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Report No: 39750-GH

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 29.8 MILLION

(US\$45 MILLION EQUIVALENT)

AND

A PROPOSED GRANT

FROM THE GLOBAL ENVIRONMENT FACILITY TRUST FUND

IN THE AMOUNT OF US\$7 MILLION

TO THE

REPUBLIC OF GHANA

FOR AN

URBAN TRANSPORT PROJECT

May 22, 2007

Transport Sector
Africa Region

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CURRENCY EQUIVALENTS

(Exchange Rate Effective February 2007)

Currency Unit = Ghanaian Cedis (GHC)

GHC 1 = US\$0.0001075

US\$1 = GHC 9,300

FISCAL YEAR

January 1—December 31

ABBREVIATIONS AND ACRONYMS

ADB	African Development Bank
ADT	Average Daily Traffic
AFD	French Agency for Development
AMA	Accra Metropolitan Assembly
AMISU	Accounting and Management Information Systems Unit
APL	Adaptable Program Lending
AWTSC	Area-Wide Traffic Signal Control
BOT	Build Operate and Transfer
BRT	Bus Rapid Transit
BRR	Building and Road Research Institute
C&AG	Controller and Accountant General
CAS	Country Assistance Strategy
CDF	Country Development Framework
CBD	Central Business District
CFAA	Country Financial and Accountability Assessment
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CUT	Center for Urban Transportation
DANIDA	Danish International Development Agency
DFR	Department of Feeder Roads
DUR	Department of Urban Roads
DVLA	Driver and Vehicle Licensing Authority
ECOWAS	Economic Community of West African States
EIA	Environmental Impact Assessment
EJDA	Ejisu Juaben District Assembly
EMP	Environmental Management Plan
EOI	Expression of Interest
EPA	Environmental Protection Agency
ERR	Economic Rate of Return
ESMF	Environmental and Social Management Framework
GEDA	Ga East District Assembly
GWDA	Ga West District Assembly
GEF	Global Environment Facility
GHA	Ghana Highway Authority
GHG	Greenhouse Gas
GOG	Government of Ghana
GPN	General Procurement Notice
GPRS	Ghana Poverty Reduction Strategy
GPRTU	Ghana Private Road Transport Union
GRTCC	Ghana Road Transport Coordinating Council
GUTP	Ghana Urban Transport Project

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HDM	Highway Development and Management Model
HSIP	Highway Sector Improvement Project
KMA	Kumasi Metropolitan Assembly
MDA	Ministries, Departments, and Agencies
MDGs	Millennium Development Goals
MMDAs	Metropolitan, Municipal, and District Assemblies
MMT	Metro Mass Transit
MOFEP	Ministry of Finance and Economic Planning
MOI	Ministry of Interior
MLGRDE	Ministry of Local Government, Rural Development, and Environment
MOT	Ministry of Transportation
MTEF	Medium-Term Expenditure Framework
MTTU	Motor Traffic and Transport Unit, Ghana Police Service
NDPC	National Development Planning Commission
NGO	Nongovernmental Organization
NMT	Non-motorized Transport
NO _x	Oxide of Nitrogen
NPV	Net Present Value
NRSC	National Road Safety Commission
NUTP	National Urban Transport Policy
O ₃	Ozone
OSA	Omnibus Service Authority
PIM	Project Implementation Manual
PM	Particulate Matter
PAO	Project Advisory Office
PPIAF	Public Private Infrastructure Advisory Facility
PROTOA	Progressive Transport Owner's Association
PRSP	Poverty Reduction Strategy Papers
RAP	Resettlement Action Plan
RMRP	Road Maintenance and Rehabilitation Program
RPF	Resettlement/Rehabilitation Policy Framework
RSDP	Road Sector Development Programme
SEA	Strategic Environmental Assessment
SIL	Sector Investment Lending
SO _x	Oxide of Sulfur
SSATP	Sub-Saharan Africa Transport Policy Program
TCPD	Town and Country Planning Department
TMA	Tema Municipal Assembly
TOR	Terms of Reference
UDPU	Urban Development Policy Unit
UPTCG	Urban Passenger Transport Coordinating Group
UPTU	Urban Passenger Transport Unit
UTAC	Urban Transport Advisory Committee
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds

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GHANA

Ghana Urban Transport Project

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GHANA
GHANA URBAN TRANSPORT PROJECT
PROJECT APPRAISAL DOCUMENT

AFRICA

AFTTR

Date: May 22, 2007 Country Director: Mats Karlsson Sector Manager: C. Sanjivi Rajasingham Project ID: P100619 Lending Instrument: Specific Investment Loan	Team Leader: Ajay Kumar Sectors: General transportation sector (100%) Themes: Infrastructure services for private sector development (P); Regulation and competition policy (S); Environmental policies and institutions (S) Environmental screening category: Full Assessment
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Global Supplemental ID: P092509 Lending Instrument: Specific Investment Loan Focal Area: M-Multi-focal area Supplement Fully Blended?: Yes	Team Leader: Ajay Kumar Sectors: General transportation sector (100%) Themes: Infrastructure services for private sector development (P); Environmental policies and institutions (S); Regulation and competition policy (S)
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Project Financing Data

Loan Credit Grant Guarantee Other:

For Others: GEF Trust Fund Grant US\$7 million

Total Bank financing (US\$m.): 45.00

Proposed terms: Standard IDA terms, 40 years and 10-year grace

Financing Plan (US\$m)

Source	Local	Foreign	Total
BORROWER/RECIPIENT	12.00	6.00	18.00
International Development Association (IDA)	15.00	30.00	45.00
Global Environment Facility (GEF)	0.00	7.00	7.00
FRANCE: French Agency for Development (Agence Francaise de Developpement (AFD))	5.00	15.00	20.00
Total:	31.00	59.00	90.00

Borrower:

Republic of Ghana, Ministry of Finance and Economic Planning
Accra,
Ghana

Responsible Agency:

Department of Urban Roads
P. O. Box M38

Accra
 Ghana
 Tel: (233-21) 661575 Fax: (233-21) 672676
info@mrt.gov.gh

Estimated disbursements (Bank FY/US\$m)									
FY	8	9	10	11	12	13	0	0	0
Annual	1.90	5.50	11.50	11.50	10.10	4.50	0.00	0.00	0.00
Cumulative	1.90	7.40	18.90	30.40	40.50	45.00	0.00	0.00	0.00

GEF Estimated disbursements (Bank FY/US\$m)									
FY	8	9	10	11	12	13	0	0	0
Annual	0.50	1.00	2.50	2.50	0.30	0.20	0.00	0.00	0.00
Cumulative	0.50	1.50	4.00	6.50	6.80	7.00	0.00	0.00	0.00

Project implementation period: Start September 21, 2007 End: June 30, 2012
 Expected effectiveness date: September 21, 2007
 Expected closing date: December 31, 2012

Does the project depart from the CAS in content or other significant respects? Yes No
Ref. PAD A.3

Does the project require any exceptions from Bank policies? Yes No
Ref. PAD D.7

Have these been approved by Bank management? Yes No

Is approval for any policy exception sought from the Board? Yes No

Does the project include any critical risks rated "substantial" or "high"? Yes No
Ref. PAD C.8

Does the project meet the Regional criteria for readiness for implementation? Yes No
Ref. PAD D.7

Project development objective *Ref. PAD B.2, Technical Annex 3*

The key objective of the project is to:

Improve mobility in areas of participating metropolitan, municipal or district assemblies (MMDAs) through a combination of traffic engineering measures, management improvements, regulation of the public transport industry, and implementation of a Bus Rapid Transit (BRT) system.

Global Environment objective *Ref. PAD B.2, Technical Annex 3*

The key GEF objective is to:

Promote a shift to more environmentally sustainable urban transport modes and encourage lower transport-related Greenhouse Gas (GHG) emissions along the pilot BRT corridor in Accra.

Project description *Ref. PAD B.3, Technical Annex 4*

The project has five components, as detailed below.

- i) Institutional development
- ii) Traffic engineering, management, and safety
- iii) Development of BRT system
- iv) Integration of urban development and transport planning for better environmental management
- v) Project outcome monitoring

Which safeguard policies are triggered, if any? *Ref. PAD D.6, Technical Annex 10*
Environmental Assessment (OP/BP 4.01), Cultural Property (OPN 11.03), and Involuntary Resettlement (OP/BP 4.12)

Significant, non-standard conditions, **if any**, for:

Ref. PAD D.7

Board presentation:

None

Credit effectiveness:

(i) Adopt Project Implementation Manual, satisfactory to the Association.

Covenants applicable to project implementation:

(i) Center for Urban Transportation (CUT) will be established by January 1, 2010, and will assume all functions of the Project Advisory Office (PAO).

(ii) An Urban Passenger Transport Unit (UPTU) will be established in each participating Accra MMDA and each Kumasi MMDA by December 31, 2008 and December 31, 2009, respectively, and thereafter maintained at all times during the implementation of the project.

(iii) GOG will provide financing for consultants' services and operating costs for PAO and CUT on a graduated scale, starting January 1, 2010, contributing 25 percent during the first year, 50 percent during the second year, 75 percent during the third year, and 100 percent thereafter.

(iv) GOG will prepare and disclose a Resettlement Action Plan (RAP), Environmental Impact Assessment (EIA), and Environmental Management Plan (EMP) in accordance with the Resettlement/Rehabilitation Policy Framework (RPF) and the Environmental and Social Management Framework (ESMF), and carry out all measures that are required under the RAP and EMP to be implemented before commencing any civil works under the project.

(v) GOG will provide to the Association annual audit reports by June 30 of each year for the preceding fiscal year (FY).

(vi) GOG will prepare and furnish to the Association for its approval, by November 30 of each year during the implementation of the Project, an Annual Work Plan and Budget containing all eligible Project activities and expenditures planned for the following FY, including a specification of the source or sources of financing for each contract for eligible expenditures and the percentage of financing of each contract from each such source.

(vii) If AFD co-financing fails to become effective by March 31, 2008, the Association and the Bank reserve the right to suspend all or part of the IDA/GEF funding.

A. STRATEGIC CONTEXT AND RATIONALE

1. Country and sector issues

The Country Context

The population of Ghana is over 20 million with more than 40 percent living in the urban areas. Approximately 3 million people live in the Accra metropolitan area representing more than 14 percent of the national population. Another 5 percent (about 1 million) of the national population live in the Kumasi metropolitan area. It is estimated that Ghana's urban areas currently contribute over 60 percent of GNP, illustrating both their importance and also their potential for contributing further to economic growth.

The city of Accra is the administrative and commercial capital of Ghana and is growing at 4 percent per year; Kumasi is the second largest city in the country, growing at 5.6 percent per year. These are above the national average of 2.4 percent per year, which implies that Accra's population will double in 16 years and Kumasi's in 12 years. The share of people in urban areas in the country is expected to increase from 1 in 4 to almost 2 in 4 by 2020.

In the last 15 years, Accra's population has doubled and its area has expanded almost three fold. The built-up area has increased from 133 square kilometers in 1990 to 344 square kilometers in 2005. The population density, in turn, has decreased from 14,000 persons per square kilometer to 8,000 persons per square kilometer over the same period. The expansion in city size and decline in density has made it difficult for the municipal authorities to meet the service demands of its residents. The vulnerable sections of society have been particularly affected because of their dependence on public systems for provision of water, electricity, transport, and other services.

There is already significant evidence that the lack of comprehensive urban development policies and inadequate implementation of programs on urban management, land use, transport, and economic development is creating problems and limiting the growth potential of these sectors. Urban sprawl has increased travel distances and pushed up the price of public transport; this particularly affects the poor and often excludes them from work because of their dependence on the public transport system. Increased car use has created congestion on the roads, resulting in health, safety, and environmental problems. For example, the National Road Safety Commission reckons that 67 percent of road accidents happen in urban areas each year.

The National Urban Transport Context

Key issues facing the urban transport sector in the country are as follows:

- (i) The sector ministries, along with the metropolitan, municipal, and district assemblies (MMDAs), are now developing the capacity and the institutional framework necessary to support the overarching sectoral responsibilities that champion transport causes and coordinate activities. Although the institutional structures for construction and maintenance of the road network seem to be in

place and performing satisfactorily, the same cannot be said about the **service operation institutions, which are generally non-existent**. Although Government of Ghana (GOG) for the last six years has been investing in Metro Mass Transit's (MMT's) plan to operate an urban passenger transit system with large buses, the impact of MMT's operation has not been substantial.

- (ii) The primary road network is highly congested due to a lack of road capacity, **inefficient use of the existing road space**, indiscriminate parking, and street trading.
- (iii) Urban transport in Accra, Kumasi and other cities is characterized by the fundamental paradox of a market with **proven excess demand and shortage of supply** and it is not attracting sufficient new investment to redress this imbalance. The "excess" demand is reflected in overcrowded buses and long waiting times, without even accounting for the "latent" demand resulting from lack of affordability and access. The supply "shortage," in spite of a proliferation of taxis and *tro-tros* (mini buses), implies constraints in the provision of large, good-quality buses. Such buses are unavailable due to the low productivity of the capital assets in highly congested traffic, and from the inability of informal operators to attract the necessary funding to operate large, good-quality buses.
- (iv) Urban development trends are encouraging **sprawling settlement patterns**, which discourage use of slow-moving NMTs (particularly bicycles) and walking and increases dependence on private motor vehicles.
- (v) The transport sector is a **dominant source of local and global air pollutants** (PM, SO_x, NO_x, CO, CO₂, VOCs, O₃) that are responsible for adverse health impacts and contribute to global climate change. The Environmental Protection Agency (EPA) does not possess the authority, staff, or physical resources to adequately address the broad environmental consequences of excessive vehicle emissions and poor standards of vehicle maintenance. Until recently there was a complete lack of data on air pollution and vehicular emissions. Recent efforts aided by the United States Environmental Protection Agency (USEPA) and the Danish International Development Agency (DANIDA) have helped initiate the process of data collection and analysis; however, USEPA assistance ended in 2006 and DANIDA support will end in 2008. The city environmental agencies need longer-term support to build capacity to effectively monitor air pollution and manage vehicular emissions.

MMDAs are the core unit of local government bodies in Ghana. The current key legislation is the Local Government Act 1993 (Act 462), which defines the framework for the various functions, powers, and responsibilities of the MMDAs and empowers the Minister of Local Government, Rural Development, and Environment to make relevant Legislative Instruments that define the responsibilities of the MMDAs. Under the Act, urban passenger transport is a devolved responsibility falling to the relevant MMDAs covering the area in question.

The Local Urban Transport Context

Traffic in Accra is characterized by heavy congestion (particularly during the peak periods), low vehicle utilization, heavy dependence on informal private bus services, weak implementation of traffic management measures, inadequate facilities for pedestrians and bicyclists, poor road safety arrangements, and high accident rates. Almost 70 percent of motorized person trips in the city depend on some form of bus transport, which is the dominant mode and uses about a third of the road space. In contrast, private cars and taxis provide only a quarter of the person trips but occupy over half of the road space (Box 1).

Box 1: Transportation Mode Share (2004)

<u>Mode</u>	<u>Share (%)</u>
Regular bus	15
Minibus	53
Shared taxi	12
Private car	14
Truck/LDV	5

Motorization in Accra metropolitan area is high by African standards, at 90 vehicles per 1,000 population, as compared to 20–30 for Nairobi, Dar es Salaam, and Addis Ababa, which partly reflects the high number of taxis. No reliable estimates are available for walking trips, although surveys suggest that about 15 percent of trips are by walking. The share of non-motorized transport (NMT), such as bicycles, is negligible because of cultural reasons and an absence of infrastructure facilities (such as bike paths and bike stands).

