissions, one should set and enforce vehicle emission standards, fuel quality standards, and inspection and maintenance requirements. To address petroleum use and related climate issues, one should promote the use of alternative fuels, set fuel economy standards, provide incentives for efficient vehicles, and so on. To address oversupply, under-capacity utilization, and congestion, one can limit vehicle registrations and transit-vehicle licenses, set parking and road tolls, and so on. Since these are the sorts of things you are proposing instead of a broad vehicle van, I think you are on the right track. After all, there is no reason to prohibit someone from buying an imported second-hand vehicle if it meets all of the environmental and safety standards you set, and you already are controlling the total number of licenses or vehicles.

The question of what to do about "informal" (by which I presume you mean unlicensed and unregulated) transit service providers is tougher, and also outside my area of expertise. Politicians and regulators face a tough choice: give the informal sector a de facto exemption from certain emissions, fuel, safety, and operations standards, in order for them to be able to provide the cheapest possible service, but at the expense of the environment and traffic flow, or else decide that it is worth the political and economic cost to protect the environment and reduce congestion by setting and enforcing various standards on the informal sector. There is no free ride here. Environmental standards, usage restrictions, and the like will have an economic cost, and at the margin will hurt some service providers. In my view, though, it is likely that the marginal social economic benefits, in terms of reduced pollution, accidents, and congestion, will exceed the marginal costs, and hence make the actions worthwhile. The problem, as always, is that the costs are clear and large and real to a few people, whereas the benefits are uncertain, non-monetary and diffused over many people. The few clearly hurt will complain more loudly than the many modest uncertain beneficiaries will cheer.

BTW, Bob Cervero at U. C. Berkeley has done research on the informal transit sector in some countries. You might want to contact him and see if has any papers or reports of interest. His e-mail address is:

robertc@uclink4.berkeley.edu

The last version of the PCD includes a new strategy vis-à-vis this issue, that integrates both the STAP reviewer comments and the outcome of the discussion held in this regard during the PCD review meeting.

PCD, E.6.2
If you do let existing formal service providers "migrate" to the informal sector, you should do everything possible to mitigate the negative impacts of that migration (unless of course you decide that social benefits of mitigation are not worth the cost, per my remarks elsewhere): set and enforce environmental and safety standards, and, more problematically, try to control pick-up, drop-off, and use of certain streets and areas.

ALSO: if the figures above do *not* include the informal service sector (they do), and if this sector is operating in routes affected by the new system, then you ought to account for the likelihood that there will be significant migration *in addition* to that you anticipate from the affected formal sector. I think that you might want to have a clearer idea of the current extent of the informal service sector and its likely reaction to the new systems.

PCD, E.6.2
I am not convinced of this. I get the impression that the plan is something like 1/3 retraining, 1/3 letting people move to the informal sector, and 1/3 "special attention". It is not clear to me that this mix will result in "all affected populations" being "adequately dealt with," because retraining might be only partially successful, migration to the informal sector will create additional hardships for everyone (e.g., increased competition for scarce passengers in already overcrowded corridors will reduce already low capacity factors), and "special attention" is vague.
We apologize if the initial text was not clear enough : the plan is to deal with all those that are going to be affected by the bus retirement program, i.e. the bus owners and those who make a living out of the old buses to be sold and retired. Bus owners will pocket the price paid for their buses and all those impacted will be given access to the retraining program. In addition to this, those interested and who will submit a sound request for funds will benefit from micro-credits.

PCD, F.2.2
OK, but I do have one comment. I do not believe that the experiment in wealthy Santiago neighborhoods will convince middle-or upper-income people to use bicycles as a transport mode. Wealthy people do not avoid bicycling because they have some wrong-headed impression that only poor people bicycle; they avoid bicycling because they can afford to pay for more convenient options. Wealthy people use bicycles for recreation or out of environmental sensibility; poor people use bicycling for transport because they are poor. Providing wealthy people nice places to cycle will induce more of them to recreate (and induce a few of them to cycle for environmental reasons), but it will not fundamentally alter the economic realities that underlie their preferences for cars over bicycles. (Moreover, as passenger cars become cleaner and cleaner, the environmental reasons for cycling diminish.)
This question is about Santiago but nevertheless, the team would like to respond that some don't use bicycle because they have not realized that actually on short trips in urban areas, using a bicycle can be more convenient than any other mode of transport : this was demonstrated by an interesting phenomenon that took place in Paris, France, during the 1995 transit workers strikes that paralyzed the transport system and clogged the streets as many had no other alternative than using their cars instead of public transport. Some resorted to bicycles. And some of these eventually continued to use their bicycles even when the strikes came to a stop because this very peculiar situation allowed them to realize that bikes are more convenient than any other mode of transport in some circumstances, even though many just cannot imagine it can be a reasonable option. Hence a sustainable rise in bike use that proves that the most convenient option is not always identified as such. And in cities like Santiago, where car ownership

keeps growing, car is getting less and less convenient and bikes are expected to be more and more competitive, even out of any environmental consideration. So it might be tough to achieve something similar in Santiago, but since the GEF has already decided to support some NMT projects, then the team thinks that cities like Santiago and Lima are, for different reasons, interesting places to have a try at it.

PCD, F.3.1, Critical Risks

Yes. I've commented on this in several places. Here, I'll add my non-professional opinion, which is that you should not provide direct formal assistance to those in the informal sector.

The Bank has a no-harm policy which tries to address the needs of those displaced, for example in resettlement issues, even if they illegally settled where they are displaced from. The same policy applies to informal bus operators, even though the team acknowledge the difficulties linked to dealing with them.

First, by definition, it will be difficult to identify all of the informal operators. OK.

Second, I cannot see how the loan-for-retirement program can work in this sector, so I presume you are talking about retraining. Yes, the loan-for-retirement program would benefit only the Limabus concessionaires to help them buy the old buses they need to retire to comply with the bidding requirements. But those they would buy the old buses from would benefit from the retraining program and would get access to micro-credits if so they wish. But (third), from an ethical standpoint, the government has no obligation to provide formal re-employment training to those whose illegal activities are made more difficult by the new transport system. That is a tough one : again, the World Bank safeguard policies are such that even those who operate illegally will benefit from the program, as long they sell their old polluting units in the framework of the public transport fleet optimization component.

Indeed, the government's main obligation in this case lies the other way: to protect the public from the harmful effects (pollution, congestion, accidents) of those who are providing transit service illegally. However, the government *does* have an obligation to try to alleviate the *general* economic hardships that essentially force some people into what amount to black-market activities. Put another way the government should address very seriously the underlying economic conditions, not the immediate consequences of this particular program on a small segment of the overall black market. Yes, but this lies outside of the scope of this project.

Annex II, A.2

OK, so the GHG-emissions reduction benefit arises from the substitution of bicycling for bus trips. But one has to be careful here. The "new" bicycling trips could: 1) be new travel altogether, 2) replace walking, 3) replace driving or carpooling, or 4) replace public transit trips. This is mentioned in the Incremental Costs analysis.

The GHG implications of each are different. Moreover, the impacts of replacing bus trips depends on the relationship between incremental changes in ridership and the size, composition, and scheduling of the bus fleet (because GHG emissions depend mainly on bus veh-km, independent of the number of persons per bus). One really has to model demand for travel and the operation of the bus system to determine the net change in VKT by type of vehicle. See corresponding annex for more detailed answers to these questions.

Annex II, B.1.

It appears that you are estimating end-use emissions of CO2. You should estimate lifecycle emissions of all GHGs, expressed in CO2 equivalents.

Right, the team looked only at "pure" CO2 emissions but CO2-equivalent emission factors are only slightly higher than "pure" CO2 emission factors, according to the numbers displayed in the document mentioned below. Moreover, whereas CO2 emissions are directly related to fuel use and fuel type and hence CO2 emission estimates are pretty reliable, other-than-CO2 GHG emissions are much more difficult to grasp and depend on many other factors such as the age and shape of the vehicle. Including

them in the calculation is clearly desirable from an academic point of view, but this would instill a higher level of incertitude. To end with, not taking into consideration the other GHG gases actually led to an under-estimation of the benefits, which means that actual benefits are just expected to be higher than those displayed in the incremental costs analysis. This being said, during the monitoring process of the project, it is planned to include all GHG gases in the estimates, and of course as well local pollutants.

For an example of this done for sustainable transportation scenarios in Chile, see:

R. O'Ryan, D. Sperling, M. Delucchi, and T. Turrentine, *Transportation in Developing Countries: Greenhouse Gas Scenarios for Chile*, Pew Center for Global Climate Change, Arlington, Virginia, August (2002).