Within the Accra metropolitan area, there are two main forms of public transport operations:

- (i) *Tro-tro (mini buses) and shared taxi services*, which are managed by unions and co-operatives and offer services along defined routes, usually between terminals or lorry parks. These operations suffer from a number of quality problems. A significant proportion of these operate outside the framework managed by the unions and co-operatives, and are usually opportunist “floaters” that take passengers that might otherwise use the services of either the organized *tro-tro* services or the Metro Mass Transit routes.
- (ii) *Large bus services* provided by the new Metro Mass Transit (MMT), a quasi-private company that receives favorable financial support from the government.

The structure of the operating industry in Accra consists of the following elements:

- ***Operating unions and associations.*** There are three operating unions and associations.
 - (i) The *Ghana Private Road Transport Union (GPRTU)*, a national union, is reported to have about 90 percent of the *tro-tro* and shared taxi business. The fundamental units are Locals, which operate the individual routes, and Branches, which are regional clusters of Locals. GPRTU represents the interests of both owners and drivers.
 - (ii) The *Progressive Transport Owners Association (PROTOA)*, is a national association that operates both *tro-tro* and shared taxi business and is organized along the same structure as the GPRTU. PROTOA mainly represents the interest of owners.
 - (iii) The *Ghana Co-operative*

Transport Association (GCTA) is a national association also organized along the lines of GPRTU and represents interest of both owners and drivers.

- ***Other private operators.*** Other private operators, such as *Agate, Kingdom Transport, and Pergah Transport*, are companies operating several buses and offering a range of services including contract service, urban services, and intercity services.
- ***Metro Mass Transit (MMT).*** MMT is a quasi-private company which is owned by a set of Government-linked financial institutions and one privately owned bank, with a substantial (45 percent) Government minority shareholding. MMT receives financial support from the GOG.
- ***Ghana Road Transport Coordination Council (GRTCC).*** GRTCC is an umbrella body of all transport operators in Ghana, including the unions and associations, other locally based associations, and other operators (both passenger and road haulers). GRTCC represents the interests of road transport operators, especially in negotiating with GOG for transport tariffs and assistance in acquisition of buses.

Government of Ghana (GOG) Strategy

GOG recognizes that the transportation challenges will get substantially worse without strong intervention, especially given the continued growth in urban areas. The intended response is to improve services through a combination of improvements in organization, management, service quality, and the operating environment, as well as improved regulatory measures. Studies have been conducted in the past few years to recommend an appropriate framework for addressing the issues facing the sector, including studies of the institutional and industry structure and the regulatory framework. Based on the studies, GOG has prepared a letter of National Urban Transport Policy (Annex 16), which lays the broad policy framework to guide the sector development.

The proposed project, set within GOG's National Urban Transport Policy, would address institutional, management, and regulatory issues to improve personal mobility in cities in Ghana, with an initial focus on Accra and Kumasi metropolitan areas. A critical success factor for the project will be the ability to regulate the bus services, and in particular to define routes, organize controlled competition for these routes, offer them under contract or franchise, and prevent interlopers from extracting earnings from the new routes. The project would also develop a Bus Rapid Transit (BRT) system on a pilot corridor in Accra.

The new regulatory framework would foresee gradual development of three distinct business sectors for the Accra and Kumasi bus transport operators:

- (i) *Scheduled bus operations* on the core network (not necessarily only on the BRT lines), using high-capacity vehicles and operating under contract within a limited competitive regime, and meeting service and comfort standards.

- (ii) *Feeder bus and local services* using vehicles of appropriate capacity, mostly smaller vehicles. These may or may not be scheduled services. These services will also be operated under contract and be required to meet operational and comfort standards.
- (iii) *Para-transit operations*. Para-transit operations would operate as a continuation of the *tro-tro and taxi* services and operators. However, they would be required to restructure their dispatching and parking arrangements to eliminate the traffic chaos they currently cause. Para-transit operators would also be required to gradually improve vehicle quality and professional standards. Initially, some of the para-transit may be co-opted to operate on contract as part of the feeder network. It would take about five years or more to establish the core network and feeders. After that, it is likely that the scheduled network will gradually incorporate areas served by para-transit, such that para-transit would migrate to the periphery and developing territories, as well as some pockets of the main Accra urban area.

The proposed project has been designed to address the above issues and constraints and achieve the following five complementary pillars:

- (i) A regulatory framework that provides a legal basis for the re-organization of the sector at the national level
- (ii) Regulatory institutions that have sufficient capability to plan, regulate, and guide the industry at the local level
- (iii) An industry structure that can compete and operate within the regulatory framework and attract the needed investment at the local level
- (iv) A culture of compliance with the regulatory framework, and the commitment and power to enforce and penalize offences at the local level
- (v) Infrastructure and a suitable operating environment to support improved urban transport services in Accra and Kumasi metropolitan areas

2. Rationale for Bank involvement

The Bank has financed transport operations in Ghana over the past two decades in primary, rural and urban roads, ports, and railways. These projects have provided an opportunity for the Bank to establish a substantive dialogue with the GOG on major issues in the transport sector. The Bank has also supported building a knowledge base through a number of studies financed by the Public-Private Infrastructure Advisory Facility (PPIAF), with the following objectives: (a) examine institutional, regulatory, and operational issues in the urban transport sector; (b) develop a toolkit on bus transport reform to help national and city policy makers implement contracting, regulating, institutional, and financing options for engaging the private sector in providing services; and (c) provide support for baseline studies and assist GOG in developing an urban transport policy. The proposed project provides an opportunity to implement the recommendations emerging from the Bank and PPIAF financed studies.

Bank involvement in this project is further justified for the following reasons: (a) drawing upon its international and regional experience, the Bank is in a strong position to support GOG in formulating strategies to address complex traffic and transport management issues. For example, in Brazil and Chile, the Bank supported the concept of physically separating buses from worsening traffic congestion. In Bogotá, Columbia, the Bank is supporting a second phase of separated bus corridors as part of the successful TransMilenio BRT system, which was first introduced in Curitiba. A project has been designed in Lima, with support from Global Environment Facility (GEF), along the lines of TransMilenio; (b) the Bank can help GOG implement these strategies through policy dialogue (PRSP, CAS), investments, and direct analytical support; (c) the Bank can help raise awareness of the need to go beyond investments in infrastructure and address mobility issues in the broader contexts of increasing urbanization, economic development, poverty reduction, and climate change; (d) the Bank can emphasize the need for integrated policy, regulatory, and institutional frameworks. In particular, the Bank can help establish appropriate institutional and regulatory measures leading to effective policies for, and planning and delivery of, urban transport services; (e) the Bank can link mobility issues to human and social development issues, such as the impact of mobility on disadvantaged groups, the poor, women, school children, and the young and old; and (f) the Bank can supply technical expertise for policy analyses and project formulation, and help coordinate and leverage financing from other development partners. The Bank can also utilize experience gained from the Sub-Saharan Africa Transport Policy Program (SSATP) and other regional initiatives to support the Ghana's reform agenda.

3. Rationale for GEF financing

Recognizing the growing importance of the transport sector's contribution to GHG emissions and the need to put urban transport on an environmentally sustainable track, the Bank has identified a unique opportunity to prepare a GEF program to mitigate greenhouse gas (GHG) emissions linked to the urban transport sector. This opportunity is aided by (a) dialogue between the GOG and the Clean Air Initiative for Sub-Saharan Africa, supported by the World Bank; and (b) the ongoing DANIDA-supported project aimed at developing a GHG emissions inventory for the urban transport sector in Ghana.

The GEF-funded activities would complement Bank funding and foster reduction of GHG emissions from the urban transport sector by making direct investments on the BRT and removing barriers at local and national level to promote and implement more sustainable and efficient urban transport systems. In line with GEF's Operational Policy on Sustainable Transport (OP11) and GEF's Strategic Priority in Climate Change focal area (CC-6), this GEF proposal aims at reducing GHG emissions from urban transport through the following measures: (a) promoting a long-term modal shift to more efficient and less polluting forms of public transport; (b) adapting strategic land-use and transport planning to the local and global environmental objective of reducing air pollution and GHG emissions; and (c) developing a demonstration project with clear benefits, such as reduced uncertainties about costs, performance, and market acceptance.

The proposed project includes the first BRT system being financed by the Bank in Sub-Saharan Africa and has the potential to be a demonstration for promoting bus-based transport systems in other cities. The project would support dissemination of learning and experience for wider application of sustainable measures in other cities of Ghana and Sub-Saharan Africa.

Discussions with GOG in preparation for the GEF co-financed components have created a unique opportunity to address broader issues related to mobility of people (as compared to just vehicles) in an environmentally and socially sustainable manner during the project and beyond.

4. Higher-level objectives to which the project contributes

The Ghana CAS (May 8, 2006) identified Ghana as one of the few countries in Sub-Saharan Africa to have a chance of meeting the Millennium Development Goals (MDGs). The strategy for meeting the MDGs, rooted in the Strategic Framework for the International Development Association's (IDA's) Assistance in Africa, rests on three pillars supporting the Ghana Poverty Reduction Strategy (GPRS): (a) sustainable growth and job creation, (b) human development and service provision, and (c) governance and empowerment. The Project will support all three objectives of the CAS and GPRS in the following ways:

- (i) Increase Ghana's competitiveness in foreign trade by reducing internal transport costs, and by promoting linkages in domestic markets, which are crucial factors for rapid and sustained growth.
- (ii) Improve governance through clarifying roles and responsibilities in the transport sector and encouraging wider and more meaningful participation of stakeholders (including private bus operators, users, commercial banks, insurance agencies, and NGOs) in the decision-making process.
- (iii) Contribute to effective and efficient delivery of urban passenger transport by emphasizing low-cost traffic management techniques and helping establish a suitable framework for policy formulation, planning, and regulation. The implementation of BRT and the retirement of old public transport vehicles will reduce travel times, operating costs, and environmental pollution impacts, leading to an improved level of service.
- (iv) Support private and financial sector development by advancing a limited competitive regime (route licensing) for the provision of urban passenger transport services. Also, improve the utilization of existing private sector investment in passenger transport vehicles, which will encourage more private sector investment and good administration of transport services.
- (v) Support decentralized management of urban passenger transport services by creating appropriate local institutions and capacity that enable the MMDAs to fulfill their responsibilities for transport services.

B. PROJECT DESCRIPTION

1. Lending instrument

The total project cost would be US\$90.0 million, which would be financed by an IDA Credit of US\$45.0 million, an Agence Française de Développement (AFD) Credit of US\$20.0 million, a GEF Grant of US\$7.0 million, and GOG financing of US\$18.0 million.

2. Project development objective and key indicators

The key objectives of the project are as follows:

- (i) Improve mobility in areas of participating MMDAs through a combination of traffic engineering measures, management improvements, regulation of the public transport industry, and implementation of a BRT system.
- (ii) Promote a shift to more environmentally sustainable urban transport modes and encourage lower transport-related GHG emissions along the pilot BRT corridor in Accra.

Expected outcomes of the investments on the pilot BRT corridor are as follows:

- (i) Reduction in average travel time for bus passengers
- (ii) Increase in average travel speed for all traffic
- (iii) Increase in productivity of bus services (passenger share of large buses)
- (iv) Reduction in CO₂ emissions

The proposed project would also help decrease peak-hour public transport vehicle flows (particularly for shared taxis and *tro-tros*) and make better use of road space (measured by more persons transported per peak hour along the BRT corridor; more kilometers traveled by buses per day; more bus passengers carried per day).

The proposed project would support long-term institutional and investment outcomes, such as improved utilization of existing public and private sector investments in passenger transport vehicles. This is expected to result in: (a) increased investment from the private sector as a result of higher returns on investment; (b) less need for government investment in passenger transport; and (c) developed institutional capacity for policy formulation, planning, regulation, operation, and monitoring and evaluation. The proposed investments would also help reduce barriers to sustainable urban transport planning and implementation.

3. Project components

The project has five components, as summarized in Table 1 (see Annex 4 for a detailed project description and Annex 5 for detailed project cost). GEF is co-financing three of the five components with the objective to facilitate removal of barriers for sustainable urban transport.

**Table 1: Project Cost by Components and Source of Financing
(US\$ million)**

Component	TOTAL	GOG	IDA	AFD	GEF
1. Institutional development	13.6	1.2	11.0	1.4	–
2. Traffic engineering, management, and safety	26.9	4.5	3.8	18.6	–
3. Development of BRT system	46.0	12.3	28.2	–	5.5
4. Integration of urban development and transport planning	2.0	–	1.0	–	1.0
5. Project outcome monitoring	1.5	–	1.0	–	0.5
Total project cost	90.0	18.0	45.0	20.0	7.0

Component 1: Institutional Development. (Total US\$13.6 million, of which IDA: US\$11.0 million, AFD: US\$1.4 million; and GOG US\$1.2 million) This component would strengthen capacity of Ministries and agencies concerned with urban transport, transport operators, MMDAs (AMA, TMA, GWDA, GEDA, KMA, and EJDA), including strengthening of the Urban Passenger Transport Units (UPTUs) within each assembly and creating an Urban Passenger Transport Coordinating Group (UPTCG) for the Accra and Kumasi MMDAs to plan, regulate, and monitor urban transport operations and services. This component would also support the work of the Project Advisory Office (PAO) and the institutional design and financial study to transform it into a permanent Center for Urban Transportation (CUT). Support would be provided through policy and institutional studies, training, technical assistance, operational support, and provision of equipment and vehicles. The specific subcomponents are:

Component 1.A Support the Ministry of Transportation in strengthening the overall transport policy environment and setting and enforcing operating and safety standards.

Component 1.B Support MLGRDE in regulation of urban passenger transport, outreach, environmental planning and monitoring. This sub-component would also provide technical assistance and training for strengthening legislation for the effective provision, regulation, licensing, emissions management, and facilitate implementation of urban transport plans. This component will finance capacity building of staff from the Environmental Protection Agency (EPA), MMDAs, Town and Country Planning Department (TCPD), and Urban Development Policy Unit (UDPU) for integrated urban development, transport planning, and environmental management, so that they can contribute meaningfully to component 4 of this project.

Component 1.C Support Accra MMDAs (financed by AFD) This sub-component would build capacity of MMDAs in the Accra Metropolitan Area to develop transport planning capacity. Support will be provided for strengthening capacity in planning, route concessioning, operations, and monitoring and evaluation aspects of BRT, to maximize the effectiveness and sustainability

of the system and other investments. This sub-component would also provide technical assistance and training for the strengthening of UPTUs within each MMDA, and establish UPTCG for the Accra metropolitan area, support development of transport related data bases, set service and quality standards, and plan and develop the bus network.

Component 1.D Support the Project Advisory Office (PAO) and Center for Urban Transportation (CUT) to: a) provide advisory services to the institutions and operators involved in the implementation of the project; and b) provide advisory services in planning, management and regulation of urban passenger transport. This sub-component would also support institutional design and financing study to transform the PAO into the proposed CUT.

Component 1.E Support KMA and EJDA. This sub-component would build capacity of two MMDAs in greater Kumasi Metropolitan Area to develop transport planning capacity. This sub-component would also provide technical assistance and training for strengthening UPTUs within the two MMDA, and establish UPTCG for the greater Kumasi Metropolitan Area, support development of transport related data bases, set service and quality standards, and plan and develop the bus network. This subcomponent would also provide technical assistance to undertake a public transport and BRT options study for the greater Kumasi Metropolitan Area.

Component 1.F Support passenger transport operators in the Accra MMDA areas by developing their capacity to prepare business plan, enter into route service contracts, develop maintenance capability to improve safety and environmental standards.

Component 1.G Support DUR in project management (including procurement, safeguards management, financial management, and monitoring and evaluation). It will also support DUR in contract administration of traffic management and implementation of BRT infrastructure components of the project.