IMPORTANT METHODOLOGICAL COMMENT: The correct way to do the CO2 emissions reduction calculation is: 1) Model the entire transportation system, and even all energy-using systems affected by changes in the transportation system; 2) specify the model for a base-case (without the project and question), and for the project case being examined; 3) run the model for both cases; 4) determine the total travel by mode (and even total use of energy-intensive activities related to transportation) for each case; These 4 steps will be taken in the modeling of the whole project, i.e. Limabus and the overall bus retirement. In the case of the GEF-funded part of the public transport fleet optimization component, whose consequences are relatively straightforward, the team believes that a simpler methodology, as the one used in the Incremental Cost Annex, gives a good estimate of the impacts and that going for the full-scale modeling would not bring much more accurateness.

5) attach lifecycle CO2-equivalent GHG emission factors to travel by mode; and 6) take the difference in CO2-equivalent emissions between the base-case and the project case. This difference is the change in CO2-equivalent emissions attributed to the project.
The team acknowledge that only end-use emissions have been looked at and not lifecycle emissions but we think that going the full cycle in this specific case where no obvious leakage can be identified (contrary for example to fuel switch projects) would not make such a difference. But this issue will be looked at during the monitoring process.

It appears that you simply have assumed that the net change in travel between the two cases can be represented by the travel of the retired buses. Given the complicated mode-switching and travel-generating effects of any major transportation investment (again, this is fully true but applies to the whole project, i.e. including the segregated busways which yes do have an effect on mode-switching and travel generation. But the incremental cost analysis examines only the impact of the specific GEF-funded bus retirement program, which will not revolutionize travel patterns, especially since it happens in a context of oversupply : removing some of these too many buses will have an impact on air quality and GHG emissions but is not expected to turn the public transport supply into a scarce good and hence to change travel behaviors). I cannot see how this can be the case exactly (although it may fortuitously turn out to be close). Moreover, the technological characteristics of the fleet might be different in the two cases. Finally, as I mentioned above, you must estimate lifecycle CO2-equivalent of all GHGs, not just end-use CO2.

I don't know what exactly the GEF wants, but here is one common way to do the cost effectiveness calculation (OK, but this is a different indicator than the incremental cost analysis required by GEF) : The quantity to be estimated is $/ton. The "tons" are annual CO2-equivalent lifecycle GHG emissions, estimated on the basis of the difference between the equilibrium travel situation in a base case vs. the project case, as outlined above. The "$" of the numerator is annualized net public costs, where "annualized" means amortized capital costs plus annual operating costs, "net" means the difference

between the base case and the project case, and public refers to public-sector (not private) investment and operating costs. These would be real investment and operating costs, not just transfers. Thus, none of the loan program costs would be included, assuming a near-zero default rate and that the administrative costs of the loan are covered in the interest rate. The cost of buying new buses now rather than buying old buses later *would* be included.

Annex IV, 1.1.1.
Here at last is the real benefit of the loan program: a lower interest rate (essentially, the elimination of the "risk premium") and no collateral requirements, because the GEF is guaranteeing the loans. After all, it would be possible to simply require the bus retirement of a certain amount of vehicles, and let the bidders decide how best to finance that, but then the bidders would have access only to relatively high-cost loans. Your proposal in essence makes low-cost loans available. This is important, and should be highlighted in the main text. It is done now.

b) **Response to GEFSEC Comments at Work Program Entry**

Page 5, Justification of the guarantee fund : the public transport fleet optimization component is part of the overall public transport improvement program, since it aims at contributing to resolve the oversupply problem which through generating congestion seriously undermined public transport activities since buses end up slowing down one another. The project concept note and PDF-B proposal envisioned the need to reduce the vehicle fleet as an integral part of the proposed strategy from the outset. The need to reduce the over- supply of vehicles was stated as a key objective of project reforms and the concept document states the "project will provide financial and technical incentives to replace old and heavily polluting buses by less polluting units." The reference to a studies in para. 36 of the concept note (Environmental impact of bus corridors in terms of GHG emissions; and help retiring the old polluting buses (provide the resources to design an incentive scheme for bus retirement old buses..) refers to the GEF preparation activities and not to a project activity. Similarly the PDF-B proposal clearly placed the financing of this study within the PDF-B as a project preparation activity for this component (Annex II cost table for PDF-B list the funding for this study). We believe that it is very late at this point to question the eligibility of this activity under OP11. Based on our discussions of Monday March 24th – we will revisit the size of the guarantee fund (and the corresponding social program) and work on the text around its description to further clarify its unique importance it has within the context of a sustainable public transport investment program in Lima..

Justification of the social component : The social program will be co-financed by the GEF and the World Bank loan, in proportions corresponding to their respective roles. The GEF will NOT cover the WB-related social impacts. Then this component is seen as necessary to (i) increase the political acceptability of the project and (ii) to try to minimize leakages, i.e. to help affected transit workers to find job alternatives outside of the transport sector, so that they do not try to reintegrate the sector as soon as their bus is retired and consequently cancel the expected benefits.

Justification of the pilot bus retirement exercise : We agree that there should be some cost-sharing on this component – and should be cost shared between the Grant and the Loan.

See page 47 from the PDS documents : "the value-added of the GEF intervention in this process is crucial : assuming that the bus retirement program will take place anyway, since local authorities are

willing to follow Bogotá's example, where the implementation of the first phase of Transmilenio provided an opportunity to start tackling the oversupply issue, the GEF will play at least three different key roles : (i) it will help make the most out of this opportunity offered by Limabus and increase the sustainability of the investment by maximizing the reduction in the public transport oversupply, (ii) it will make sure the bus retirement program is handled properly from an environmental point of view and will lay the groundwork for still cleaner bus retirement process and (iii) last but not least, it will, in coordination with the loan, address the social problems that the process might unfetter, through programs of reinsertion in the job market, without which the sustainability of the bus fleet optimization process would be seriously jeopardized.

Page 6 and onwards, NMT component

(page 6):

2. Bikeways: With GEF funds of $3.48 m, the project would rehabilitate 31 km of bikeways, build 5 km of additional bikeways, and undertake bike promotion activities. With WB loan of $1 m, the project would build more bikeways. Please clarify how many km of bikeways would be built by the World Bank loan of $1 m?

Reply:

As a result of our (including the bikeway expert from Bogotá) supervision missions over the last two months, the total bikeway length was reduced downwards (e.g. Av. Angélica Gamarra was deleted, and also a branch of the new Av. Universitaria). Maybe this is the reason why the Detailed Project Description of the PCD refers to 26.5 km of existing bikeways to be rehabilitated, and 4.1 km of the bikeway extension, rather than the 31 km and 5 km mentioned elsewhere. In the following, the team takes the 26.5 km and 4.1 km as correct.

This needs a further clarification: The existing bikeways on Av Universitaria and Av Colonial are on the two sides of these wide Avenues, whereas the existing bikeway along Av Tomás Valle and most of the new bikeway extension along Av. Universitaria consists of a single bikeway in the median or on one side of those Avenues. To summarize, the approximate length of the bikeways would be as follows:

	km of Avenue	# of reserved bike pavements	km of bikeways pavements
Existing			
Universitaria	10.4	2	20.8
Colonial	10.8	2	21.6
Tomás Valle	5.3	1	5.3
total	*26.5*		*47.7*
New			
Universitaria	4.1	1	4.1

The WB/IDB loan expects to fund some bikeways as feeders to the busway. These bikeways -- as yet undefined -- would be part and parcel of the improvement of feeder roads near the busway terminals. As of March 7, the US 1 million estimate provided by ProTransporte is indicative only.

(page 7): In Annex 1, Project Design Summary, there is reference to construction of 95 km of bikeways. Are these additional to the 5 km of additional bikeways that will be built with GEF grants? Who is paying for these 95 km?

Reply: We can't explain this 95 km number (unfortunate cut-and-paste when merging the two PCDs?). The (yet undefined) bikeways of the WB/IDB loan would hardly exceed 10 km. Other than the GEF and

WB/IDB projects, there are currently no plans to build more bikeways in Lima.

(page 7):
The logframe matrix also mentions that 95 km of bikeways would be constructed. Again, is the Bank/IDB loan doing this?
Reply: see above

(page 7): Is the per km cost of rehabilitation/construction of bikeways consistent with previous GEF financed bikeway projects?
Reply:

As a result of the March 3-7 mission, the total construction cost was revised downwards from $2.5 to $2.2 million. (At the same time, the new estimated cost for the promotional strategy had to be increased from $0.65 to $0.95 million.)
Unfortunately we do not have (here in Chile) the latest cost details prepared by the consultants. Assuming $140,000 per km of new bikeway construction, the 4.1 km of new bikeways would cost $574,000. The improvement of the 47.7 km of existing bike pavements would thus average $34,000/km.

(page 7): Also, it is mentioned that in 1996 (or 1994?) the World Bank has financed 46 km bikeways in Lima. To date, there has been a low level of use of these bikeways. The proposed project will aim at resolving the problems identified in the context of this previous World Bank initiative. These problems are mainly linked to traffic and personal safety, low quality of engineering design, lack of information and communication. This raises two questions:

1. Why is there a need for a GEF grant to finance bikeways in Lima if such a project can be financed directly by World bank funds as was done in 1994 (or 1996?) ? What is the justification for GEF intervention now?
2. What has been learned from constructing and operating these lanes - other than the need for a promotional strategy as mentioned? What specific barriers have been identified? And how does the proposed GEF project incorporate these Lima-specific lessons and address these barriers?

Reply:

1994 - approval of the loan which included pilot non-motorized transport project. 1996 - construction of bikeways financed under that loan
Another reason why bicycle use increased only moderately after the 1996 project was the absence of a promotional strategy to change the poor image of non-motorized transport, which is perhaps the barrier inhibiting a more bicycle-friendly culture.
Re: 1. The new project focuses on public transport and the implementation of segregated busways -- the proposed bikeways will be part of feeder roads to busway. The new project would not deal with the bikeways of the 1996 pilot program because (a) they serve a different area from the busway, and (b) as the new loan is to the city of Lima, it could not improve the bikeway extensions carried out by the city of Callao. Upgrading the 1996 pilot bikeways now (rather than later, or never) is timely as it coincides with the WB/IDB loan and the renewed emphasis on NMT of the new city administration, as evidenced by the recent re-establishment of its NMT Program office.
Re: 2. Besides the need for a promotional strategy, it was learned that purely functional bikeway design without attention to visual quality restricts their attractiveness -- hence the ciclomódulos and urbanistic design aspects of the bikeway improvements. In addition, several minor errors were made in the original designs, which render the existing bikeways unsafe or

uncomfortable for cyclists -- hence the numerous spot improvements contained in the proposed bikeway improvements (e.g. speed ramps to slow down right turns by motor traffic, introduction of islands for waiting bus passengers, combination of bikeway with sidewalk where space is limited, etc)

(page 8): Also, what portion of the $3.48 m being used for promotion of bikeways? Please provide a budget for the bike component itemized by sub-component.

Reply:

The cost breakdown (in US$) is as follows:

Bikeway construction	2,500,000
Bikeway maintenance	280,000
Ciclomódulos	50,000
Promotional strategy	650,000
Total	**3,480,000**

As indicated above, the March 3-7 mission concluded that the promotional strategy requires $300,000 in additional funds, offsetting the "savings" of the same amount in construction costs

(page 9): Also, local municipalities are budgeting funds for the maintenance of the bikeways that would be rehabilitated/constructed. However, the brief mentions that counterpart funds from the municipalities to maintain the bikeways have not been identified, yet. Currently a campaign is underway to convince District mayors to do so.

Reply:

This is correct, and the initial responses from the District Mayors have been positive. These will be confirmed in formal letters to FONAM, in which the Districts will commit themselves to bikeway maintenance and control (similar letters have been signed by Mayors of the three Comunas participating in the parallel GEF project in Santiago.)

There is also a verbal (so far) commitment from the Executive Director of the Metropolitan Non-Motorized Transport Program, which was recently re-established by the metropolitan municipality of Lima. DMTU (Dirección Municipal de Transporte Urbano) has just designed a routine maintenance plan for the bikeways. There are as well verbal commitments from the Municipalidad Provincial del Callao, FINVER (Fondo de Inversiones de la Municipalidad del Callao) and Gobierno Regional del Callao. Through the public programs called “A trabajar Urbano”, designed to provide employment through labor intensive works, at least part of the maintenance will be carried out. It has recently been confirmed that a budget of $170,000 has been allocated to the Lima NMT Program office this calendar year due to the efforts and advocacy of the Mayor of Lima.

(page 9):

How much municipal funding is being expected? Will these funds be adequate for long-term sustainability? Will there

be any private sector contributions, especially from bicycle retailers/manufacturers or companies that promote bike use among their staff, etc.

Reply:

As indicated above, the specific funding commitments are still subject of discussions between FONAM and the municipalities. Some private sector and NGO (in kind) contributions are expected in the context of the promotional strategy.

(page 9):
What will happen if this counterpart funding for maintenance does not materialize?
Reply: Sufficient maintenance funds have been budgeted for 1-2 years after construction. With formal commitments by the District mayors, increased involvement of neighborhood groups as result of the promotional strategy, and good supervision of the project, zero bikeway maintenance is unlikely. Maintenance refers largely to removal of garbage and of construction debris; structurally, the bikeways can be expected to survive decades in Lima's rain-free environment.

(page 10): Has a market/demand analysis been conducted for the modes of transport that are being proposed?
Reply: With regard to the bikeways, a market demand assessment was carried out by both the design consultants and by Apoyo, who had conducted attitudinal research for this component.

(maintain this response)

(page 14): Please include a discussion of lessons learned from related World Bank projects such as the Peru Transport Rehabilitation Project I which included a non-motorized transport pilot component for Lima as well as the GEF financed bikeways project in Marikina.

> Regarding the Peru Transport Rehabilitation Project, see item 2 of Comment 5 above. The PAD can expand on this aspect, drawing on the Bank's ICR and the project conclusion report prepared several years ago be the Lima authorities
> The Bank's project team for Lima includes a specialist who was closely involved in the preparation of the Marikina scheme, and remains in steady consultation with their EAP colleagues supervising that project, which is still in its initial implementation phase

(page 14): Also, clear demonstration that the project builds on lessons learned from other related World Bank projects and also contributes to mainstreaming of the concept of non-motorized transport within the institution. Mainstreaming can be done through training, workshops, publications, inclusion of project outputs in sector strategies and CAS's, etc.)

Reply: Two members of the project team (Guitink, Menckhoff) are recognized within the Bank as specialists in non-motorized transport. They were the two staff responsible for the original Lima Non-Motorized Transport (NMT) project and are knowledgeable of its successes and failures. They contributed to the NMT chapter of the Bank's new Urban Transport Strategy (without their input, such a chapter would probably not have been written), and gave many presentations on NMT within and outside the Bank.

(page 15): Please include a clear demonstration that the project collaborates with and builds on lessons learned from related efforts by other IAs, including UNDP's recent Poland - Gdansk Cycling Infrastructure MSP proposal. Also, elaborate on the IDB project as well as any other relevant transport initiatives.

Reply:
The team drew on the recent GEF experiences in Santiago and Mexico City (by participating in the preparation of these projects, and by frequent exchanges with the respective task managers.
The WB Lima team exchanged a lot of views and ideas with the WB Manila team and seized the opportunity of the gathering of representatives from Lima, Mexico and Santiago during the Transport Research Board Seminar to organize an informal workshop on sustainable transport and NMT where

views were exchanged In addition, it learned valuable lessons on the successful bikeway project in Bogotá, by directly participating in the supervision of the Bank's first and preparation of the second project, and by making special learning visits to Bogotá. Moreover, FONAM contracted Dr. Ricardo Montezuma of a Bogotá NGO -- perhaps Latin America's most knowledgeable expert in this area -- to assist in the supervision of PDF-B studies preparing the bikeway construction and promotion- strategy components. The team acknowledges it has not contacted the Gdansk team but believes that in the context of Lima, Bogota and Santiago are very probably much more relevant. At the outset of the Lima project preparation, the team did study the PCD of the Gdansk project , which aims primarily at traffic calming measures in a European context. While the Lima design does include some traffic calming measures, the team feels that the technical approach for Gdansk may not be directly applicable to Lima's driving habits. Nevertheless, it is agreed that recent data on the Gdansk implementation experience should be reviewed again.

IDB is cofinancing the LimaBus project with the World Bank, as described in the PCD. There is no separate IDB project.

PDF-B outputs :

Core Studies	**US$,000**
NMT focus groups	30
Bicycle Promotion Design	40
Strategy to revive the Plan Bici	9.656
Engineering studies	73
Design of the Bus retirement Program	48
Design of the Inst Strength. Comp	31.7
M & E and Operation manuals	15
Supervisions	
Bus retirement strategy	3.9
Promotion	11.2
Engineering Studies	14.4
M & E and Operation manuals	0.9
Financial Audit	5
Workshops	40
TA	
Communication	2.7
Financial Management	1.2

There is so far US$ 23k of savings, which may be needed for example to update the bus retirement strategy when the study about the financial sustainability of the bus concessions is available.

Page 10

Demand analysis :The expected demand for the segregated busways is estimated at 518,000 passengers per day.