Component 1.H Support MTTU training, equipment (monitoring, vehicles, safety control devices, traffic cameras, radar guns), capacity building in traffic management and enforcement of traffic regulations, collecting basic traffic data, and study tours and training to review successful traffic management practices in other cities.

Component 2: Traffic Engineering, Management and Safety. (Total US\$26.9 million, of which AFD: US\$18.6 million; IDA: US\$3.8 million; and GOG: USD\$4.5 million). The subcomponents are (a) traffic management in the Accra MMDA areas; (b) area-wide traffic signal control in the Accra MMDA areas; (c) traffic management in the Kumasi MMDA areas; (d) area-wide traffic signal control in the Kumasi Metropolitan Area; (e) enforcement of traffic rules and education; and (f) design and supervision of works under sub-components (a) through (e).

Component 3. Development of a Bus Rapid Transit System. (Total US\$46.0 million, of which IDA: US\$28.2 million; GEF: US\$5.5 million; and GOG: US\$12.3 million) The sub-components are as follows: (a) BRT infrastructure implementation (including segregated busways, interchange facilities, and terminals and facilities for pedestrians and NMT). The trunk route is 9.1 kilometers in length, with one BRT lane per direction, feeding two distributor loops

in the central business district. The trunk route has a terminal/modal interchange at the New Gbawe junction at Mallam, and modal interchanges at Odorkor Junction, Darkuman Junction, Kaneshie Market, and CMB; (b) design and supervision of construction of the BRT infrastructure; (c) a program of regular engagement with key stakeholders, and implementation of a public relations and media strategy for generating support and disseminating information on the BRT system. This sub-component would also include developing an Accra BRT Web site for broader dissemination and information sharing, and promoting replication in Kumasi by information sharing and leveraging the demonstration nature of this project; and (d) overall management and operationalization of the BRT system.

GOG and IDA will finance the construction of the BRT infrastructure, while GEF will finance sub-components (b), (c) and (d) of the BRT system. The selection of consultants for the design of the BRT system is well advanced and has taken place in consultation with the Bank following the Bank's procurement guidelines. A contract is expected to be signed in June 2007, before the GEF grant has become effective. Retroactive financing of up to US\$200,000 from the GEF grant will be provided to finance the design consultancy.

Component 4. Integration of Urban Development and Transport Planning for Better Environmental Management (Total US\$2.0 million, of which IDA: US\$1.0 million, GEF: US\$1.0 million). This component would include the following goals, to be achieved through technical advisory services and procurement of goods:

- (i) Building on other initiatives, GEF's contribution to this component would support the MLGRDE and respective MMDAs to update the integrated urban and transport development plans for the greater Accra Metropolitan Area. This is expected to help remove barriers to result in a better integration of urban development and transport planning. This would be a highly consultative exercise that will include a review of existing structural plan, regulations, institutional structures, standards, and procedures with a view to supporting urban growth that is more compatible with the development of transport infrastructure and services, leading to better environmental management.
- (ii) The development plan would be subject to a Strategic Environmental Assessment (SEA) especially as it relates to urban transportation (with emphasis on walking, non-motorized use and public transport).

Component 5. Project Outcome Monitoring (Total US\$1.5 million, of which IDA: US\$1.0 million and GEF: US\$0.5 million). The subcomponents are studies to support the monitoring of project outcomes through evaluation of (a) transport and social impact indicators, (b) environmental impact indicators, and (c) capacity development indicators.

The GEF would co-finance the subcomponent that focuses on GHG emissions, namely sub-component (b). Support would also be provided for strengthening EPA for air pollution and emissions management. The impact indicators would include calculation of direct GHG emissions from interventions such as BRT and NMT. As a result, GEF would also rely on some of the outputs of subcomponents (a) and (c).

4. Lessons learned and reflected in the project design

Setting up a strong institutional basis for coordinated planning and regulation is critical to the success of urban transport projects. The Bank urban transport policy paper “Cities on the Move” (2002) identifies institutional weaknesses as the source of many observed failures in urban transport in developing countries. Strengthening urban transport institutions often requires legislative, institutional, and management changes at the national, state, and municipal level to minimize jurisdictional and functional impediments to efficient and effective service delivery. Strengthening transport also requires setting up dedicated institutional bodies for urban transport planning and regulation, with commitment from the highest levels of government and a champion to further the cause of good management. The proposed project would set up a Center for Urban Transportation at the national level to provide technical and managerial back-stopping for the emerging local-level licensing and regulatory authorities. Local-level planning, regulation, and monitoring of urban passenger transport services will be carried out by the MMDAs involved in the project and the need for licensing authorities for Greater Accra and Kumasi will be explored within the project timescale. The Minister of Transportation, MLGRDE, and Chief Executives of Accra, Tema, Ga East and Ga West have endorsed this concept and are committed to this arrangement. In the short term, a PAO has been set up to perform initially the functions of CUT until the latter is established under the project.

Interactions with the borrower and beneficiaries should take place in a context of their choosing. The impact of ongoing changes in policy, governance, and institutional frameworks in countries like Ghana should not be underestimated. Where the requirements bring about changes in roles, responsibilities, and relationships, there is a need to understand the impact on the culture and values of the societies, sectors, and institutions for which the change is proposed. It is critical to understand the broader country-specific context. Experience shows that best results are achieved through long-term relationships where new ideas can be introduced indirectly and gradually, in pursuit of a shared vision and road map. The design of this project is driven by consideration of national requirements and what is most appropriate in the national context.

It is proposed to empower the MMDAs to perform the functions of urban passenger transport services, within an agreed time frame and well-defined road map. A simultaneous thrust has been on sharing best practices and building capacity at the local level (through discussions and study tours) over an extended period of time.

Allow a measure of flexibility in the design and set reasonable targets. The growing problem of urban mobility is the result of absence of regulatory institutions, inadequate capacity for planning public transport services, and inadequate investments. To reorganize urban transport service planning and delivery is a long-term process and its prominence in achieving urban sustainability compounds the need for more integrated, long-term and inclusive decision making. Such reorganization often requires legislative, institutional, and management changes and a period of internalization, capacity building, and behavioral adjustment within organizations before the real impact of the proposed new structures can be observed. The preparation of this project has taken almost three years of extensive consultation. Key issues have been agreed up front. A National Urban Transport Policy Letter has been submitted to the Bank (Annex 16). The proposed project would involve implementing the agreed program.

Implementation of BRT is a big challenge and requires considerable up-front discussions and consensus building. BRT is a “system” and requires extensive up-front planning and discussions that consider all the relevant issues as a package, including the design of the bus-way; design of the stops and junctions; design of the ticketing systems, fare levels, and structures; regulation and ownership of the buses; safety; and enforcement of the regulations. A successful system requires ownership by existing operators, drivers, and users and incorporation of their specific concerns in the design. The immediate focus of this project is on the following goals: (a) developing a regulatory framework, institutions, and a culture of compliance with the framework and an industry structure that can compete and operate within the framework; (b) organizing and regulating existing services; (c) bringing the operators on board; and (d) understanding needs of the users through surveys and focus group discussions. Investments in BRT “hardware” will come about only after an understanding and acceptance of the broader reform program and an appreciation of the complexity of issues involved.

Sustained engagement and complementary actions are key to making an overall impact. The urban transport issues faced by cities of today are the result of inaction of many decades. One operation cannot address all the problems. Sustained engagement and complementary actions by other sectors (urban, environment, energy, social) are crucial to making an impact in cities. The proposed project focuses on making improvements in a pilot corridor. If interventions are successful, it is expected to replicate the experience in other parts of the city.

Provide opportunities to learn from successful implementation of the reform program. As part of involving private operators in the dialogue, they accompanied the Government team on a study tour to London and South America. The tour provided an opportunity to develop a vision and understand the complexity of tasks required to reform the urban bus transport industry. Some of the key lessons documented by the study team at the conclusion of the study tour were as follows (a) a need for clear political will from the key decision makers and allocation of resources; (b) clear vision on passenger transport services as a means of improving the quality of life of the citizens, not just moving vehicles; (c) clear involvement of the Chief Executives of MMDAs; (d) setting up a project preparatory office/agency that works right from the beginning so as to own and follow through with the project; (e) identifying transport services as business; (f) helping traditional operators transform into legal entities to enable access to support from financial institutions; (g) clear and powerful communication and marketing strategies; (h) developing business models for traditional operators as basis for accessing funds; (i) making the system user friendly for all, from children to the elderly and physically challenged; and (j) integrating the system with sidewalks and bicycle ways with bicycle parking facilities at terminals and stations.

A good project monitoring system is necessary for effective management. A detailed monitoring and evaluation component, including collection of all necessary baseline data, has been designed and built into the project. Given that the project entails a lot of innovations and changes, there are plans for close monitoring combined with extensive consultations, which should allow appropriate adjustments to be made in a timely fashion.

5. Alternatives considered and reasons for rejection

Given the highly innovative nature of the project, various approaches and alternatives were considered in the way the various project components are designed. The reason why certain approaches were considered more appropriate and why they were selected is discussed below.

Local government versus national government as the key regulatory agent for local urban bus service. International experience shows that local government has a strong role in the planning, procurement, and management of urban passenger transport services within its territory. A strong local role ensures that all decisions are accountable at the local level; that they respond to the needs of the citizens; and that urban, transportation, societal, and fiscal decisions relating to the services are taken within a common framework. There are few examples where national government makes the key strategic and tactical decisions in relation to local transportation of cities and metropolitan areas. However, in Ghana, while there is a strong constitutional requirement for decentralization, the reality is that the local government (MMDAs) has no prior experience with passenger transport, and has many structural weaknesses. The approach taken by the project is to establish and support the MMDAs in planning and regulating their own urban passenger transport services. At the same time, the MMDAs will be operating within a broader framework of policy, guidance, and oversight provided by an Urban Transport Advisory Committee (UTAC) and technical support by the proposed Centre for Urban Transportation (CUT).

Regulated market versus self-regulation or deregulated market. The choice of regulatory system has a direct impact on the operators and their freedom of initiative in the market. The current market for urban passenger transport services in Accra is very lightly regulated and is in effect self-regulated, with the GPRTU having the dominant role among the minibus sector. Although the operations are relatively orderly and without “turf-wars,” the buses are old and poorly maintained; the services are operated and dispatched to benefit the operator and not the customer; the terminals are badly congested; and there is a lot of inefficiency as buses wait their turn to operate. There is currently no motivation for the sector to change its approach, operating practices, or to invest in better-quality vehicles. The experience in Accra indicates that self-regulation will not provide the framework for investment and quality improvements. A regulated market is needed to provide the stability and incentive for operators to invest in better-quality vehicles, to reorganize their practices, to reduce inefficiency and idle vehicles, and to control predation on routes where better services are offered. The BRT being proposed in this project will require high-quality vehicles, the ability to control and manage the services that operate on it, and a framework in which to plan and provide both BRT and feeder services. The approach taken is to (a) introduce light regulation across all of Accra metropolitan area so that all bus and *tro-tro* services must be registered and meet quality standards, and (b) to plan and procure the BRT and core feeder services under contract through competitive processes. This will require operators to adapt and bid for the contract routes, while leaving them a high degree of freedom away from the BRT corridors.

Developing a Bogotá-style BRT system versus adapting the design to African conditions The exemplary BRT system in Bogotá, Columbia—TransMilenio—has served as a model for urban passenger transport development in other cities across the world. However, the infrastructure

construction cost of the first phase of TransMilenio was US\$5.3 million per kilometer, and this scale of investment has proved extremely difficult to finance in the Sub-Saharan Africa region. The economic and administrative context in Sub-Saharan Africa cities is also quite different, requiring some adaptations. Most major cities in Sub-Saharan Africa have 2–3 million inhabitants and a relatively low density over the aggregate urban area. Levels of wealth vary quite widely, but are typically less than 40 percent of that in Bogotá. Motorization levels are also much lower and city development patterns are less constrained by geography. Single-corridor passenger flows are nowhere near those found in Latin American cities.

The challenge, therefore, is to develop a high-quality bus system that is affordable in the local context while retaining as many of the most desirable BRT characteristics as possible. The proposed system consists of segregated bus-ways on trunk corridors, with integrated tributary services; restricted entry to system (closed operating system); standard-capacity buses compatible with tributary routes, but with appropriate emissions levels; on-board fare collection or verification, with open stations; and graduated or zonal fares structures, with explicit charging for feeder services. System capacity would be somewhat lower than for a comprehensive BRT system, but still appropriate to the levels of demand found in the main corridors of most cities in the region.

Public-sector investment in rolling stock for the BRT system Regional experience of direct public-sector involvement in the delivery of urban passenger transport services has generally been unsatisfactory, both because of political interference in the management of the businesses and the desire to hold down fares, with the consequence of insufficient levels of financial support. The GOG has committed to a public-private partnership whereby it accepts responsibility for the enabling environment and infrastructure provision, but the private sector will be responsible for service delivery, including rolling stock provision and management.

However, financing of new buses by the fragmented private sector has also proved problematic. Owners mostly lack the collateral to support major investments and have difficulty in producing credible business plans for financial institutions. Finance leases have been proposed as a means of bridging this gap, but the necessary levels of deposit are still difficult to afford, the rights of the lessor are weak in the case of default, and there is no assurance of appropriate maintenance. The preferred approach is the development of operating leases whereby the lessor retains clear asset ownership, including responsibility for bus maintenance costs that are covered in the lease charge, and residual-value management that enables charges to be minimized.

The leasing industry in Ghana is small but is now benefiting from an IFC-sponsored program that has identified legal and regulatory constraints and is acting to remove them.

C. IMPLEMENTATION

1. Partnership arrangements

The proposed project is a fully blended project with **GEF**. The GEF-funded activities will complement Bank funding and foster reduction of GHG emissions from the urban transport sector by making direct investments on the BRT and removing barriers at local and national level to promote and implement more sustainable and efficient transport systems. The GEF-funded activities build on the dialogue that the Clean Air Initiative (SSA) has been having with GOG, and are likely to benefit from that engagement during the course of the project.

AFD is co-financing this project and is focusing its support on the institutional development and the traffic engineering, management, and safety components.

The **Global Road Safety Partnership**, in partnership with the National Road Safety Commission, is working on developing safety standards and guidelines.

DANIDA is financing a separate institutional support project, with a focus on road safety and vehicle emissions. The objective of the road safety component is to develop the capacity of and anchor road safety within NRSC, and support other key Ghanaian stakeholders (DVLA, DUR, GHA, MTTU, and BRRI) to effectively implement GOG road safety policy. The objective of the vehicle emissions component is to reduce the negative environmental impact of vehicle emissions. It includes the provision of baseline studies on vehicle emissions and provides support to develop and implement policies.

The **Dutch EIA Commission** has a program of support for the EPA (which is a part of MLGRDE) and the project is likely to benefit from it.

2. Institutional and implementation arrangements

The roles and responsibilities of the various agencies involved in this project are as follows:

- (i) GOG has formed an Urban Transport Advisory Committee (UTAC) to ensure key technical inputs, multi stakeholder consultation, collaboration, coordination, and information dissemination for urban transport policy development and implementation. Specific responsibilities include: a) advising on a common policy and regulatory framework for urban transportation in Ghana, including target dates for each MMDA to pass related regulatory instruments; b) advising MLGRDE on directives to be issued to MMDAs in implementing urban transport policies and regulations; c) providing guidance for the set-up and operationalization of CUT and UPTUs; and d) reviewing progress made towards achieving the project's objectives, and make recommendations for its efficient implementation.
- (ii) MOT will have the overall sector responsibility for this project in close collaboration with MLGRDE. MOT will provide the urban transport policy framework and carry out project activities related to the setting and enforcing

urban passenger transport operating and safety standards, and vehicle and driver standards. MOT will also arrange for the annual audit of the project.