Enforcement of the concessions : The enforcement of the concessioned routes will be enforced as in Bogotá, where bus lanes are basically fenced-off and only accessible to those buses which are part of the concessionaires' fleet. No enforcement measure is to be financed by the GEF. (this question has been answered already).

Page 11

- Replication Strategy : The Replication Strategy in Peru for the NMT and the segregated busways component has been partially initiated since workshops targeting non only mayors but as well congressmen have been planned to try to convince political decision-makers into opting for sustainable transport measures. The first of these workshops will take place on April 9, 2003 in Lima, and will include Dr. Yasmine Biro and the mayor of Bogotá. These events, which will be replicated, aim at making politicians aware of the benefits to be expected from such projects so that they could replicate them in their own constituencies. On the non-motorized transport side, the concept is to go gradually : it has started with municipal districts which will benefit from GEF funds to ensure their commitment to at least maintain the infrastructure, and if possible expand it. Then will come the neighboring districts once the GEF-funded bikeways are built and likely to have a snowball effect. Only afterwards will this strategy target cities outside Lima, probably at the end of the project when results can be shown on the ground.
- Inclusion of the informal sector in the participatory process : yes, informal operators were included in the 700 interviewees. The sample was been designed in such a way that it covered all categories of transit workers. Impacts on transit workers, including those from the informal sector are discussed page 39
- A detailed M & E plan, part of the PDF-b activity, is already available in Spanish.

The budget for the replication strategy is estimated at US$ 80,000, to be split between the elaboration of this strategy and its implementation, which envisage between other activities field visits to Lima proposed to technicians and decision makers from other Peruvian cities and seminar/workshops organized on those same cities. The final budget needs to be fine-tuned and will be determined at appraisal.

Page 13

Amount of the loan : this is still being discussed with the Municipality and the Ministry of Finance but should be between 40 and 46 millions. The Project Brief mentions 40 in order to be on the safe side. The 41 figure is a mistake for which the team apologizes.

GEF funds contribution to GHG reduction : see incremental analysis.

Page 16 :

Discussion of lessons learned :

·**Pilot Project of Non Motorized Transport of Metropolitan Lima (PPTNM)**
Conclusions from a report by Lara Gomez, Consultant

General

The PPTNM sought to *create* demand for the use of bicycles in Lima-Callao and was not a response to a latent existing demand. The intent to generate this demand, however, was not accompanied by a coherent communications campaign, and the results have not been as positive as expected.

Jobs in the industrial zone of Lima-Callao, where the bikepaths were constructed, are mainly held by

men. This fact restricts the number of women who would use these bikepaths to transport themselves to work, or use these bikepaths for work-related purposes. This helps explain the minimal presence of women on the bikepaths.
The design of the bikepath routes does not form a network. It is rather a group of longitudinal routes that always needs to be combined with the use of other avenues and roads where there are no bikepaths. Sharing road space with motorized traffic along main avenues acts as a deterrent of bicycle usage.
Bikepaths in Lima-Callao are not being properly maintained, due to insufficient resources from the MML and to the lack of collaboration of the district municipalities involved. Therefore, bikepaths have garbage, construction residues, and potholes that diminish their appeal and usefulness. Women are particularly sensitive to the state of the bikepaths.
The impact of the bikepaths on the neighbors and residents was not properly assessed, and not adequately taken into consideration for their design. This resulted in a disapproving attitude of the neighbors, who felt threatened by the project, rather than part of it. The PPTNM did not make the most of the opportunity for creating goodwill toward the project through the participation of the neighbors as beneficiaries.

Promotion and Educational Campaigns
Currently, there is not a culture of use of the bicycle as a means of transport, especially by women. This requires of specific efforts on education and promotion –both for the general population and targeted to women- that have not taken place.
Bicycles are quite unfamiliar machines for women, who often feel unconfident as to how to handle and repair them.
The promotional efforts undertaken for the PPTNM have been centered solely around the PlanBici bicycle credit program. They have not designed communications pieces targeted to female audiences and do not address the specific issues and concerns of women with respect to bicycle riding.

Bicycle Credits: Plan Bici
PlanBici has not yet found a way to reach informal workers –male and female- who would be prime subjects for the Program. There is a need to create mechanisms that allow the credit program to engage these subjects without incurring in high loan default rates.
PlanBici did not design a strategy with women as the target group. Women's organizations such as Vaso de Leche or Comedores Populares were not approached as beneficiaries of this credit program.

Recommendations

General
The bikepath network and the bicycle credit program need to be conceived within a holistic approach to the solution of the public transport problem in Lima-Callao. This is, the use of bicycles needs to be conceived as a complement to other transport interventions that need to be addressed. For instance, if safe parking spaces were available at strategic locations, users could enjoy multi-modal transport, using bicycles to reach the buses that will take them in longer trips.
It is necessary to work *with* public and private organizations in order to raise their awareness of the benefits of cycling and create a favorable environment for bicycle riderhood. This commitment will be translated –for instance- in the construction of secure bicycle parking in public buildings, municipalities, police stations, markets, health centers, businesses, banks and schools, among others.

Promotion and Educational Campaigns
Since bicycles have commonly been regarded as a sort of "toys" used mainly by boys, many women are not familiar with them and have never learned how to ride. Even for those women who do know how to ride, the handling and maintenance of the bicycle is something foreign. The educational campaign must

address these issues, especially for women.
The promotional and educational efforts should be launched even before the works start on the street. It is necessary to create ownership for the project from its beneficiaries, and to make the most of the goodwill that can be created through this process. Failure to engage the population and the local authorities will result in antagonism toward the project and will threaten its sustainability.

Bicycle Credits: Plan Bici
Credit culture is very incipient in Peru, especially among the lower socioeconomic levels, who historically haven't had access to credit. PlanBici must include an educational component designed to inform the clients about what it means to get a personal credit, and what responsibilities and liabilities it entails.
Bicycle credit programs should design a specific strategy with women as the target group. This should include the elaboration of messages tailored to women's worries and concerns, as well as working directly with women's organizations such as Vaso de Leche or Comedores Populares as organizations whose members can benefit from the program.
The bicycles being offered through PlanBici should include models that are more comfortable for women (for instance, models where the woman can sit up straight and not lean forward so much) equipped with baskets and seats for carrying children.
In order to reach the poor in a widespread fashion, the bicycle credit program must devise a way to reach the informal sector, men and women. It will also be necessary to create a strategy to work with the women's organizations that exist on each district.

ALL THE ISSUES MENTIONED HERE HAVE BEEN ADDRESSED IN THE DESIGN OF THE NEW PROJECT.

Page 15, consultation and collaboration between IAs.
The project is fully coordinated with the IDB since the loans have been and will be jointly processed

c) **Response to GEFSEC Comments for things expected at Work Program Inclusion**

Project Design : see Annex II of PES

Sustainability : the expected demand for the segregated busways is estimated at 518,000 passengers per day. The required fleet, including feeder buses and articulated buses on the trunk routes, will be around 375 vehicles. This means that ridership per bus and per day will increase from 152 to around 1380. As enormous a difference as it may look, this is not unrealistic since after 10 months of operation, Transmilenio ridership in Bogotá has increased from 312 to 1807 passengers per day per bus. Buses will run at approximately 26-28 km/h all day long compared to commercial speeds as low as 6-8 km/h now in the central business districts during peak hours. These numbers will trigger a substantial reduction in the operating costs per passenger-km and makes the business highly attractive to private investors, even more so that the Bogotá example is now known all over the transport sector in Latin America. The enforcement of the concessioned routes will be enforced as in Bogotá, where bus lanes are basically fenced-off and only accessible to those buses which are part of the concessionaires' fleet. No enforcement measure is to be financed by the GEF.

Replication : see 3 c above. The Replication Strategy in Peru for the NMT and the segregated busways

component has been partially initiated since workshops targeting non only mayors but as well congressmen have been planned to try to convince political decision-makers into opting for sustainable transport measures. The first of these workshops will take place on April 9, 2003 in Lima, and will include the mayor of Bogotá. These events, which will be replicated, aim at making politicians aware of the benefits to be expected from such projects so that they could replicate them in their own constituencies. On the non-motorized transport side, the concept is to go gradually : it has started with municipal districts which will benefit from GEF funds to ensure their commitment to at least maintain the infrastructure, and if possible expand it. Then will come the neighboring districts once the GEF-funded bikeways are built and likely to have a snowball effect. Only afterwards will this strategy target cities outside Lima, probably at the end of the project when results can be shown on the ground.

Stakeholder involvement : see 3 d.

Monitoring and Evaluation : see 3 e.

Financing Plan and "explanation of how GEF funds contribute to reduction of GHG" : see Incremental Costs Analysis.