- (iii) DUR (under the MOT) will be the main implementing agency for the project. DUR will have direct responsibility for project management (including procurement, safeguards management, financial management, and monitoring and evaluation). DUR's finance department will oversee all eligible expenditures under the project, in accordance with systems and procedures acceptable to IDA. It will work in accordance with the Financial Procedures Manual established for the ongoing IDA financed Road Sector Development Program and ensure robust internal control arrangements for the project. DUR will also have responsibility for contract administration of traffic management and BRT infrastructure components of the project.
- (iv) MLGRDE has overall responsibility for the regulation of passenger transport in the urban areas falling under the jurisdiction of MMDAs. MOLGRDE (working in close collaboration with MOT) will ensure that the MMDAs are adequately mandated and resourced to undertake their responsibility in the regulation and delivery of urban transport services. Specific responsibilities include: a) overall regulation of urban passenger transport; b) collecting and analyzing environmental indicators for urban transport; c) supporting DUR in ensuring implementation of the ESMF, RPF, EMP and RAP; and d) undertaking an Urban Development Plan and a Strategic Environment Assessment for greater Accra metropolitan area.
- (v) A PAO has been established within DUR, with key staff, office facilities, and support services. While the line management of the project will be carried out by the DUR on behalf of the MOT, the PAO will report to the Director of DUR for all operational and management issues. Specific responsibilities include: a) providing advisory services to the institutions and operators involved in the implementation of the project; and b) providing advisory services in planning, management and regulation of urban passenger transport. The PAO will form the nucleus of the proposed CUT. The project will fund the operations of the PO until December 31, 2009. The staff and operating cost will then be transferred on a sliding scale basis to the government over the next three years. The IDA Credit would continue to finance the gap.
- (vi) UPTUs will be strengthened to develop the authority and the capacity of MMDAs in the domain of planning and regulating local passenger transport services at a pace they can absorb and with support from the project.

A Project Implementation Manual (PIM) will be prepared by DUR (with PAO/CUT support) for: (a) institutional coordination and day-to-day execution of the project; (b) disbursement and financial management; (c) procurement; (d) environmental and social guidelines; (e) monitoring, evaluation, reporting and communication; and (f) such other administrative, financial, technical and organizational arrangements and procedures as shall be required for the Project. The DUR

(with PAO/CUT support) will prepare an Annual Work Plan and Budget containing all eligible expenditures and the percentage of financing of each contract, identified by source. The Procurement Plan would indicate the source of financing for each contract and the Interim Financial Report would be adjusted to include the additional information.

Regulation of urban passenger transport services Agreement has been reached on a mechanism for the four MMDAs in the Accra metropolitan area (AMA, TMA, GEDA, GWDA) and for two MMDAs in Kumasi (KMA, EJDA) to progressively register and license all local passenger transport services in their areas. Key enabling steps are as follows:

- (i) The Minister (for LGRDE) designates passenger transport as a responsibility of the four greater-Accra MMDAs (AMA, TMA, GEDA, GWDA) and two Kumasi MMDAs (KMA, EJDA).
- (ii) The Minister of Local Government, by Legislative Instrument empowered under Section 81 of the Local Government Act (462 of 1993), makes model bylaws for the regulation of passenger transport services.
- (iii) MMDAs adapt their internal structures to accept these functions and responsibilities and develop local UPTUs.
- (iv) The four Accra MMDAs establish a joint committee to deal with inter-District passenger transport services, as provided for under sections 32 and 33 of Act 462; and
- (v) The four Accra MMDAs and the two Kumasi MMDAs harmonize sticker fees and develop the working basis on which stickers should be priced and revenues disbursed in future.

The above mechanism would be implemented in four stages:

Stage 1 (start January 2008) Begin registration of all current regular passenger transport routes operated by *tro-tros*, shared taxis, and buses.

Stage 2 (start July 2008) Issue “Type A” route operating licenses for all routes registered under Stage 1, and for which an organizer or operator has been verified.

Stage 3 (start July 2009) Issue “Type B” route operating licenses for selected routes where a higher quality of service is desired.

Stage 4 (start July 2010) Offer route service contracts on selected routes where a higher quality of service is desired that could only be achieved by investing in good-quality buses. The route service contracts would be awarded using competitive procurement methods. This stage should start with a small number of routes offered as a pilot scheme and could coincide with making the pilot BRT scheme operational.

3. Accounting, financial reporting, and auditing arrangements

The DUR would, through the PAO, oversee all expenditures financed by the project, in accordance with systems and procedures acceptable to IDA. It would work in accordance with

the procedures that have been prepared and put in place under the ongoing Road Sector Development Program (RSDP).

New Designated Accounts for the IDA credit and GEF grant will be opened and maintained in a commercial bank acceptable to IDA, managed by DUR. Independent auditors acceptable to IDA would audit the use of all IDA and GEF funds, including the IDA Designated Accounts and the statements of expenditures. Financial audit reports would be submitted to IDA no later than six months after the end of the fiscal year. The format and the frequency of periodic reporting are defined in the PIM. The financial/technical audit system, developed under RSDP, would be continued and enhanced under the proposed project to assess the cost effectiveness and adherence to agreed work programs.

4. Monitoring and evaluation of outcomes/results

The project includes a comprehensive monitoring and evaluation component based on qualitative and quantitative performance indicators for each subcomponent. These include transport, social, environmental, and capacity development indicators. This data would be used, in turn, to estimate project-related GHG emission reductions. A mobile source inventory would be established and periodically updated, building on the baseline developed under the DANIDA project.

The transport and social impact monitoring will be conducted by DUR (with the help of PAO) on an annual basis. A number of studies were conducted as part of preparation, which will be continued during implementation to monitor the impact of project investments. The specific output of studies is the identification of attributes of adequate public transport, which would feed into the design of the BRT corridor. The analytical scope of attributes to be identified, evolve around four main attributes as listed below. These are the attributes, along which the travel diary form/questionnaire will be centered. There will be a dedicated M&E unit in DUR to develop and conduct the studies.

Attributes	Dimensions
Affordability	Monthly spending on transport/users income Price or fare; Offer of benefits for public transport (e.g. bus-passes) or subsidies on fares; “Opportunistic cost of service”
Availability	Routes desired by users vs available services Length of wait, Traveling time, Reliability, Availability of services at night and at weekends
Accessibility	Walking distance to terminal or station Availability of information Access roads to allow vehicles in neighborhood Social environment (mugging and violence) Vehicles and bus stops adapted to vulnerable users (children, pregnant women, elderly, disable)
Acceptability	Safety inside vehicle Crew member’s attitudes (drivers and aides) Conditions of bus stops and shelters Cleanliness and conservation of vehicles Comfort and capacity

The environmental impact monitoring strategy for this project aims at tracking the barrier removal activities that facilitate changes towards adoption of new transport patterns and behavior and calculating direct and indirect impacts of the project activities on GHG emissions reduction and sustainability of interventions from a climate change perspective. Progress towards the project objectives would be measured on a regular basis through the following actions:

- (i) Design and validation of the monitoring system in cooperation with the implementing agency and all stakeholders
- (ii) Implementation of an automated data processing system that generates the relevant M&E information periodically
- (iii) Periodic field data collection for input into the data processing system to generate the appropriate indicators
- (iv) Collation of monthly and quarterly reports by DUR (with support from PAO) from agencies and institutions participating in the project
- (v) Publication and circulation of quarterly progress reports by the DUR/PAO to all project stakeholders

The EPA has sited six ambient air-quality testing stations across the Accra metropolitan area, one of which is positioned in the BRT pilot corridor close to the location of maximum existing congestion. This station would provide the baseline data for ambient air quality in the corridor and tangible evidence of the impacts of the BRT scheme on the corridor. Cross-reference to the other test sites will enable separation of project impacts from those arising from more general interventions such as improving fuel quality and tighter control of vehicle standards.

The EPA also has a mobile air-quality testing station that could be used to identify pollution levels on the feeder routes to the BRT scheme, and hence locate particular areas of concern. Post-investment monitoring could then focus on those black-spots to determine the effectiveness of the intervention. In addition, under the DANIDA project, EPA has the basic capacity to update the vehicle emissions inventory for local and global pollutants. This capacity would be strengthened and utilized for M&E during the project.

5. Sustainability

The project would support a number of strategies to achieve higher productivity of buses and improve standards of vehicle maintenance and repair, which would enable a higher return to be earned on bus investments. Increased asset productivity derived from improved traffic management would allow informal bus operators to attract the necessary funding. Rationalization of bus supply would eradicate predatory competition, increase rider ship and fare box revenues, and reduce operating costs. This would make the public transport industry more profitable and allow informal private operators to secure funding, thereby improving chances of financial sustainability.

The project would also focus on ensuring sustainability of the critical legal and institutional structures necessary to support long-term implementation of an integrated reform program. Currently, there are inadequate arrangements to plan and regulate bus services, impose safety standards, or adjust services to better respond to market demand. The PO would assist the MMDAs in planning, regulating and procuring urban public transport services and help establish local and national capacity for market regulation, supported by a nucleus of professionals. This

would ensure institutional sustainability of the BRT, the NMT facilities, and the limited competitive regime. In addition, setting up institutions within a framework common to the whole transport sector would provide a sustainable basis to manage an effective and efficient transport system in the long run. During the first year, institutional studies would be undertaken to agree on steps to transform the PAO into a permanent unit (Center for Urban Transport) by January 1, 2010. The project will finance operations of the PAO for the first two years. After transition to the permanent CUT, the staff and operating cost will then be transferred on a sliding scale basis to the government over the next three years. GOG is committed to make the CUT financially sustainable by the end of the project.

6. Replicability

Segregated bus-ways, rationalization of public transport operations, and feeder NMT services have enormous potential for replication in other corridors within greater Accra, other cities in Ghana, and other Sub-Saharan Africa countries. Most cities in Sub-Saharan Africa share common characteristics: a growing urban population inadequately served by the transport system, declining standards in public transport system, multiplicity of agencies responsible for planning and implementing transport solutions, massive growth in informal privately operated bus services, an increasing dependence on private transport modes, and consequent deteriorating environmental quality and safety standards. Thus far there are no BRT systems in Sub-Saharan Africa; plans are, however, in progress in Dar es Salaam, Lagos, and Addis Ababa. Evidence suggests that introduction of BRT systems coupled with NMT facilities as feeder systems is one way to check the rapid growth of private vehicles, bring discipline to private bus operations, and reduce GHG emissions. Implementation of a BRT system on a pilot corridor in Accra and strengthening planning and regulatory capacity would be of high interest to other cities faced with similar problems. One of the potential outcomes would be a step-by-step procedure for planning and designing a BRT system in an African context, which can be used as an example by other cities. A dissemination plan and a set of activities will be developed during project implementation to replicate the proposed pilot project on other corridors in Accra and Kumasi. Detailed studies have been conducted in Kumasi, Tamale, Sekondi/Takoradi, Cape Coast, and Koforidua, from which potential applications can be derived. Elsewhere in Sub-Saharan Africa, both Dar es Salaam and Addis Ababa are cross-fertilizing from experience in Accra. Lagos is also in the process of examining the potential of BRT along major corridors.

7. Stakeholder involvement

The preparation phase of this project has involved several consultations organized by GOG, including focus group discussions and workshops involving government agencies, users, private operators, *tro-tro* drivers, bus owners, commercial banks, insurance companies, NGOs, and development partners (see Annex 20 for details). Different workshops were conducted to design the project. In a two-day workshop, representatives of the private sector, government, commercial banks, and other stakeholders were involved in detailed discussions to formulate options on improving the urban transport environment. Based on the discussions, institutional, financial, regulatory, technical, and environmental strategies were developed and presented in a second workshop. The project design was modified further based on discussions and this was presented in a third high-level workshop, with participation of the Office of the President and

other key stakeholders. In addition, a number of focus group discussions were organized with the bus operators and users to inform the project design. Communication programs were developed to target high-level actors (ministry officials, city authority, local community leaders, local employers, and so forth) in order to build support for the program at the decision maker's level.

8. Critical risks and possible controversial aspects

Table 2: Critical Risks and Possible Controversial Aspects

Potential risks	Mitigation	Risk Rating
Lack of political commitment. Arrangements to coordinate activities of multiple ministries and agencies in delivery and management of urban transport services not in place. Delays in formulating necessary legislation to establish appropriate institutions.	GOG has submitted a letter of National Urban Transport Policy defining the role of Government, agencies, private sector, and civil society in management and delivery of urban transport services. A PAO and UTAC have been set up for advisory, coordination, and monitoring and evaluation of urban transportation.	M
Local authorities and institutions responsible for regulating public transport have weak institutional capacity to implement the project; institutional framework and operating plans are not in place at the outset.	Support will be provided during project implementation to the PAO and MMDAs to plan, regulate, enforce, and monitor and evaluate public transport operations. There is agreement on the definition and the framework for implementation. Gradually the mechanisms will be put in place as capacity develops.	M
Legal basis for regulation of public transport is not sufficient and creates obstacles to implementation. Obstacles could arise either from legal advice within ministries or by lawsuits.	Legal basis studied. Comprehensive legal framework for urban passenger transport regulation is lacking. MMDAs will be empowered to deal with urban passenger transport under Local Government Act 1993 (Act 462) and pass local bylaws to empower local transport units within their jurisdiction, to require registration of bus and minibus services, and to regulate operations.	S
Capacity to plan and implement traffic management measures remains weak.	Specific arrangements to strengthen capacity of traffic police and city traffic enforcement units have been put in place.	M
Effective enforcement of the BRT corridor might not be achieved. Could lead to serious deterioration of operating conditions, either due to high levels of traffic violations or encroachment by curbside traders and street hawkers.	BRT positioned as a "must-do" project. Strong political commitment exists to make it succeed. PAO to identify signs of problems at early stages. Adequate resources would be made available to intervene immediately if encroachment occurs. Focus group discussions and dissemination workshops will raise awareness.	S
Private bus sector might not participate in initial stages, and frustrate efforts to bring regulation to the sector.	Assessment is that all operators seek to advance the quality of their vehicles and service and wish to move to more profitable and secure industry basis. Measures include: (a) involving operators from the outset in planning a fair and transparent process, (b) assisting operators to identify opportunities and being honest with them about the risks, and (c) put in place capacity-building processes.	S
Floater, illegals, unaffiliated operators, and various discontents will resist change and try to cause trouble both at	Mitigation measures include: (a) ensuring political commitment to the process based on visible and permanent benefits to citizens of MMDAs (b)	H

political and street levels.	working with operators to bring maximum number on-board from the outset, (c) avoid setting operators against each other, (d) being patient and negotiating to bring as many into the scheme as possible.	
Traditional operators fail to develop the ability to bid successfully.	Current members of private sector are well positioned to adapt and compete. Measures include: (a) know-how transfer, capacity building, and training to assist operators within the structured bus and <i>tro-tro</i> services; and (b) design processes to allow gradual adaptation and avoid major discontinuities. Standards, thresholds, evaluation criteria, and so forth can be set low initially and raised over time. Discussion forums would be held to explain the processes and how best to make bids.	S
Operating industry fails to attract the necessary investment in new rolling stock to meet system design standards.	Number of discussions held with representative bodies of the operating industry. Willingness to invest constrained by lack of faith in regulatory system and low commercial speeds possible in the conurbation; both factors being addressed in the project. Availability of finance was a problem, but leasing appears attractive. In the near term, vehicles procured for public-private partnership MMT could provide necessary fleet until new investment mobilized.	M
Current bus operators do not accept relocation of their routes and rationalization of transport system. Introduction of large buses in formal sector may have the unintended consequence of discouraging private sector investments.	Number of workshops and focus groups organized with private bus operators to sensitize them to project concept. Discussions will continue and final recommendations to be based on consensual arrangement. Small private operators will be encouraged to form associations and participate in bidding for route franchising.	S
Overall Risk Rating		S

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

9. Credit conditions and covenants

Effectiveness conditions

- (i) Adopt PIM, satisfactory to IDA

Other project-specific covenants

- (i) CUT will be established by January 1, 2010, and will assume all functions of the PAO.
- (ii) A UPTU will be established in each participating Accra MMDA and each Kumasi MMDA by December 31, 2008 and December 31, 2009, respectively, and thereafter maintained at all times during the implementation of the project.
- (iii) GOG will provide financing for consultants' services and operating costs for PAO and CUT on a graduated scale, starting January 1, 2010, contributing 25 percent during the first year, 50 percent during the second year, 75 percent during the third year, and 100 percent thereafter.
- (iv) GOG will prepare and disclose a RAP, EIA, and EMP in accordance with the RPF and ESMF and carry out all measures that are required under the RAP and EMP to be implemented before commencing any civil works under the project.

- (v) GOG will provide to the Association annual audit reports by June 30 of each year for the preceding FY.
- (vi) GOG will prepare and furnish to the Association for its approval, by November 30 of each year during the implementation of the Project, an Annual Work Plan and Budget containing all eligible Project activities and expenditures planned for the following FY, including a specification of the source or sources of financing for each contract for eligible expenditures and the percentage of financing of each contract from each such source.
- (vii) If AFD co-financing fails to become effective by March 31, 2008, IDA reserves the right to suspend all or part of the IDA/GEF funding.

D. APPRAISAL SUMMARY

1. Economic and financial analyses

Economic analysis was carried out for investments to support the BRT component, accounting for about 50 percent of the IDA Credit. The investments in traffic engineering, management, and area-wide traffic signal control would be spread over a number of subcomponents, throughout the Accra and Kumasi metropolitan areas. Past experience suggests that these investments provide significant benefits in terms of channelization of mixed traffic, improvements in average speed and travel time, and reductions in accident rates.

Four alternative designs for bus operations were evaluated:

- Alternative 1: feeder/trunk operation with electronic fare
- Alternative 2: feeder/trunk route with non-electronic fare
- Alternative 3: direct operations (reduced transfers) with electronic fare
- Alternative 4: direct operations (reduced transfers) with non-electronic fare

All designs introduce some route optimization to reduce fleet size, and include central business district (CBD) circulators (Circle and Ministries).

It is assumed that fares on the BRT and feeder services will be at the same level as existing *tro-tro* fares. For simplicity, a two-tier fare structure has been assumed in which users of the feeder services pay 2,000 cedis and trunk route users also pay 2,000 cedis. A user of both the feeder and trunk services would therefore pay 4,000 cedis.

The economic evaluation was based upon the conventional before-and-after analysis for a 10-year analysis period, which is shorter than the 20-year period used for civil infrastructure projects. As the bus-way and structural elements can conservatively be expected to have a 20-year life, a residual value of 50 percent was applied to the major structural works, bus-way, and station items of capital cost.

Road user savings were quantified for the following:

- (i) Vehicle operating costs per mode for taxis, *tro-tros*, and buses were derived from HDM4 analysis based upon road and traffic characteristics representing the Winneba/Graphic Road corridor. For the BRT system, the total recurring costs (with electronic fare collection) were used.
- (ii) Value of time for vehicle occupants for taxis, *tro-tros*, and buses were calculated from observed operational characteristics related to route characteristics, waiting time, travel speed, stop time, and frequency. Travel time for occupants of the BRT system was calculated in a similar manner based upon the characteristics of the BRT system.

Table 3: Results of Economic Analysis

Alternatives	Base	Cost +20%	Savings –20%	Cost +20%/ Savings –20%
1	18%	14%	13%	10%
2	19%	15%	14%	11%
3	21%	17%	16%	12%
4	22%	18%	17%	13%

2. Technical

The selection of the pilot corridor to implement BRT scheme was based on the general criterion of hourly peak passenger bi directional flows, and the need to provide an integrated public transport network. The following routes were identified as routes on which BRT services should operate in an exclusive running-way: (i) Guggisberg Avenue from Mpoase to CBD; (ii) Winneba Road from Mallam to CBD; (iii) Nsawam Road from Apenkwa to CBD; (iv) Liberation Road and Independence Avenue from Tetteh Quarshie to CBD; (v) Ring Road from Korle Bu to Labadi; (vi) Motorway Extension from Mallam to Tetteh Quarshie; (vii) Accra–Tema Coastal Route; (viii) Nima/Kanda Highway; and (ix) CBD/Ministries circulation system. The highest ranked corridor was BRT 2—Winneba/Graphic Road from Mallam to the Accra CBD, which scored 0.80.

In the design of the BRT system, consideration was given to developing a high-quality bus system that is affordable in the local context while retaining as many of the most desirable BRT characteristics as possible. The proposed system consists of segregated bus-ways on trunk corridors (typically with curbside operation and stations, except in areas of high side friction), but with integrated tributary services; restricted entry to system (closed operating system); standard-capacity buses compatible with tributary routes, but with appropriate emission levels; on-board fare collection or verification, with open stations; and graduated or zonal fare structures, with explicit charging for feeder services. Some of the direct benefits of BRT are illustrated below.

Table 4: Benefits of BRT

Category	Description
Economic	<ul style="list-style-type: none"> ▪ Improved utilization and returns on investments ▪ Increased private sector investment in urban passenger transport services ▪ Increased revenue generation for local authorities ▪ More reliable product deliveries for producers and consumers ▪ Increased economic productivity from the urban area as a whole ▪ Reduced cost of road accidents, especially for urban poor ▪ Increased access and flexibility to employment opportunities
Social	<ul style="list-style-type: none"> ▪ Increased mobility and equitable access in the city ▪ Reduced accidents and illness ▪ Increased civic pride, sense of community, and user satisfaction ▪ Reduced travel time and resulting increased quality time with family ▪ Increased confidence in market regulation (through demonstration) ▪ Raised expectations for urban transport services and infrastructure
Environmental	<ul style="list-style-type: none"> ▪ Lower energy consumption per person/kilometer and reduced GHG emissions ▪ Reduced emissions of air pollutants (fine particulates, CO, SO_x, NO_x) ▪ Improvements in public health through reduced ambient air pollution ▪ Reduced noise levels and increased walkability
Urban form	<ul style="list-style-type: none"> ▪ Improved utilization of existing transport infrastructure ▪ Improved planning for new transport infrastructure

3. Fiduciary

Financial management: IDA has carried out a fiduciary assessment of the DUR, in its capacity as the lead implementing agency, with respect to its capacities in financial management and procurement. The assessment recommended some measures for the DUR to implement, as indicated in the financial and legal covenants that will be included in the Financing Agreement. Implementation of the financial management action plan completes the setting up of the necessary arrangements that will facilitate the smooth implementation of the planned project activities. The project's proposed fiduciary arrangements meet the Bank's minimum requirements for financial management.

Procurement: Procurement of goods and works would be carried out in accordance with the World Bank's "*Guidelines: Procurement under IBRD Loans and IDA Credits*" dated May 2004 and revised in October 2006; and "*Guidelines: Selection and Employment of Consultants by World Bank Borrowers*" dated May 2004 and revised in October 2006, and the provisions stipulated in the Financing Agreement. In the circumstances specified in the said guideline,

procurement and selection of consultants will be carried out in accordance with the Ghana Public Procurement Act 663 of 2003. The general description of various items under different expenditure categories is described in Annex 8. Each contract to be financed by the IDA Credit and the co-financing GEF Grant, different procurement or consultant selection methods, the need for prequalification, estimated costs, prior review requirements, and time frame are agreed between the Borrower and the Bank project team in the Borrower's Procurement Plan. The Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

4. Social

Social assessment: A survey of 3,000 households was carried out, to study travel patterns of the inhabitants of Accra and establish baseline data. In conjunction with the household survey, a survey of travel diaries focusing on school children, market women, and women at maternal health clinics along the pilot BRT corridor was carried out. The findings will not only feed into the design of the BRT, but will also serve to monitor the social development outcomes of the project in a before-and-after study of the social impacts. The household and focus group surveys will be carried out annually during the project life. A Resettlement/Rehabilitation Policy Framework (RPF) was prepared and disclosed, prior to appraisal. A Resettlement Action Plan (RAP) will be prepared after the detailed design of the BRT becomes available and prior to the road-upgrading civil works along the BRT corridor; as the physical impacts will then be known, and consequently, impacts in houses and structures along the BRT alignment.

Gender issues: The project will benefit children, women, men, and the elderly by responding to their mobility needs and providing them better access to basic social services (health, church, school) and to markets. Particular attention will, however, be given to markets along the road, by providing safe and enhanced access to the market places, which will particularly benefit women and children. Also, the project will seek to provide enhanced and safe emergency access to health clinics and hospitals with focus on maternal health.

Participation/Consultation/Communication: The identification of project components was participatory. Project preparation involved several consultations: (a) Meetings with local government (municipality) officials, likewise the ministries of local government and of transportation and DUR; (b) focus group discussions with users, transport unions (private operators, *tro-tro* bus drivers, bus owners), commercial banks, insurance companies, NGOs, and development partners; and (c) workshops involving all the above-mentioned stakeholders. Representatives of these key stakeholders were involved in detailed discussions formulating ideas on options to improve the urban transport environment. Based on the discussions, institutional, financial, regulatory, technical, and environmental strategies were prepared. In addition, a study tour to Latin America was organized, to enhance social cohesion among key stakeholders, enhance their understanding of the benefits of the project, and strengthen ownership. As result of the participatory process, all key stakeholders became vocal advocates of the project. Also, the project includes a communication subcomponent design to enhance participation and strengthen ownership of the project by its stakeholders.

Social benefits. The expected social benefits of the proposed project include savings in travel time for users of the system (both in- and out-of-vehicle time), particularly for school children; reduced vehicle operating costs; reduced fares; and improvements in the safety and quality of

transport services. In addition to traditional mobility benefits, the project may increase labor market options for some workers and diversify land-use patterns in Accra.

Impact assessment: To assess the social benefits of the project, the household survey data as well as the travel diary data will be used as baseline for a before-and-after study (a panel survey).

5. Environment

The project aims to improve the environmental performance of the Accra urban transport system. The transport sector is a major source of local and global air pollutants (PM, SO_x, NO_x, CO, CO₂, VOCs, O₃) that are responsible for poor health and other negative impacts.

An Environmental and Social Management Framework (ESMF) was prepared and disclosed, prior to appraisal. No adverse environmental impacts have been identified by the ESMF. An Environmental Impact Assessment (EIA), with accompanying environmental management plans (EMP), will be prepared after the detailed design of the BRT becomes available and prior to the road upgrading civil works along the BRT corridor. Appropriate mitigation measures and management arrangements will be designed to ensure compliance and appropriate implementation of the Environmental Management Plan (EMP).

6. Safeguard policies

Table 5: Safeguard Policies Triggered by the Project

Project	Yes	No
Environmental Assessment (<u>OP/BP/GP</u> 4.01)	[X]	[]
Natural Habitats (<u>OP/BP</u> 4.04)	[]	[X]
Pest Management (<u>OP</u> 4.09)	[]	[X]
Cultural Property (<u>OPN</u> 11.03, being revised as OP 4.11)	[X]	[]
Involuntary Resettlement (<u>OP/BP</u> 4.12)	[X]	[]
Indigenous Peoples (<u>OD</u> 4.20, being revised as OP 4.10)	[]	[X]
Forests (<u>OP/BP</u> 4.36)	[]	[X]
Safety of Dams (<u>OP/BP</u> 4.37)	[]	[X]
Projects in Disputed Areas (<u>OP/BP/GP</u> 7.60)*	[]	[X]
Projects on International Waterways (<u>OP/BP/GP</u> 7.50)	[]	[X]

7. Policy exceptions and readiness

The project complies with all applicable Bank policies.

The engineering design documents for the first year activities are complete and ready for the start of project implementation.

Annex 1: Country and Sector Background

GHANA: Urban Transport Project

Country and Sector Issues

The Country Context

The population of Ghana is over 20 million with more than 40 percent living in the urban areas. Approximately 3 million people live in the Accra urban area representing more than 14 percent of the national population. Another 5 percent of the national population lives in Kumasi. It is estimated that Ghana's urban areas currently contribute over 60 percent of GNP, illustrating both their importance and also their potential for contributing further to the country's economic growth.

The city of Accra is the administrative and commercial capital of Ghana and growing at 4 percent per year. Kumasi is the second largest city in the country, with a population of about 1 million and growing at 5.6 per cent per year. These figures are above the national average of 2.4 percent per year, which implies that Accra's population will double in 16 years and Kumasi's in 12 years. The share of people in urban areas in Ghana is expected to increase from 1 in 4 to almost 2 in 4 by 2020.

Experience from around the world shows that as economies grow, rapid urbanization takes place that encompasses a large share of a nation's population. Cities also become significant engines of growth. Without a clear policy direction and vision, the ability of cities to grow competitively and remain bankable and livable is often compromised. The cities in Ghana like other cities in SSA are no exception. Like most SSA countries, the growth of the agriculture sector in Ghana is slowing down and the "push factors" are forcing people to flood into towns and cities. However, the urban areas are not generating enough economic growth for the increased population and local authorities do not have sufficient resources or expertise to provide services, such as access to transport, water, housing, education and health care.

The National Urban Transport Context

Motorization is high by African standards at 90 vehicles per 1000 population, as compared to 20-30 for Nairobi, Dar es Salaam and Addis Ababa, which partly reflects the high number of taxis. No reliable estimates are available for walking trips, although surveys suggest that about 15 percent of the total trips are by walking. The share of non motorized transport (NMT), such as bicycles, is negligible because of cultural reasons and an absence of infrastructure facilities (such as bike paths and bike stands).

The main issues facing the urban transport sector in the country are as follows:

- *Institutional* – government. Within the affected assemblies and the sector ministries, the transportation sector is now developing the capacity and the institutional framework necessary to support the overarching sectoral responsibilities that champion transport causes and coordinate activities.
- *Infrastructure* – road capacity and traffic management. In a recent survey, over 70 percent of arterial routes in Accra were found to be congested (operating at less than 20 kilometers per hour at some time of the day). The problem of traffic congestion on the primary road network is as much due to a lack of road capacity as it is to the inefficient use of the existing road space, indiscriminate parking, and street trading. As a result, urban traffic congestion is increasing rapidly and is already a significant constraint to urban productivity. This has put even more time and travel burden on the urban poor in particular and further increased transport cost for goods.

- *Planning* – transport networks, passenger services, and integration with land use. The majority of urban residents are inadequately served by transport services as measured by the time spent in traveling to places of daily necessities, delays in transporting goods to the local markets, and so forth. Almost 50 percent of the trips require multiple interchanges to get to a destination, and about 30 percent of trips include the use a personal motorized vehicle to get to the nearest bus stop. Work-related travel of more than one hour per day is the norm, with great variation upward due to the unreliability of public transport.
- *Regulatory* – enforcement of standards, control of competition. Growth in privately provided bus transport systems has resulted from by a rapid growth in travel demand, fueled by expansion of the city and a rise in population, and coupled with declining state-provided public transport services. . Currently, there are relatively few regulations that are specific to public transport. There is little licensing and much of the public transport legislation is obsolete and delegates control to metro areas and municipalities. There is also little enforcement of existing regulations.
- *Financial* – infrastructure investment and maintenance, subsidies to users or operators. The main causes for the continuing poor quality of transportation services are poor infrastructure, poor condition of road vehicles (the average age of *tro-tros* is 17 years), low fares, inadequate management of transport businesses, outdated technology, and inadequate investments in repairs and preventive maintenance.
- *Affordability* – fares. Public transport fares in greater Accra range from 1,000 to 5,000 cedi per trip, but a high proportion of journeys involve one or more interchanges that require additional payments. Taking the average journey cost as being at the median of the fare range, daily travel expenditure would be about 7,500–10,000 cedi. Commuting expenditure for a month would be in the range of 10–15 percent of monthly income for the lowest quintile group.