Core Commitments and Linkages : The Bank Project will finance a basic network of segregated high capacity bus corridors of more than 24 km that will provide service to the low-income population segments who need an efficient, low-cost and affordable transport service. The basic high capacity network consists of bus corridors with operational and functional compatibility with follow-up phases, and will be using existing road corridors, while bus-stops and feeder-trunk route transfer terminals will be newly constructed. Each of the sections is expected to be functionally, economically, and operationally self-sustainable. The Bank Project will also invest in the construction of access routes to terminals, focusing on accessibility for pedestrians and bicycles. Along the high capacity corridors horizontal and vertical road markings will be rehabilitated, including an overhaul of the traffic lights. While road safety improvement forms a separate component, implementation of road safety audit recommendations will be included under various civil works. Monitoring of air quality will take place through the establishment of an air quality monitoring network which includes operation and maintenance. The Project will also prepare the business plan for the bus service concession; develop the fare collection system and its adjustment conditions; support the creation and strengthening of an operations entity; and assist in the development of an efficient organizational structure for the municipal management of urban transit and transport. Within the framework of the latter, the project will also provide support to MML's transport agencies to develop well-defined responsibilities, coordinated management and resource utilization, as well as transport performance monitoring and control mechanisms.
The GEF project complements the loan through :
1. enhancing a bus retirement program, made possible through the implementation of the segregated busways which will dramatically increase the efficiency of the public transport system. This retirement program, so-sponsored by the GEF, will allow to reap environmental benefits that the stand-alone busways isolated from a wider strategy may not bring. GEF funds will help maximize the magnitude of this public transport fleet optimization component and facilitate it through providing Credit Guarantee Funds which will make it financially easier to buy back and retire old polluting buses, hence reducing GHG emissions.
2. improving non-motorized transport facilities, part of which will feed the WB loan-financed segregated busways. Through this, and since bike use is cheaper than riding a bus, the GEF funds will contribute to the overall objective of the project, which is to improve the poor's mobility. The Bank loan will complement the GEF intervention through providing US$ 1 million dollars to expand further the

bikeway network and increase its coverage and connectivity.
3. strengthening institutional capacities that are essential to the sustainability of the segregated busway system and to its extension once the project is closed. This will be carried out at the national and municipal levels on transport and environment-related issues, so that sustainable transport is kept high in political agendas.

Lessons learned : (i) More construction of bikeways does not ensure the increased use of bicycles. In 1996, about 46 km of Bank-financed bikeways were successfully implemented in Lima, connecting an industrial area with low-income residential zones. However, the number of cyclists did not increase significantly, as the project did not include a coherent strategy to overcome the cultural barriers inhibiting bicycle use. Even in Bogotá, where over 200 km of bikeways were built in the last four years, the growth in cycling has been modest, and the local Government intends to implement – under the next Bank-financed project – a promotional strategy to raise bicycle use. Therefore, an important component of the proposed project would start the cultural change process through a multi-pronged promotional strategy aimed at making bicycle use more attractive in the minds of the population. (ii) Community Participation is Vital For Success. The recently approved GEF grant to support the introduction of climate friendly measures in transport of Mexico City stresses that a "participatory approach, incorporating public opinion in the project, is required to establish legitimacy of the project". Similarly, the Bogotá experience demonstrates the importance of community involvement which contributed to the public acceptance, even pride, for several "project outputs, notably TransMilenio and the bike paths". The proposed project – especially the components aiming at increasing bicycle use and at reducing public transport oversupply– was prepared in close consultation with civil society; this collaboration would continue during project implementation.
The Bank has a long-standing involvement in the sector of air quality management, in general and its interrelationship with urban transport in particular. The first loan of that nature was approved in 1992, and it had the objective of reducing traffic-generated air pollution in Mexico City. Stemming largely from that participation, the Clean Air Initiative in Latin American Cities was set up in 1997, which has been highly successful in disseminating experiences among major cities, including Lima. Similar clean air initiatives have now been started in Asia and Africa. In addition, recent strategy papers on Pollution Management Masami Kojima and Magda Lovei, *Urban Air Quality Management – Coordinating Transport, Environment and Energy Policies in Developing Countries*, World Bank Technical Paper 508, 2001. and Urban Transport *Cities on the Move*, a World Bank Urban Transport Strategy Review, 2002. discuss extensively the effects of urban traffic on air quality. Urban transport operations in Bogotá, Buenos Aires, Lima and São Paulo include air quality management components in their design. Regarding non-motorized transport, the World Bank Urban Strategy stresses the importance of bike and pedestrian facilities, not only from an environmental perspective, but also from a social one. Several GEF projects implemented by the loan include NMT components (Manila, Mexico, Santiago) and other stand-alone Bank operations do too, which was almost unseen a few years back. Bank staff will be participating in the Velocity conference in Paris in September 2003 to disseminate the Bank's experience in Lima and Santiago regarding NMT. A related paper will be published by the Velocity organizational Committee. Many times, Bank staff deliver presentations on the Urban Transport Strategy of the Bank all over the world, which do put NMT as one of the top priorities. Through the Bank, this project, along with other WB-implemented GEF OP 11 projects (Santiago, Mexico, Manila), has already been presented at various seminars, such as the Human Mobility Seminar in Bogotá (February 2003) and the Transport Research Board Seminar in Washington D.C. (January 2003).

Consultation, Coordination, Collaboration : The WB Lima team exchanged a lot of views and ideas with the WB Manila team and seized the opportunity of the gathering of representatives from Lima, Mexico and Santiago during the Transport Research Board Seminar to organize an informal workshop on

sustainable transport and NMT where views were exchanged. In addition, a consultant from Bogotá was hired during the preparation phase to supervise the NMT studies in Lima and transfer his knowledge and experience to the local Lima team.

Additional Annex 7: Detailed GEF Project Description
PERU: LIMABUS TRANSPORT

1. Project Components

The GEF financial aspects include four components: (i) to support the reduction in the public transport fleet oversupply, (ii) to consolidate the bikeways pilot project developed in Lima North Cone, (iii) to carry out an institutional strengthening program on sustainable transport, targeting municipalities and institutions dealing with environmental issues and/or transport planning, and (iv) to assess and monitor the GEF project performance.

Preparatory studies under GEF funding (PDF-B, US$ 350,000) allowed to define in greater depth the activities of all components, and to prepare the related Terms of Reference.

1.1. To support the rationalization of the public transport fleet

The activities to be developed in the framework of this first component aim at supporting the WB-IDB-financed Limabus Project, which will rationalize public transport services and provide opportunities to reduce the size of the current fleet operating in Lima (more than 55,000 buses, most of which are extremely polluting and obsolete). This component can be divided into three sub-activities :

Provide financial incentives to bus concessionaires in order to encourage them to retire additional obsolete and pollutant public transport vehicles

Support programs aiming at mitigating the social impacts of this program in terms of employment (training programs, access to micro-credits)

Co-finance with the loan a pilot project that will enhance the introduction in Peru of more environment-friendly vehicle retirement methods and that will build the local capacity required to make sure that the adoption of those new methods will be sustainable.

1.1.1 Designing Financial Incentives to Encourage the Retirement of Aged and Polluting Public Transport Vehicles

As part of the preparation work for the project, a study was carried out to design an incentive scheme to encourage the retirement of aged and polluting buses, in order to promote a reduction in the public transport oversupply and improve public transport attractiveness. Several alternatives were studied, including the direct financing of bus purchases and destruction, the provision of a guarantee on loans used to purchase and destroy old buses, etc (see Section D of the main text).

The study concluded that constituting a Credit Guarantee Fund was the alternative likely to lead to the greatest number of additional retired units. The Credit Guarantee Fund will be used to guarantee part of the loans obtained by the Limabus Project winning bidders in order to buy and retire aged polluting vehicles. The Fund will only be used to foster the retirement of additional bus units, above the minimum number required and achievable without the GEF intervention.

To achieve the above mentioned results, the bidding documents for the Limabus Project will require bidders to establish in their bid the number of aged buses they commit to buy back and retire if they win a concession. To encourage bidders to offer to retire the highest possible number of polluting units, the Limabus bidding documents will offer to award additional points, in the evaluation process, for each unit promised to be retired in addition to the minimum required quota This scheme was used for Transmilenio's second phase which required bus concessionaires to retire at least 6 LDVs per articulated

bus (compared to 2.7 in the first phase). Due to the additional points awarded to those willing to retire more than the minimum required, the three winning concessionaires offered to retire 7.5 (two of them) and 8.9 LDVs per articulated bus introduced in the new system. Bogotá is not Lima, but this tends to prove that the whole scheme is feasible and that the concessions can be profitable enough to allow for a substantial bus retirement program without turning the business into something unprofitable and without putting unacceptable pressure on the fares.. Pending on a decision to be taken by PROTRANSPORTE, bidder could offer a plan where they would specify how many buses they would buy back and retire every year along the concession duration. Units retired in the early years of the concessions would have a higher weight than units retired later (via an appropriate discount rate). Allowing bidders to expand their repurchases of old buses over the entire length of their concession should allow them to retire a higher number of buses. Their profits are indeed expected to be higher after the initial investments they will have to make (mostly to acquire their bus fleet) are partially paid for and amortized.

The Fund will then guarantee loans taken on by the winning bidders to finance **all the additional units** that their bids voluntarily propose to retire, plus **an equal quantity** of units from the minimum required quota (but not all of these required units).

For example, if the winner company promises to retire 2 **additional** LDVs (above the minimum quota), the Fund will guarantee loans issued to finance these 2 units plus 2 LDVs units of the minimum quota. In total, therefore, it will guarantee the financing of 4 units.

Such mechanism will apply until all of the units from the minimum required quota have possibly been financed by a guaranteed loan. Above such level, the guaranteed loan will still be available, but to finance additional units only.

The winning bidders will be expected to finance the purchase and retirement of the potentially remaining units of the minimum required quota via non guaranteed loans, equity and/or revenues from operation. A financial analysis of the proposed private operations is currently being conducted to define a feasible minimum required quota, given expected operational revenues and costs.

It is expected that the Guarantee Fund will help provide credits for up to five times the value of the Guarantee Fund. In this way, the US$1.0 million allocated to the Fund should allow to retire units for a total amount of US$ 5 million. This corresponds to either an additional group of approximately 750 minivans (or “combis”), 350 minibuses, or 300 buses. The US$1.0 million was calculated on the basis of some preliminary estimates of the financial sustainability of the concessions and on the Bogotá experience, where the maximum amount of buses offered for retirement was close to 9. Assuming that the minimum requirement would be for the concessionaires to retire around 6 minivans per articulated bus introduced in the system (i.e. the current estimate of what could be reasonably demanded to concessionaires without jeopardizing the profitability of their business), and assuming that concessionaires will be willing to offer as many buses as in Bogotá (between 7 and 9), the Credit Guarantee Fund will have to back the purchase of approximately 3 additional buses per new bus articulated, i.e. approximately 1,000 minivans since the fleet of new buses is estimated to be around 350 units. This potential demand is quite uneasy to estimate since the number of buses to be retired is not only related to the financial sustainability of the concessions but as well on the strategic decisions that concesionaires will make when drafting their bidding proposals. They will have to find a trade-off between raising their chances of being awarded the concession and putting extra financial burden on themselves. Due to the relative unpredictibility of the final outcome, the amounts to be used for this purpose will be disbursed against specific requests to back old buses purchase.

The GEF allocation for the Guarantee Fund could be deposited directly in one or several financial institutions, to guarantee the credit lines that these institutions would extend in favor of the winning companies of the Limabus concessions. In this case, the implementing agency (FONAM) would sign an agreement with the financial institutions, by which they would commit to offer loans to the winning companies backed up by the GEF deposit. The financial institution(s) would be selected competitively, based for instance on the conditions they would demand to borrowers (interest rate, maturities, other possible guarantees required, etc).

The Fund will guarantee a pre-determined amount of loan per unit retired (corresponding to the estimated average market value of an old vehicle, times a maximum acceptable leverage). The loans will have a pre-determined maturity (agreed with the financial institutions) and the guarantee will expand over the duration of the loans. The bidders will then be eligible to request a guaranteed loan equal to the pre-determined amount of loan per unit retired, multiplied by the number of units they propose to retire during the duration of each loan plus an equal number of units from the minimum quota.
For instance, if the loans have a three-year maturity, the bidders will be eligible to receive in year 1 of the concession a guaranteed loan equal to the pre-determined amount of loan per unit retired multiplied by the number of units he proposes to retire during years 1, 2 and 3 of the concession. The fund will be revolving, so that the same bidder will be eligible to receive another three year-guaranteed loan in year 4 of the concession to finance the units he proposes to retire in years 4, 5 and 6 of the concession, and so on until the end of the concession.

The key advantage for bidders is that the guarantee decreases the cost of the loans, as well as collateral requirements.

It is likely that the interest rate on these loans will be floating. This means that in later years of the concession, the bidders will be free to reject the loans they are eligible to get (if they found that their conditions had become not attractive). The probability that this happen is however low as the proposed financial mechanism should reduce the cost of loans, by the effect of the guarantee and because the Fund will be sufficiently capitalized to have a first class credit rating.
In order to reduce the credit risk involved, the repayment of the loans taken on with the guarantee of the Fund and payment of related interest charges will be made through the "Fiduciary Fund" that has to be established as part of the Limabus Project and that will be fed by the farebox revenues. The winning companies, at the time of requesting a loan guarantee from the Fund, will extend an authorization to the Fiduciary Fund to dutifully pay back the loan and interest charges from contributions they will make to the Fiduciary Fund from their operating revenues.

1.1.2. Providing Support to Mitigation Plans Aimed at Offering other Job Opportunities to Displaced Public Transport Workers

The introduction of the Limabus Project changes the public transport system, and impacts bus-owners, owner-drivers, bus-drivers, and fare collectors. To mitigate these impacts, a social program has been designed, drawing on resources from a common fund established jointly by the GEF project and the Limabus Project. The GEF funds will solely support the incremental workers displaced by the GEF proportion of the bus retirement component.

The social impacts on bus owners will be partially offset by the market prices they will receive when they deliver their aged and polluting vehicle. Additionally, to avoid the possibility that the drivers purchase another old vehicle and re-enter the transport system, the social plan will train these persons for diverse activities in other sectors.

The social program will aim at giving affected workers as many assets as possible to find new jobs outside the transport sector. To fulfill this aim, a special training and technical assistance program has been designed which covers all types of affected populations. A special revolving fund has been proposed to finance small businesses. This will be carried out in coordination with existing safety nets, such as those provided by Prompyme from the Ministry of Labour (Commission for the promotion of small and micro-enterprises, see http://www.prompyme.gob.pe/) and with renowned and experienced NGOs specialized in micro-credits such as Finca, Fovida, Edpyme, Edyficar, Banco Mibanco, ONG Alternativa, PRISMA, PROMUC, etc.

FONAM will select firms specialized in training, and will coordinate and supervise implementation of the social program. FONAM will be responsible for quality control of the program. The subjects of the training and technical assistance have already been proposed in the preparatory studies. The financial assistance program will be implemented by a specialized institution that will be properly identified through a public bid.

1.1.3. Implementing a Pilot Project in order to Test Various Retirement Methods

As no relevant experience exists in Latin America, the feasibility and the real costs of establishing higher standards for bus retirement processes will be determined by conducting a pilot retirement of 150 units (50 of each vehicle category). These vehicles will be dismantled under realistic industrial conditions. The pilot study will focus on the dismantling process, classification and destination of all parts, evaluation of the required time for dismantling, and establishment of the quantities of the different materials to recover, parts that can be reconstructed, reutilized or recycled, parts that should be destroyed at the foundry, and parts that should be destroyed and directed to the sanitary landfills. This Pilot Project will be the basis for implementing more stringent but still realistic norms for old vehicles retirement, which will be used as the retirement process accompanies the next phases of the segregated busway program in the years to come, expectedly with the support of the revolving Credit Guarantee Fund which will still be available after the project closes.

1.2 Consolidate and expand Lima bikeway network

Through this component, the project will aim at resolving the problems identified in the context of the WB-financed non-motorized transport pilot program (1994) and that are seen as the explanatory variables of the still low levels of use of the North Cone bikeways. These problems are mainly linked to traffic and personal safety, low quality of the engineering design in some places, and lack of information and communication on the issue. This component can be divided into four sub-activities

Realize the required physical improvements on the existing network and extend it by 6 km of "missing links" to increase its connectivity,

Finance one year of bikeway maintenance during which municipalities will benefit from a hands-on training,

Equip bus stations with bike parking facilities

Finance a traffic safety audits of the bikeways

Carry out a promotion campaign on bike use,

Restart the dormant credit program for bicycles acquisition, through making it more flexible and applicable to the financing of small bike-related businesses.

1.2.1. Physical Improvements and Extension of the Existing Bikeway Network

During the preparatory study, an assessment "block by block" was carried out to help to design the improvements in the existing bikeways network (Colonial, Universitaria, Tomas Valle avenues), whose characteristics are displayed in the following table :

Bikeways	**Existing (Km.)**	**Planned Extension**	**Total (Km.)**
Av. Colonial	10.8	------	10.8
Av. Universitaria	10.4	4.1	14.5
Av. Arequipa	6.0	2	8.0
Av. Tomás Valle	5.3	--------	5.3
TOTAL	32.5	6.1	38.6

The improvements will include safer exits, realignment of curbs to facilitate car access to neighboring properties, intersections improvements to enhance traffic safety, and traffic calming measures. The Universitaria Ave. bikeway will be extended 4 km to connect the **San Marcos and Catolica** Universities to the network.