The Local Urban Transport Context

In the last 15 years, Accra’s population has doubled and its area has expanded almost three fold. The built-up area has increased from 133 square kilometers in 1990 to 344 square kilometers in 2005. The population density, in turn, has decreased from 14,000 persons per square kilometer to 8,000 persons per square kilometer over the same period. The expansion in city size and decline in density has made it difficult for the municipal authorities to meet the service demands of its residents. There is already significant evidence that the lack of urban policies on land use, transport, and economic development is creating problems and limiting the growth potential of these sectors. Urban sprawl has increased travel distances and pushed up the price of public transport; this particularly affects the poor and often excludes them from work because of their dependence on the public transport system. Increased car use has created congestion on the roads, resulting in health, safety, and environmental problems. For example, the National Road Safety Council reckons that 67 percent of road accidents happen in urban areas each year.

Box 1: Mode Share (2004)

<u>Mode</u>	<u>Share</u>
Regular bus	15%
Minibus	53%
Shared taxi	12%
Private car	14%
Truck/LDV	5%

Traffic in Accra is characterized by heavy congestion (particularly during the peak periods), low vehicle utilization, heavy dependence on informal private bus services, weak implementation of traffic management measures, inadequate facilities for pedestrians and bicyclists, poor road safety arrangements and high accident rates. Almost 70 percent of motorized person trips in the city depend on some form of bus transport, which is the dominant mode and uses about a third of the road space. In contrast, private cars and taxis provide only a quarter of the person trips but occupy over half of the road space (Box 1).

Public Transport Operations in Accra

The sector has two main divisions: (i) a few medium- to large large-scale operators of full full-size buses (including the recently launched quasi-private Metro Mass Transit or MMT), and (ii) the remainder who are individual owners or owner-operators, almost always with only 1–2 vehicles, usually *tro-tros* (10–15 seater minibuses) or shared taxis (5- seater). Almost 20 percent of the public transport trips are by large diesel buses; and the remainder is by *tro-tros* (around 65 percent) and taxis (15 %). percent). The *tro-tros* and the shared taxi operators do not own any workshops or garages to undertake repairs or maintenance. Most operators acquire low-value, second-hand vehicles that can be financed individually or through the extended family or similar support groups. The small buses operated by the informal sector are inefficient users of the limited road space. On-street competition has resulted in aggressive driving, congestion, poor safety standards, and low vehicle productivity. Critical problems associated with public transport operations in the city include the following:

- inefficient utilization and management of publicly owned transport terminals
- inefficient use of vehicles by private and public operators due to terminal dispatch practices (only sending buses out when full, for example)
- lack of management control to enforce proper vehicle maintenance scheduling
- uneconomic fares that do not support investments in new buses
- inappropriate bus size (too many small vehicles) and incorrect allocation of function between vehicle sizes (particularly the operation of taxis and mini buses on trunk routes more suitable for large buses)
- operations impeded by excessive numbers of small vehicles offering public transport service

Institutional Arrangements

Public transport in urban areas in Ghana has evolved since independence in 1957. A number of different ministries hold either direct or indirect responsibilities within the sector. These include the following:

- Ministry of Transportation (MOT). The ministry has overall responsibility for the road transport sector. The following responsibilities rest with the respective ministries, departments and agencies (MDAs); road infrastructure (DUR, GHA); vehicle ownership and use regulations (DVLA); road safety (NRSC); public transport (MMT and fare negotiation with private operators)
- Ministry of Local Government, Rural Development and Environment (MLGRDE). The ministry has overall responsibility for implementing the government decentralization program and empowering MMDAs to regulate public transport services.
- Local Assemblies (AMA, TMA, GEDA, GWDA, KMA and EJDA) are responsible for the issuance of operating permits; passing of byelaws; fares control (not currently exercised);
- TCPD is responsible for terminal management and land use planning;
- EPA is responsible for environmental protection.
- Ministry of Finance and Economic Planning—The ministry is responsible for taxation (VAT, IRS, CEPS); insurance (NIC, SIC); subsidy and public investment
- Ministry of Interior, Ghana Police Service—Motor Traffic and Transport Unit (MTTU). MTTU is responsible for enforcement of road traffic regulations.

Legal basis for organization and jurisdiction in the Urban Transport Sector

Under the Local Government Act (No.462 of 1993), urban passenger transport is a devolved responsibility falling to the relevant MMDAs covering the area in question. In the Accra metropolitan area, these bodies are the Accra Metropolitan Assembly, the Tema Municipal Assembly, the Ga District Assembly (East) and the Ga District Assembly (West). Each has jurisdiction within its own boundaries, but there is no formal coordination between them or a higher-level authority to which they could defer.

Structure and Organization of Urban Public Transport

About 90 percent of public transport services in Accra currently are provided by the informal sector. The only formal bus operation is the newly established MMT (addressing the remaining 10 percent of the transport demand).¹

Operating levels have declined due to the decline in the traditional fiscal basis for financing subsidized public transport, coupled with inability of the public transport systems to raise sufficient revenues through fare collection to maintain service quality, has resulted in declining levels of operation. As a result, during the early 1990s, the urban transport bus operations underwent a major transformation, with creating a greater role of for the private sector. In Accra, publicly owned bus operations virtually ceased in early 1990s following mounting losses. The control over both *tro-tros* (minibuses) and shared taxis was mandated to Ghana Private Road Transport Union (GPRTU), whose members provide 80 to 90 percent of bus services in Accra

Key characteristics of bus operations in Accra are as follows:

- (i) The dominant share of public transport demand is met by private informal services:
 - 70 percent *tro-tros* (minibuses)
 - 15 percent taxis
 - 15 percent large buses
- (ii) The privately operated minibuses and taxis play an important role in meeting travel demand in Accra. Most of the privately operated buses in Accra are controlled by unions, through routing, loading by turns, and permission to operate on specific routes. The few operators (less than 10 percent) who do not belong to any transport union are called “floating drivers” by the unionized members.
- (iii) The market share of low-capacity buses, (mainly second-hand imported van conversions and minibuses) is high, leading to worsening of traffic congestion:

- registered private buses:	12,094
- taxis:	23,497
- buses	588
- (iv) Use of old commercial vehicles for passenger transport results in adverse environmental impacts due to frequent break downs, and poor engine maintenance.

¹ Metro Mass Transit Ltd (MMT) has been established as a private commercial undertaking, but with the Government of Ghana holding 45% of the equity through equal shareholdings by the Ministries of Roads and Transport, and Local Government and Rural Development. The Social Security and National Insurance Trust, the National Investment Bank, the State Insurance Company and the Prudential Bank hold the balance of equity. Only the last of these can truly be regarded as a private-sector enterprise, and so MMT is under clear Government control.

- (v) The bus transport system is generally of poor quality, because most vehicles are old and many trucks/ and vans have been converted for passenger services for which they are not well suited.
- (vi) The regulatory and institutional environment supporting the transport system is weak. The 1972 Omnibus Services Decree provided for the establishment of the Omnibus Licensing Authority to decide routes, and parking places, and fares to be paid. However, the Decree has never been implemented and no bus route licensing system operates in Ghana. As a result, there are no specified bus routes for public and private buses. The license gives the right to operators to operate the buses anywhere in the city.
- (vii) Generally, private operators run buses on high-demand corridors and where the road condition is in a good condition. Where demand is low or roads are in poor condition, services are of a lower standard and higher fares are charged. This is typically the case in poor outlying areas.
- (viii) Public transport is informally controlled by transport unions, including Ghana Private Road Transport Union (GPRTU.) All unions are under the umbrella organization, the Ghana Road Transport Coordinating Council (GRTCC). Since 1990, bus fares have been de-regulated by Government and the fares are now being fixed by the umbrella body of the transport unions, GRTCC in consultation with MOT.
- (ix) The unions charge membership fees and drivers are obliged to register with and pay a daily fee to a local branch, which controls a terminal. The unions also collect user charges, operating on behalf of the MMDAs, which own the terminals. Unions require a vehicle to be full before it can depart, a practice which that is not always in the interest of the passengers; they often cannot board vehicles between terminals and must wait long periods until vehicles are full.
- (x) There is freedom of entry into the market, provided a vehicle meets the roadworthiness standard set by the Driver and Vehicle Licensing Authority (DVLA) for operating commercial vehicles. The operating permits, renewed annually, are provided by the MMDAs after certification by DVLA.
- (xi) Difficulties in raising commercial financing for purchase of buses results in most private buses being financed through individual resources. This has compromised investment in modern, safe, high-capacity buses.
- (xii) The route structure of public transport generally provides good access to the city center from suburbs but there are poor links from east to west. Cross-town or radial trips requiring require interchanges for people living in suburbs.
- (xiii) Minibuses and terminals are poorly utilized because of driver insistence on fully loading prior to departure, further compromising reliability of services for passengers in route.
- (xiv) The transport unions do not provide any physical facilities to their members as they are considered welfare unions. Unions mainly organize social activities and engage in collective negotiations with GOG. The operators/drivers pay one-time fees to join the unions and association, in addition to membership fees and daily loading fees at the terminals.
- (xv) There is no centralized bus routing and scheduling plan. An ad hoc route network has developed that links the fixed terminals of the operator unions or associations as potential demand is been identified for services. Negotiations are then held between the relevant union

branches to share the work and the service is launched on a trial basis. Should the trial service rapidly become a commercial success, it is then incorporated into the permanent network.

- (xvi) Routes are not operated on a schedule, but rather respond to demand from their originating terminals. As passengers arrive at the terminal they are allocated to the first vehicle waiting to serve their intended route, which commences service once it has been filled. Even on the quieter routes, there is no set maximum headway between services. This may cause severe delays to waiting passengers, both at the terminals and along the routes.
- (xvii) The average licensed capacity for *tro-tros* this class of vehicle is 17.5 people, or 16.5 passengers excluding the driver. Their surveyed average occupancy is 80 percent, giving an average load of 13.2 passengers. The average round trip route distance falls within the range surveyed in the study on improving urban transport of 10–15 kilometers. At a weekday average of 125 kilometers operated, this gives some 20 one-way trips per vehicle or 265 passengers per day. The number of *tro-tros* operating permits issued by the three assemblies in the greater Accra metropolitan area totaled 12,000 in 2003, the last year for which figures are available. The level of vehicle availability reported in the owners survey was around 90 percent, though this figure may be biased by the unavailability of vehicles under longer-term repair. One branch official reported that less than half of his registered owners were able to offer their vehicles for service on any given day. Adjusting for this factor, perhaps around 6,000 *tro-tros* are put into daily service. Taken together, these figures suggest a daily *tro-tro* patronage of about 1.6 million passengers.

Recommendations to Improve Urban Transport in Ghana

A detailed study was conducted to recommend an appropriate framework to address the issues facing the sector including the institutional and industry structure and its regulatory framework. The study has recommended setting up a National Urban Transport Commission (NUTC), with the following tasks:

- (i) Identification of urban transport policy options
- (ii) Preparation of urban transport master plans
- (iii) Identification and prioritization of public investments in the urban transport sector
- (iv) Determination of maintenance standards for public investments
- (v) Determination of the form of economic regulation to be adopted in the urban passenger transport sub-sector.

There has been a vacuum in the strategic planning of urban passenger transport services since the break-up of the Omnibus Services Authority (OSA). The Omnibus Services Decree of 1972 was designed to separate the roles of the OSA authority between the regulation of transport services and their operation, but this was never fully implemented even though OSA Ltd was established as the operating entity. The powers for strategic transport planning within a prescribed area lie with its Licensing Authority, acting with the approval of the MLGRDE. The functions of the licensing authorities in Accra have been subsumed by the local assemblies covering the conurbation, namely the Accra Metropolitan Assembly, the Tema Municipal Assembly, and the two Ga District Assemblies. However, these assemblies perform no strategic function but only rather act as only as a collector and enforcer of license fees. These fees are set at such a low level (US\$4 per vehicle per year) that they fail to fund enforcement activities. Furthermore, there is no formal coordination between these authorities, although transport policy needs to reflect real travel patterns rather than political boundaries.

Effective reform of the urban passenger transport sector in the greater Accra conurbation requires a sponsoring body to set reform goals and monitor progress towards them, taking remedial actions as

necessary. For this reason, the study has also recommended setting up individual authorities in each urban area to set local priorities and be accountable to its electorate for the outcomes. The executive functions of the authority are essentially local in nature. Route networks, for example, are unique to each conurbation, their transport operations may differ, and monitoring of contracts must be at the point of service delivery. For greater Accra, which covers the Accra metropolis, the greater part of Tema municipality, and the urban areas of the Ga districts, the study proposed setting up of the Greater Accra Metropolitan Area Transport Authority (GAMATA). The two main functions of the Authority GAMATA are seen as being the local provision of transport infrastructure and the regulation of passenger transport services.

Introduction of Route Licensing and Tenders for Route Service Contracts.

At present, passenger transport operators in the greater Accra conurbation obtain a permit to operate services from the relevant local assembly. These permits generally cover the whole area governed by the assembly, and are not confined to specified routes. When “limited competition” is introduced, it will be necessary to confine all operators to specified routes so that their services are not mutually extractive. The first step towards this process would be the introduction of route licenses in place of area permits.

The next step would be establishment of a tendering authority and development of a competitive supply industry. This would require some consolidation in the transport industry into business units of appropriate size and form needed to meet tender specifications, as well as creation of a draft service contract and pilot route specifications for the different classes of vehicles.

The form of regulation applied to feeder services will need to be agreed with the unions and associations on behalf of their members. It is expected that deregulation of local and feeder services would be allowed to continue for a limited period until the core network has been designed and contracted. Route licenses of about 12 months would be offered so as not to entrench incumbent operators, and to allow for adjustments to the core network as necessary. However, once the initial round of tendering for the core services have been completed (about two years after implementation), the local and feeder services will also be exposed to competition.

A pilot bus rapid transit (BRT) system

The key technical elements of BRT are borrowed from rapid rail systems and aim to provide high-quality service by minimizing the amount of time buses are stopped for passenger boarding and alighting (dwell time), maximizing the vehicle cruise speed, facilitating transfers, and enhancing the reliability of bus operations. Several major technical elements have been identified as BRT characteristics:

- (i) **Busways** that range from general traffic lanes to fully -graded, separated lanes for BRT transit-ways.
- (ii) **Stations** vary from simple stops with basic shelters to complex inter-modal terminals with many amenities.
- (iii) A wide variety of **vehicles** from standard buses to specialized vehicles.
- (iv) A Service and Operations Plan that specifies vehicle frequency, reliability, and coordination, as well as the route alignment and structure.
- (v) **Fare collection** options range from traditional pay-on-board methods to pre-payment with electronic fare media (such as smart cards).
- (vi) A wide variety of **Intelligent Transportation Systems (ITS)** technologies that can be integrated into BRT systems, such as vehicle priority, operations and maintenance management, operator communications, real-time passenger information, safety and security systems.
- (vii) **Supporting regulatory, financial, institutional, and legal elements.** In a developing

metropolitan area like Greater Accra it is necessary to combine the technical elements of BRT with a series of regulatory, financial, institutional, and legal elements to provide a sustainable public transportation system. The purpose of these elements is to turn the prevailing negative aspects of current public transportation service provision, into an adequate structure.