The following table shows the construction works to be done:

Existing bikeways	**Construction works to be done**
Colonial Ave.	Rehabilitation of curbs, pavement and sidewalks. Some intersections will be improved. All curbs will be painted.
Universitaria Av.	Rehabilitation of curbs, pavement and sidewalks. Some intersections will be substantially improved. All curbs will be painted.
Arequipa Av.	Rehabilitation of curbs, pavement and sidewalks. Some intersections will be improved. All curbs will be painted.
Tomas Valle Ave.	Most dangerous intersections will be improved

In some locations, existing earth sidewalks will be paved next to the bikeways, rather than leaving them unpaved which would entice pedestrians to use the bikeways. More islands for waiting bus passengers will be introduced between the bikeways and the road. Some additional spot improvements will be made to improve the public space at selected locations where a lot pedestrians (and potentially cyclists) congregate.

Some green areas will be laid out in the bikeways vicinity. The project will also include the construction of five so-called cycle-modules (see annex ciclomódulos), meeting spaces built along the bikeways, which will give the bikeway network a recognizable image and which will provide different services such as bathrooms, fast-foods, police assistance, small stores, bicycle repair shops, etc. The cycle-modules will be given without cost to selected concessionaires operating those businesses, and these concessionaires will be responsible for the maintenance of the cycle-modules and of the neighboring green areas.

In spite of a focus on poor areas (Northern Lima) and on work-related trips, the program will cover as well some better-off neighborhoods and leisure-related trips with the rehabilitation and extension of the Avenida Arequipa bikeway. The rationale beyond this is that from the broader view of sustainable

transport in Lima, the promotion of bicycle use should target a more diverse range of populations and uses to bring about a cultural shift needed to further promote the use of bicycles in the urban environment. The opportunity provided by a linkage with the Avenida Arequipa will encourage middle-class users and tourists to use the bikeways as a viable option for reaching the city's historic center and ride to the beach. Rehabilitating Arequipa would have as well an effect on other middle-income comunas such as Barranco, Surco, San Borja, and would help send the signal that bikes are not just for the poor. It additionally provides better linkages between neighborhoods of varying socioeconomic backgrounds.

GEF's incremental support has the potential to play a large role in maintaining political momentum which is also just beginning : for example, in Miraflores and San Isidro, two middle-income districts being served by Arequipa Avenue, bikeways were part of the electoral platforms of those eventually elected. The mayor of Miraflores has expressed his enthusiasm for NMT and the GEF project and said he would consider support for the project. Another factor that was taken into account to include Avenida Arequipa into the program was that counterpart funds from municipal districts such as middle-class Miraflores will be more substantial than from the Northern Lima municipal districts, since they are in a better financial situation.

1.2.2. Maintenance Plan Strategy

Proper maintenance is indispensable to the sustainability of this component and the project will finance the first year of maintenance during which municipalities will benefit from a hands-on training. This transitory one-year period will be used to seal agreements with the municipalities so that they commit themselves to continue to maintain the bikeways, provided that they are offered training and technical assistance regarding bikeway maintenance

1.2.3. Promotion Campaign

The Communication program will facilitate the relevant information for users, authorities and officials regarding the role of the different means of local transport in order to make Lima inhabitants aware of the benefits they can expect from riding a bike in terms of time and money savings. The message will be conveyed through universities, schools, media or civil society organizations such as the “Clubes de Madres”. In addition, the grant would also help tackling issues such as road safety, harassment of female users and maintenance of bicycles.

This promotion campaign includes several elements. The most important are listed below:

> “sustainable mobility” program: as a result of an agreement with local businesses and factories, bicycle use will promoted in coordination with local employers willing to provide their employees with some basic bike facilities such as guarded parking and, wherever possible, lockers and shower rooms.
>
> An educational campaign through the media will disseminate information about the advantages of using bicycles and will aim at spurring a change of mentality in order to change bike use perception in the citizenry.
>
> A number of promotional events that will generate and strengthen the population’s interest for bicycle use, such as races, mass bike-riding on Sundays, closing of some arteries to motorized transport in specific occasions like Bank holidays, etc. To the extent possible,

those events will be patronized by local celebrities.

Safe-routes-to-school program: this component will try to encourage bicycle use as a mean of transport to schools, through the definition of NMT-friendly itineraries, building up on similar experiments carried out in North America and in Europe

Project “San Marcos is moving": San Marcos University, located in the bikeways catchment area was identified as a very promising place to promote bicycle use. University management was consulted and agreed on facilitating bike use through installing bike parking facilities, promoting its use through internal campaigns, etc.

Project “Women and Transport”: different groups of women will be reached through schools, universities, civil society organizations, employers to disseminate a message adapted to women in order to change the poor image of the bicycle and turn into a regular transport mode, that women can use as much as men do.

1.2.4. Restarting the 1994 Micro-Credit Scheme for Bicycle Acquisition (Plan Bici)

The 1994 scheme, designed to help low-income people to buy bicycles, was reasonably successful when it started and as long as the 1995-1996 promotion campaign on NMT was going on, but it later came to a standstill since the Caja Municipal, in charge of administering the funds, had no incentives to keep lending to the poor since transactions costs where too high due to the small size of the credit amounts, the stringent conditions to award the loans and their lack of direct connections with potential clients.

The current organization will be reformed to let private operators specialized in micro-credit participate;

Participating operators will have to have wide and strong relationships with grassroots organizations (clubes de madre, comedor popular);

Credit will also be provided to create bicycle-repair shops and will be available to anyone interested, regardless of his/her revenues, since the GEF project’s ultimate is environmental and not poverty-focused;

The following table shows the new criteria that will be used for the program:

		INITIAL OR CURRENT CRITERIA	**PROPOSED CRITERIA**
1.	INTEREST RATES	Low interest rates	Interest rates levels ensuring the sustainability of the program (i.e. covering costs), freely determined by each operator.
2.	DIVISION OF WORK	The promotion and supply of credits are done by distinct agents	The credit providers will be responsible for both the promotion and supply of credit.
3.	LIQUIDITY REQUIREMENT	To high minimum liquidity balance required from operator, which ended up being an incentive no to lend.	Liquidity requirements will be limited to national and international standard levels.
4.	BIKEWAYS	Limited to the purchase of bicycles to be used in the areas of	Priority will be given to bicycles to be used in the areas of

		influence of the bikeways	influence of the bikeways, but flexibility will be offered for other areas.
5.	FUNDS DISTRIBUTION	Management of the funds attributed without clear criteria.	The funds will be distributed to selected operators according to objective indicators (such as their prospective clientele or business plan).
6.	COST OF BIKES	The cost of a bicycle that can be financed must be less than US$100.	The loan amount must be inferior to US$150.
7.	PROMOTION	Sporadic promotion teams separated from the financial institution	Credit officers will be in charge of promotion.
8.	OPERATORS	Operators with minimum relationships with Social Base Organizations	Operators with wide and strong relationships with Social Base Organizations.
9	INTERESTS USE	Interests capitalized in the credit fund.	A share of the interests will cover the operating costs, reserve funds and the operators' profits.
10.	MANAGERS OF THE PROGRAMS	No permanent professional team financed by the project	Permanent management team financed by the project.
11.	TARGET GROUP	Target Group: the poor and extreme poor (monthly income smaller than US$200 and assets smaller than US$5,000).	No limit on the level of revenues and family assets.

1.3. Carry out an institutional strengthening program on sustainable transport

This component will be targeting municipalities and institutions dealing with environmental issues and/or transport planning. It aims at incorporating climate change and environmental considerations into decision making processes, but will also strengthen the technical capacities of the municipal teams currently in charge of transport planning and that are stakeholders of the project. This institutional strengthening program, designed as an outcome of a diagnosis and capacity assessment exercise carried out jointly with the expected beneficiaries, aims at laying the groundwork for the success of the project and ensure it can be sustainable over time once those institutions will take over when the GEF project is closed.

The following institutions will benefit from the program : two provincial municipalities, Lima and Callo and seven municipal districts, Los Olivos, Independencia, San Martín de Porres, Comas, Rimac, Bellavista, Carmen de la Legua – Reynoso, along with FONAM which is the Project Implementation Unit.