Outline design of the BRT route network

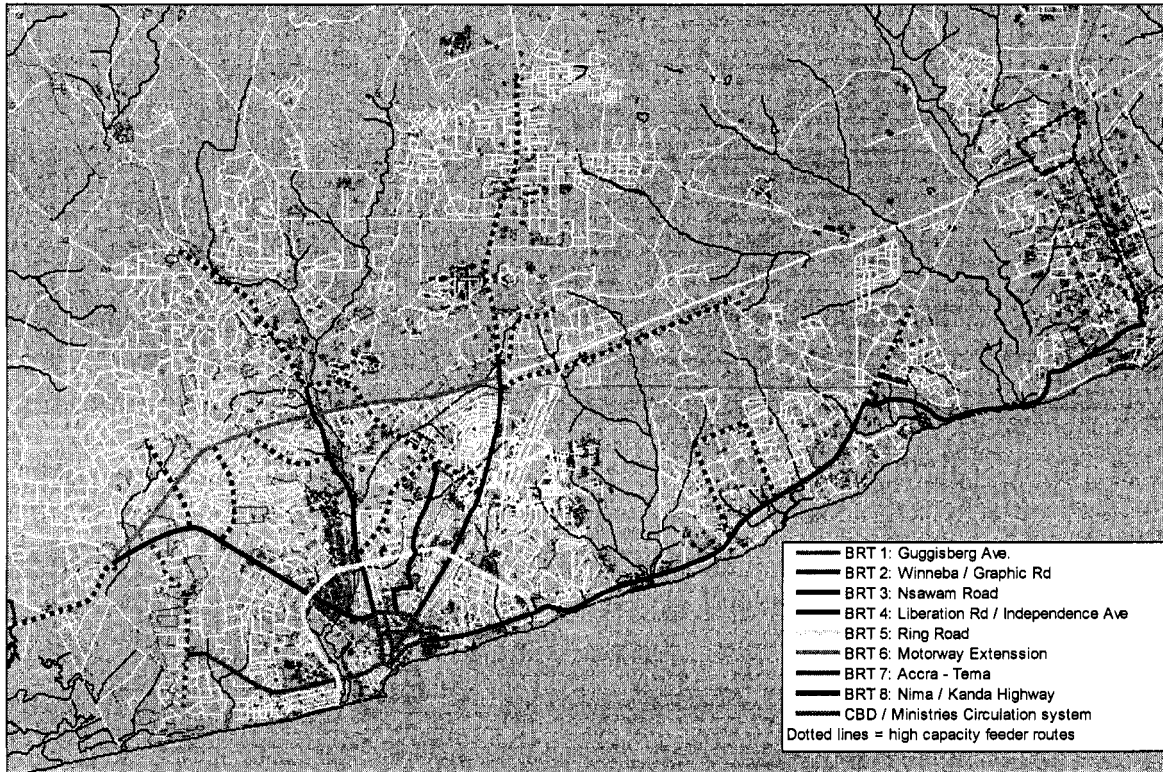
The proposed long-term BRT network consists of a combination of radial and orbital routes that together will form a network of routes that cover most major employment areas. Due to the capital costs involved in providing the BRT busways, the proposed BRT network is restricted to major corridors of demand. Based upon the general criterion of hourly peak passenger bi-directional flows greater than 10,000 in 2013, and the need to provide an integrated public transport network, the following routes were identified as routes on which BRT services should operate in an exclusive busway:

- (i) Guggisberg Avenue from Mpoase to CBD
- (ii) Winneba Road from Mallam to CBD
- (iii) Nsawam Road from Apenkwa to CBD
- (iv) Liberation Road and Independence Avenue from Tetteh Quarshie to CBD
- (v) Ring Road from Korle Bu to Labadi
- (vi) Motorway Extension from Mallam to Tetteh Quarshie
- (vii) Accra–Tema Coastal Route
- (viii) Nima/Kanda Highway
- (ix) CBD/Ministries circulation system
- (x) Feeder services are required to link the dispersed residential areas of the study area to the high-capacity BRT trunk routes. A hierarchy of feeder services is proposed in order to maximize the usage and efficiency of the BRT service. On high-volume routes that do not meet the criteria for BRT services on a dedicated busway, high-capacity feeder services are proposed.

It is envisaged that dedicated BRT routes would replace the high-capacity feeder routes described above when demand on the feeder routes warranted a higher level of service. On lower-density routes, feeder services are proposed that will utilize existing *tro-tro* operators using vehicles of capacity similar to existing *tro-tros*. These mid-capacity feeder services should be a formal part of the BRT system, and operated under contractual agreements between the operators and the relevant Public Transport Authority. Low-capacity feeder services would be provided on an informal basis by current taxi operators.

Nonmotorized transport plays an important role in provision of feeder services. An integrated system of pedestrian walkways and bicycle routes will increase accessibility of the system, in particular for low-income users. The location of the proposed trunk and feeder routes is shown in Figure A1.1.

Figure A1.1.1. Location of Proposed Trunk and Feeder Routes



BRT options for a general hypothetical corridor

Most of the general characteristics of the initial pilot corridor will be applicable to other corridors in Accra. For this reason a set of characteristics was generated that will be applicable for the whole system and not only for the initial pilot corridor. An analytical tool was developed to calculate at a macro level the expected costs and impacts of a given option. The model incorporates several characteristics of the BRT corridor and calculates the capital and operational costs for infrastructure, buses, and fare collection system. Infrastructure includes the rehabilitation or construction of bus lanes, construction of transfer and terminal facilities, and construction of garages. Travel time impacts on the passengers are also estimated.

Selection of pilot BRT corridor

In order to select a corridor for pilot implementation, the Project Team assessed the degree of compliance of each of the potential BRT corridors with a number of criteria. Five high-level criteria, some of which had second- and third-level subcriteria, were evaluated. Each criterion and sub-criterion was quantitatively or qualitatively rated and then normalized on a scale of 0 to 1. Table 1 below shows the normalized scores, where a higher score shows a more positive compliance with the criterion.

Table A1.1. Normalized Scores for Selected Corridors

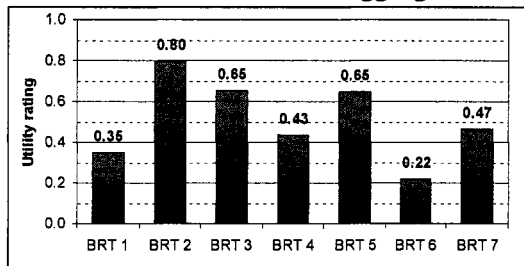
Criteria	BRT 1 Guggisberg	BRT 2 Winneba	BRT 3 Nsawam	BRT 4 Liberation	BRT 5 Ring Rd	BRT 6 M'Way ext	BRT 7 Tema
Travel demand	⊕ 0.00	● 1.00	● 0.86	◐ 0.71	◐ 0.54	⊕ 0.01	⊕ 0.07
Ease of implementation	◐ 0.27	◐ 0.78	● 1.00	● 0.88	◐ 0.65	◐ 0.70	◐ 0.53
Transport impact	◐ 0.25	● 1.00	⊕ 0.08	◐ 0.25	● 0.92	⊕ 0.00	◐ 0.67
Access for low income population	● 1.00	◐ 0.46	● 0.92	⊕ 0.00	◐ 0.69	◐ 0.46	◐ 0.77
Urban planning impact	◐ 0.45	◐ 0.70	● 1.00	● 0.81	⊕ 0.15	◐ 0.28	◐ 0.36

The relative importance of each criterion (and sub-criterion) was established by a series of interviews with relevant role players. A combined score for all interviews was determined for each criterion as follows:

- Transportation impact: 27.7 percent
- Total travel demand: 26.4 percent
- Accessibility for low-income population: 21.4 percent
- Cost/ease of implementation: 17.7 percent
- Urban planning impacts: 6.8 percent

Applying the weightings for each criterion to a normalized rating, the following aggregate scores were obtained of the relative attractiveness of each corridor for pilot implementation.

Table A1.2. BRT Corridor Aggregate Scores



The highest-ranked corridor was BRT 2—Winneba/Graphic Road from Mallam to the Accra CBD—which scored 0.80. Winneba Road rated highly with regard to the number of potential users of the system and the impact that the BRT will have on travel time in this corridor.

Notwithstanding the need for grade separation at Obetsebi Lamptey Circle and the Railway crossing on Graphic Road, the existing portion of the three-lane road and relatively low impacts on the Graphic Road

section contributed to BRT 2's good score for ease of implementation. Integration with the CBD and good linkages to transportation infrastructure resulted in an above-average rating for BRT with regard to urban planning impacts. However, BRT 2 scored below average on accessibility to low-income communities.

Based upon the preceding analysis, the ranking of the various routes analyzed was found to be relatively robust to changes in the weighting of criteria. The seven potential BRT routes were therefore ranked in decreasing order of priority for implementation as follows:

1. BRT 2 Winneba Road from Mallam to CB
2. BRT 3 Nsawam Road from Apenkwa to CBD
3. BRT 5 Ring Road from Korle Bu to Labadi
4. BRT 7 Accra-Tema along the Tema Beach Road
5. BRT 4 Liberation Road and Independence Avenue from Tetteh Quarshie to CBD
6. BRT 1 Guggisberg Avenue from Mpoase to CBD
7. BRT 6 Motorway Extension from Mallam to Tetteh Quarshie

Corridor BRT 2 therefore can be considered as offering the best combination of demand, ease of implementation, transport impact, attention to low-income population, and urban and regional planning impacts. Therefore the Winneba/Graphic Road corridor from Mallam to the CBD was selected for implementation of the BRT pilot project.

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

GHANA: Urban Transport Project

PROJECT	IP RATING	DO RATING	SECTOR ISSUES ADDRESSED
BANK FINANCED			
Urban II Project-Closed		S	Urban infrastructure, decentralization, improved fiscal management
Local Government Development-Closed		S	Urban infrastructure, decentralization, improved fiscal management
Urban Transport Project – Closed		S	Urban Road Infrastructure,
Highway Sector Improvement Project - Closed		S	Main and urban roads, traffic management
Urban Environmental and Sanitation Project - Closed		S	Urban infrastructure, support to MMDAs
Urban Environmental and Sanitation Project II - ongoing	MS	MU	Urban infrastructure
Ghana Fifth Urban Project -Phase 1-ongoing	S	S	Urban infrastructure, decentralization, improved fiscal management
Road Sector Development Program-ongoing	S	S	Main, urban and feeder roads, studies, traffic management
OTHER DEVELOPMENT AGENCIES			
AFD: Tema and Sekondi-Takoradi Urban Road Project;			Urban roads rehabilitation and maintenance, traffic management

Kumasi Urban Road Project

CIDA (Canada): (1) Local Government Reform Study-ongoing; (2) Fiscal Decentralization

(1) Adopting budgeting and expenditure management reforms undertaken at the central level to the local level; (2) Implementation of fiscal decentralization

DfID (UK): Performance Improvement Program

Support civil service reform for the entire public sector (ministries, departments and agencies)

DANIDA (Denmark): Transport Sector Programme Support II

Support to decentralization of transport agencies

Note: For ongoing projects, the Implementation Progress (IP) and Development Objective (DO) ratings are taken from latest Implementation Status Report (ISR); for closed projects, the DO ratings are taken from the ICR, when available.

HS-Highly satisfactory, S-Satisfactory, MS – Moderately Satisfactory, MU – Moderately Unsatisfactory, U-Unsatisfactory, HU-Highly unsatisfactory

Annex 3: Results Framework and Monitoring

GHANA: Urban Transport Project

Table 1

Development and Global Environment Objectives	Project Outcome Indicators	Use of Project Outcome Information
<p><i>Development Objective.</i> Improve mobility in areas of participating MMDAs in Ghana through a combination of traffic engineering measures, management improvements, regulation of the public transport industry, and implementation of Bus Rapid Transit (BRT) system.</p>	<ul style="list-style-type: none"> • Reduction in average travel time for bus passengers on pilot BRT route • Increase in average travel speed for all traffic on pilot BRT route • Increase in productivity of bus services (passenger share of large buses) 	Support to sustainable transport planning and decision making.
<p><i>Global Environment Objective.</i> Promote a shift to more environmentally sustainable transport and lower transport-related GHG emissions along the pilot BRT corridor in Accra</p>	<ul style="list-style-type: none"> • 10% reduction in tons of CO₂ emissions along the pilot route in Accra. 	

Intermediate Outcomes	Intermediate Outcome Indicators	Use of Intermediate Outcome Monitoring
<p>Component 1. Institutional Development.</p> <p>Local capacity to plan, implement and monitor public transport services</p>	<ul style="list-style-type: none"> • Creation of CUT by January 1, 2010 • Development and passing of urban transport by-laws in MMDAs • UPTUs developed in the participating MMDAs • Begin registration of bus services by January 2008 • Offer route service contracts on a competitive procurement basis on the pilot route(s) starting July 2010 • A number of bus companies formed by a group of current operators to bid for route licenses • Public transport and BRT options study for the greater Kumasi metropolitan area completed 	Enhance the efficacy and efficiency of undertaking sustainable urban transport measures
<p>Component 2. Traffic Engineering, Management and Safety</p>	<ul style="list-style-type: none"> • Number of intersections improved in AMA, TMA, GEDA, GWDA • Number of intersections improved in 	

KMA and EJDA

- Traffic signal system developed on 24 intersections in Accra MMDA areas
- Traffic signal system developed on 12 intersections in KMA
- Set up a centralized traffic control center in AMA
- Set up a centralized traffic control center in KMA

Component 3. Development of a BRT

- Pilot BRT corridor developed
- Integrated feeder routes developed
- Length of sidewalks improved
- Number of contracted BRT and feeder routes
- Number of passenger shelters and terminal facilities built

Monitoring implementation progress, diagnose problems and address them.

Component 4. Integration of urban development and transport planning for better environmental management

- Structural and urban development plan for greater Accra metropolitan area updated
- Strategic Environmental Assessment (SEA) completed of strategic and urban development plan as it relates to urban transport.

Monitor coordination between land use development and transport infrastructure planning and development; highlight deficiencies in the process, and take corrective action.

Component 5. Outcome monitoring

Transport and social

Bus-km/bus/day (pilot)

Pax/bus/day

Peak hour public transport vehicle flow

Environmental impact

System in place for ambient air quality monitoring and vehicular emissions inventory

Ambient air pollution along BRT corridor²
(ug/m³, monthly avg.)

Capacity development

No. of traffic police trained

No. of training programs for staff from TCPD, EPA, MMDAs

Monitoring project implementation progress of key components, highlight deficiencies, and take corrective action.

² Data from Ghana EPA for 2006.

Table 2: Arrangements for results monitoring

Project Outcome Indicators	Target Values (Years)					Data Collection and Reporting			
	Baseline	2008	2009	2010	2011	2012	Frequency and Reports	Data Collection Instruments	Responsibility for Data Collection
Av travel time by bus (min) on BRT pilot corridor	65	65-70	65	55	50	40	Semi-annual reports (SAR)	Supervision	DUR/PAO
Av. Travel speed (km/hr) on BRT pilot corridor	15	12-15	15		15-18	20	SAR	Supervision	DUR/PAO
Passenger share of bus (large) %	15				35	45	SAR	Supervision	DUR/PAO
GHG Emissions from vehicles in Accra along the pilot BRT corridor ³ (MTCO2/Yr)	1,200,000			5% reduction from baseline		10% reduction from baseline	Mid term report (MTR) and completion	MTR and ICR	EPA, PAO
Intermediate Outcome Indicators									
Component 1									
Set up CUT				Established					
By-laws enacted to regulate UPT in participating MMDAs	0	4	6			6	MTR	Supervision	MLGRDE, MMDAs
UPTUs developed in participating MMDAs	0	4	6			6	MTR	Supervision	PAO, MLGRDE
Share of registered bus and minibuses services	0	25%	50%	100%	100%	100%	SAR	Supervision	PAO, MMDAs
Number of contracted BRT	0	0	1	6	7	10	SAR	Supervision	PAO, MMDAs

³ Baseline data is for the Accra Metropolitan Area from DANIDA funded emissions inventory study, 2006; Emissions baseline for the BRT corridor will be determined in Year 1 of the project.