The project would strengthen those institutions through three different types of activities:

Awareness raising: through workshops, classes, forums, the beneficiaries of the program

will be exposed and involved in discussions and debates whose objective will be to raise their awareness vis-à-vis environmental issues related to transport, including climate change, so that air pollution, public and non-motorized transport move up in the municipal agendas. The target of those awareness raising activities goes beyond the municipal teams and will reach as well local communities and citizens so that the message could end up being as widespread as possible, in order to pave the way for future involvement of the citizenry in issues of transport planning. It will aim as well at reinforcing the bike promotion campaign and create a sense of ownership of the bikeways, so that they will be seen as a good belonging to the community and that has to be taken care of at the neighborhood level.

Training programs and technical assistance: to promote on-the-job training, consultants will accompany and advice during the project implementation timeframe municipal transport teams in their daily work and will help them resolve transport-related problems on the ground. The importance of this sub-component will decrease over time, but is expected to be quite important when the project starts as local capacities will still be insufficient to ensure a good start of the GEF project implementation. The scope of this technical assistance will cover as well overall specific studies necessary to the project success, but which are transversal to the municipalities and needed specifically in the context of the GEF project rather than on a regular and routine basis (such as the fine-tuning of the environmental guidelines for bus retirement to be included in the ToRs for the companies in charge of realizing it, or the redaction of templates for contracts between municipalities and civil works contractors or consultants).

Capacity building: Municipal teams, whose technical capacity is somewhat weak, will benefit from classes about the basics of transport planning (data collection, sample techniques, feasibility studies, environmental impact assessment, project monitoring, infrastructure maintenance, civil works supervision, etc…)

To end with, some basic equipments will be financed through the project in order to provide local municipalities with the core supplies and equipments necessary to carry out a decent job. It is worth mentioning here that some of those municipalities don't have computers or printers. The project will finance as well the equipments (uniforms and bikes) of the transit police staff which will be assigned to the bikeway surveillance.

1.4. Management, Monitoring and Evaluation and Replication Strategy

The project includes a comprehensive monitoring and evaluation component based on qualitative and quantitative performance indicators for each of the sub-components. These indicators will include public transport and bicycle user surveys and impact assessments, public transport ridership data, road safety data, general traffic counts on trunk routes and bus counts on public transport routes given in concession.

The monitoring strategy for this project aims at tracking the changes towards the adoption of new transport patterns and behaviors. The methodology opted for is probably quite time-consuming and might require some more efforts than regular monitoring processes but the objective of the exercise is to provide the GEF with the necessary information it needs to decide whether expanding their support to similar sustainable transport measures is justified from a climate change perspective. Progress towards the project objectives will be measured on a regular basis through the following actions:

Design and validation of the monitoring system in cooperation with the implementing agency and all main stakeholders of the transport sector (municipal districts, DMTU, Direction of

Non-Motorized Transport of the Metropolitan Municipality of Lima, provincial municipalities of Lima and Callao, NGOs in charge of project execution and the GEF project Consultative Committee).

Implementation of an automated data processing system

Monitoring of the implementation of the project, through project indicators that will result in monthly reports on project development progress, in comparison with the implementation plan, for each one of the components.

Monitoring through periodic surveys of the target population on a semester basis in order to measure permanently the market evolution and to estimate gradual increase in bicycle use, impacts and efficiency of the pilot projects to be implemented at the start of the bike use promotion campaign, rate of reinsertion in the labor market of those affected by the bus retirement component as a result of labor retraining or/and access to micro-credits, effective delivery of classes to institutions, etc.

Periodic surveys to measure the impacts of the communication and project advocacy actions on community leaders, members of the central and local governments, police authorities, university authorities, business world, etc.

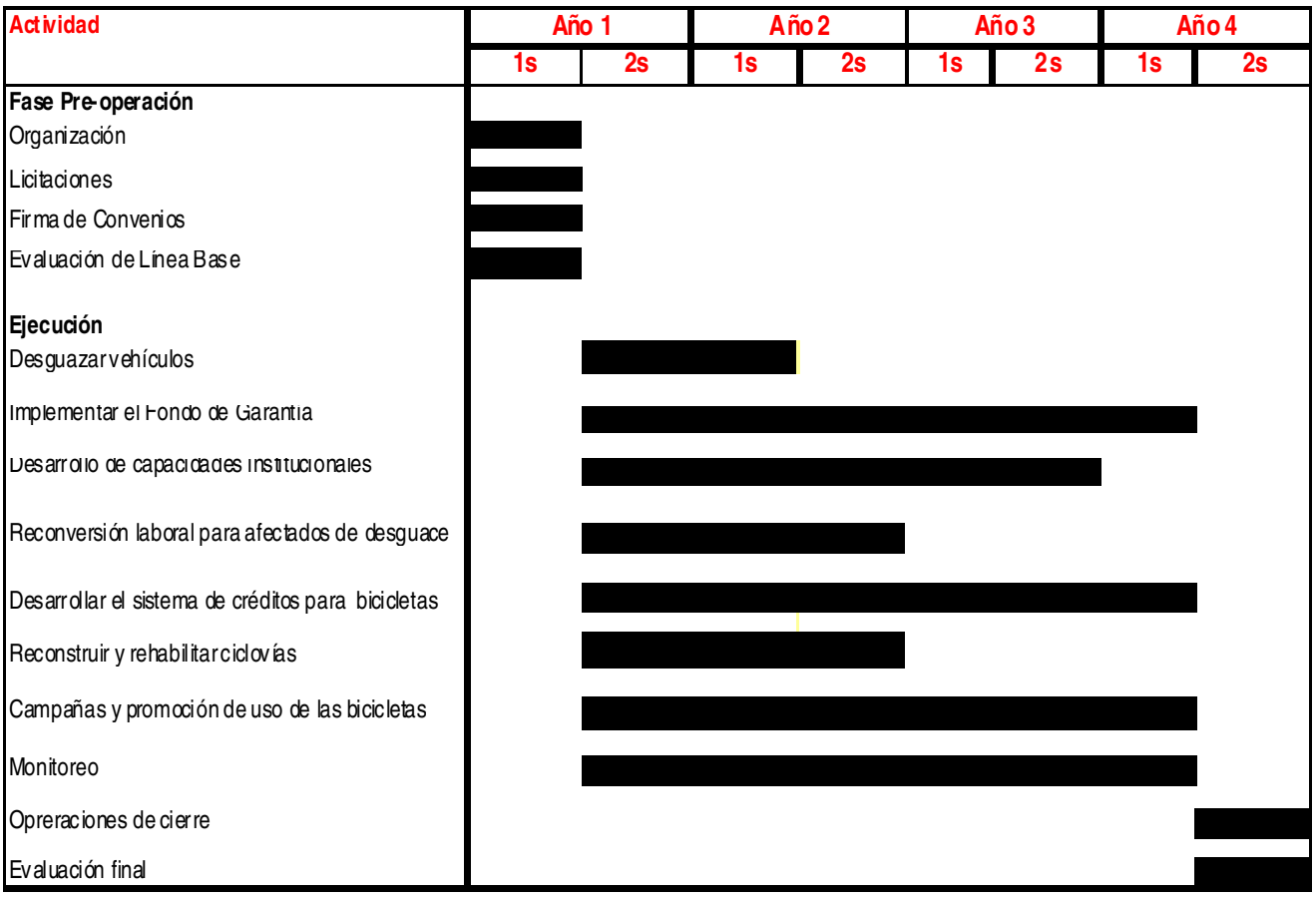
Mid-term evaluation after two years of implementation to track behavioral changes that will have materialized, in order to try to identify the determinant factors that remove the barriers towards sustainable travel behaviors. This mid-term review will also evaluate to what extent people have become more aware of the direct link between transport and global/local contamination. This evaluation will then be used by the PIU to re-orient, if need be, the project implementation strategy.

Final evaluation / completion report that will measure the final results for each component and will estimate the degree of sustainability of the objectives achieved at closing date. The capacities acquired by government agencies and the traffic police, along with their degree of commitment to the objectives of the project will be assessed in order to identify potential weakness signals. The evaluation will conduct a final cost effectiveness analysis in relation to each component.

At that point, a very important factor to assess will be evaluation the change in perceptions, attitudes and behaviors within the different segments from the population vis-à-vis sustainable transport. This change will be measured against the results of the various focus groups carried out during the GEF project preparation phase. The final evaluation will be repeated two years after the project conclusion in order to examine sustainability and medium and long term impacts.

A replication strategy will be designed in the first half of the project implementation period and carried out in the second half. Mayors and technicians of secondary Peruvian cities will be invited to Lima for field visits and discussion with their Lima counterparts while seminars on sustainable transport will be organized in their cities, with the participation of stakeholders of the Lima project.

Additional Annex 8: GEF Project Schedule
PERU: LIMABUS TRANSPORT



Additional Annex 9: Ciclomodulos
PERU: LIMABUS TRANSPORT