Project Outcome Indicators	Baseline	Target Values (Years)					Data Collection and Reporting		
		2008	2009	2010	2011	2012	Frequency and Reports	Data Collection Instruments	Responsibility for Data Collection
and feeder routes									
Number of bus companies formed by a group of current operators to bid for route licenses	1					4	annual	Supervision	PAO, MMDAs
Public transport and BRT options study for greater Kumasi metropolitan area	None			Completed			MTR	Supervision	KMA
Component 2									
Number of intersection improved in AMA, TMA, GEDA, GWDA	0	0				24	SAR	Reports from DUR	PAO, DUR
Number of intersections improved in KMA, EJDA	0	0				12	SAR	Reports from DUR	PAO, DUR
Traffic signal systems developed at intersections in Accra MMDAs	0					24	SAR	Reports from DUR	PAO, DUR
Traffic signal system developed at intersections in KMA	0					12	SAR	Supervision	PAO, DUR
Set up traffic control center in AMA	None		1			1	SAR	Reports from DUR	PAO, DUR
Set up traffic	None			1		1			

Project Outcome Indicators	Baseline	Target Values (Years)					Data Collection and Reporting		
		2008	2009	2010	2011	2012	Frequency and Reports	Data Collection Instruments	Responsibility for Data Collection
control center in KMA									
Component 3									
Length of BRT corridor developed	None				9.2 km		MTR	Reports from DUR	PO, DUR
Length of integrated feeder routes to corridor	None				15 km		SAR	Reports from DUR	PO, DUR
Length of sidewalks improved	0		20 km	30 km	40 km		SAR	Reports from DUR	PO, DUR
Number of contracted BRT and feeder routes	0	0	1	6	7	10		Reports from DUR	PO, DUR
No. of passenger shelters and terminal facilities built	0					6	MTR	Reports from DUR	PO, DUR
Component 4									
Structural plan updated	None				Completed			MTR and Supervision	PO, DUR
SEA on urban development and transport planning carried out	None		Completed					MTR and Supervision	EPA, PO, DTCP, MMDA
Component 5									
Transport and social impact Indicators:									
- Bus-km/bus/day (pilot)	125					225	SAS	Reports from DUR, Supervision	DUR, PAO
- Pax/bus/day	265					800			
- Peak hour public transport vehicle	3200					1800			

Project Outcome Indicators	Target Values (Years)					Data Collection and Reporting			
	Baseline	2008	2009	2010	2011	2012	Frequency and Reports	Data Collection Instruments	Responsibility for Data Collection
flow - av. walking time to/from bus (min.)	40			30		20			
<u>Environmental Impact Indicators</u> - System in place for ambient air quality monitoring and vehicular emissions inventory	Basic equipment and software exists	Upgrade / maintain equipment and software				System maintained	MTR, SAS	Supervision	EPA, PAO
- ambient air pollution along BRT corridor ⁴ (ug/m3, monthly avg.)	120			5% reduction from baseline		10% reduction from baseline			
<u>Capacity Development Indicators:</u> - No. of traffic police trained - No. of training programs for staff from DTCP, EPA, MMDAs	0 0	6 2	12 4	18 4	30 8	40 10	Annual Annual	Training reports	PAO, EPA, TCPD, MMDA

⁴ Data from Ghana EPA for 2006.

Annex 4: Detailed Project Description

GHANA: Urban Transport Project

The two key objectives of the project are to:

- (i) Improve mobility in areas of participating MMDAs through a combination of traffic engineering measures, management improvements, regulation of the public transport industry, and implementation of a BRT system
- (ii) Promote a shift to more environmentally sustainable transport modes and lower transport-related GHG emissions along the pilot BRT corridor in Accra

The project has the following five components:

Component 1: Institutional Development. (Total US\$13.6 million, of which IDA: US\$11.0 million, AFD: US\$1.4 million; and GOG US\$1.2 million) This component would strengthen capacity of Ministries and agencies concerned with urban transport, transport operators, MMDAs (AMA, TMA, GWDA, GEDA, KMA, and EJDA), including strengthening of the Urban Passenger Transport Units (UPTUs) within each assembly and creating an Urban Passenger Transport Coordinating Group (UPTCG) for the Accra and Kumasi MMDAs to plan, regulate, and monitor urban transport operations and services. This component would also support the work of the Project Advisory Office (PAO) and the institutional design study to transform it into a permanent Center for Urban Transportation (CUT). Support would be provided through policy and institutional studies, training, technical assistance, operational support, and provision of equipment and vehicles.

This component would also support introduction of a 'limited competition' regime for the operation of urban passenger transport and establishment of the associated planning, licensing, monitoring and evaluation capacity. Other agencies to be supported under this component are: MLGRDE (including EPA and TCPD); MOT (including DVLA, DUR and NRSC); MTTU; and support to passenger transport operators.

The specific subcomponents are:

Component 1.A Support MOT to develop and implement measures for enhancing the overall transport policy, regulation and co-ordination including the formulation of operating and safety standards and investment plans in the urban transport sector.

Component 1.B Support MLGRDE in regulation of urban passenger transport, outreach, environmental planning and monitoring. This sub-component would also provide technical assistance and training for strengthening legislation for the effective provision, regulation, licensing, emissions management, and facilitate implementation of urban transport plans. This component will finance capacity building of staff from the Environmental Protection Agency (EPA), Accra and Kumasi MMDAs, Town and Country Planning Department (TCPD), and Urban Development Policy Unit (UDPU) for integrated urban development, transport planning, and environmental management, so that they can contribute meaningfully to component 4 of this project.

Component 1.C Support Accra MMDAs (financed by AFD) This sub-component would build capacity of MMDAs in the Accra Metropolitan Area to develop transport planning capacity. Support will be provided for strengthening capacity in planning, route concessioning, operations,

and monitoring and evaluation aspects of BRT, to maximize the effectiveness and sustainability of the system and other investments. This sub-component would also provide technical assistance and training for the strengthening of UPTUs within each MMDA, and establish UPTCG for the Accra metropolitan area, support development of transport related data bases, set service and quality standards, and plan and develop the bus network.

Component 1.D Support the Project Advisory Office (PAO) and Center for Urban Transportation (CUT) to: a) provide advisory services to the institutions and operators involved in the implementation of the project; and b) provide advisory services in planning, management and regulation of urban passenger transport. This sub-component would also support institutional design and financing study to transform the PAO into the proposed CUT.

Component 1.E Support KMA and EJDA. This sub-component would build capacity of two MMDAs in greater Kumasi Metropolitan Area to develop transport planning capacity. This sub-component would also provide technical assistance and training for strengthening UPTUs within the two MMDA, and establish UPTCG for the greater Kumasi Metropolitan Area, support development of transport related data bases, set service and quality standards, and plan and develop the bus network. This subcomponent would also provide technical assistance to undertake a public transport and BRT options study for the greater Kumasi Metropolitan Area.

Component 1.F Support passenger transport operators in the Accra MMDA areas by developing their capacity to prepare business plan, enter into route service contracts, develop maintenance capability to improve safety and environmental standards.

Component 1.G Support DUR in project management (including procurement, safeguards management, financial management, and monitoring and evaluation). It will also support DUR in contract administration of traffic management and implementation of BRT infrastructure components of the project.

Component 1.H Support MTTU training, equipment (monitoring, vehicles, safety control devices, traffic cameras, radar guns), capacity building in traffic management and enforcement of traffic regulations, collecting basic traffic data, and study tours and training to review successful traffic management practices in other cities.

Component 2: Traffic Engineering, Management and Safety. (Total US\$26.9 million of which AFD: US\$18.6 million; IDA: US\$3.8 million; GOG: USD\$4.5 million). This component would improve reliability of the urban passenger transport system and strengthen traffic management, through the provision of goods, works, training, and technical advisory services for the following subcomponents:

Component 2.A: Traffic Management in Accra MMDA areas. This subcomponent is funded by AFD. The objective is to determine the optimum lane and intersection configuration and other engineering requirements for the efficient movement of people and goods within each intersection and along the arterial roads in AMA, TMA, GEDA, and GWDA. The investments would include introduction of appropriate road widths, storage lengths, turning radii and other design changes based upon traffic and geometric and physical characteristics at each site. Improvements will be made at 24 intersections (three of which are not signalized), categorized into six groups.

Arterial road traffic management measures proposed for the Ring Road (from Old Winneba road junction to Labadi Beach road junction) and Ashaiman Central Business District include rehabilitation of existing road pavement structure at selected sections, provision of road markings

and signs, provision of pedestrian walkways, signalization of selected intersection, covering of open drains, banning on-street parking and rehabilitation of existing bicycle routes.

Component 2.B: Area-Wide Traffic Signal Control in Accra MMDA areas. This subcomponent is funded by AFD. The objective of the Area-Wide Traffic Signal Control (AWTSC) is to develop an appropriate coordinated traffic signal system and to develop a centralized control center for all traffic signals in Accra. The range of applications would include: capacity provision, improved system efficiency, demand management, and improved reliability of the transport system. Key investment components are:

- (i) **Electrical system.** Provide a clean and reliable power supply for uninterrupted operations of any area-wide traffic control system. This would include: installation of a separate electrical service cabinet with line conditioners and a meter at key signalized intersections and installation of a backup power system to provide flashing control during power outages;
- (ii) **Traffic signal system.** The investment subcomponents include: a) development of a comprehensive signal and electrical design standard to guide contractors, signal manufacturers, signal designers and design reviewers; b) provision and installation of preformed magnetic loops at all signalized junctions for vehicle detection to allow local and corridor flow optimization; and c) provision of advanced signal control system and wireless communication interconnect between the field signal controllers and the Traffic Management Center; and
- (iii) **Traffic Management Center (TMC).** To minimize traffic delays, the TMC would enable the remote management, monitoring and coordination of all traffic operations, emergency responses, public transport services, and special events. The TMC would include traffic management and control space, communication room, traffic operations supervisor office, equipment testing lab, conference room, storage, security space, and so forth.

Component 2.C: Traffic Management in Kumasi MMDA areas. The objective is to determine the optimum lane and intersection configuration and other engineering requirements for the efficient movement of people and goods within each intersection and along the arterial in the Kumasi metropolitan area. The investments would include introduction of appropriate road widths, storage lengths, turning radii and other design changes based upon traffic, geometric and physical characteristics at each site.

Component 2.D: Area-Wide Traffic Signal Control in Kumasi Metropolitan Area. The objective of the Area-Wide Traffic Signal Control (AWTSC) is to develop an appropriate coordinated traffic signal system and to develop a centralized control center for traffic signals in Kumasi, along the same lines as in Accra.

Component 2.E: Traffic enforcement, education and training This subcomponent would consist of a targeted information dissemination of an effective education program to enhance traffic management and road safety. The program would target different sections of society using appropriate medium for that group and emphasize public's responsibility on roadways. The focus of the education program will be to inform and educate the public (including school children) on traffic rules and regulations. The enforcement strengthening program would focus on implementing a sustained and aggressive enforcement effort.

Component 2.F: Design and Supervision This component would cater for the design and supervision of components 2A- 2E.

Component 3 Development of a Bus Rapid Transit System (Total US\$46.0 million of which IDA: US\$28.2 million, GEF: US\$5.5 million; and GOG US\$12.3 million). This subcomponent would finance BRT system infrastructure design and implementation, operationalization of the system and a communications strategy, all through the provision of goods, works and technical advisory services.

Component 3.A BRT Infrastructure including interchange facilities and traffic management The system will include segregated busways, interchange facilities, terminals and facilities for pedestrians and NMT. The trunk route is 9.1 kilometers in length, with one BRT lane per direction. The trunk route has a terminal/modal interchange at the New Gbawe junction at Mallam, and modal interchanges at Odorkor Junction, Darkuman Junction, Kaneshie Market and CMB. There are 8 stations on the trunk route.

The CBD Distributor route utilizes a single (one-way) BRT lane. The Circle CBD Distributor route is 7.1 kilometers in length, and has a modal interchange facility at the Railway Station, and nine stations. The Ministries CBD Distributor is 6.0 km. However, a portion of the route of approximately 2 kilometer is shared with the Circle route. It has modal interchange facilities at Kinbu and New Tema Stations, and four other stations. The major structural works required for the BRT trunk route are as follows:

- (i) Grade separation of the Obetsebi Lamptey Circle, where the Ring Road intersects with Winneba and Graphic Roads
- (ii) Grade separation of the level railway crossing on Graphic Road by means of a Road-over-Rail bridge
- (iii) Provision of three lanes per direction across the Odaw River, adjacent to the railway crossing on the Graphic Road

Existing station locations were reviewed and locations for stations on the BRT corridor were proposed based on serving major trip attractors and transport terminals, while keeping station spacing between 500m and 1 kilometer. The interchange facilities include:

- (i) Modal interchange with Anyaa and Santa Maria (Kwashiemman) feeder services
- (ii) Modal interchange with Nyameche feeder services along Darkuman Road and informal feeder services on Dansoman Road

Distribution within the CBD is proposed to take place by means of a circulation system integrated with the trunk service, and not by means of a CBD terminal and separate CBD feeder/distributor services. Within the CBD the following locations were identified as being important to link into the BRT system: Informal and small retail outlets adjacent to the Accra railway station on Station Road, Kimberley Avenue and Commercial Street, General Post Office on Asafoatse Nettey Road, Makola Market, Ministries and Accra Polytechnic. Traffic management measures would finance goods and works to improve traffic flow through interchange facilities.

Component 3 B. Design and supervision. This subcomponent, financed by GEF, would finance design and supervision consultancy to support sub-components under 3 A.

Component 3 C. BRT Consultation, Communications and Media Strategy This subcomponent, also financed by GEF, would support implementation of a public awareness strategy for the BRT system. The strategy would draw upon the household and travel surveys along the pilot corridor conducted during the preparation phase. The objective of the survey was

to understand the behavior of residents, stratified by beneficiary groups, with a specific focus on: labor market access, access to services (health, education), economic opportunities (including firm location and impact on poverty, and productivity at the scale of an urban area).

The GEF financing would support the development of a framework for public feedback into all elements of design and operation and share specific needs of the users with policy makers and BRT operators. This framework will include stakeholder consultations, public relations, and media strategy. This component will also finance (a) study tours for policy makers and operators to learn from similar experience in other parts of the world; (b) a media strategy to provide content and appropriate material for TV, radio, and public billboards and facilitate media's ability to promote the BRT concept; and (c) production of video clips to depict issues related to mobility in the city. The goal of video production is to develop a tool that will sensitize key urban transport policy makers to the multiple dimensions of the city's urban mobility problem and suggest sustainable solutions. The short videos (10–20 minutes) will describe the purpose, methodologies, and expected benefits of the BRT systems and reform program to an audience of very senior policymakers.

Component 3.D. Operationalizing the system To derive the full benefits of the scheme it is necessary to ensure that the various components of the concept are pieced together to develop a system and to ensure that the pilot corridor is well integrated and functions adequately with regards to the entire city. This component, financed by GEF, will include: overall management of the BRT system operations, service planning and packaging, harnessing the infrastructure, institutions, private sector and the users.

Component 4. Integration of Urban Development and Transport Planning for Better Environmental Management (Total US\$2.0 million, of which IDA: US\$1.0 million, GEF: US\$1.0 million). There is increasing evidence that in cities like Accra urban land development is happening rapidly and in a haphazard manner, with little coordination with transport planning. Increasing congestion on the streets is perceived as a manifestation of that problem. The last strategic plan for the Accra region was prepared in 1991 and there is a need to update it. The World Bank is currently undertaking a piece of analytical work on Urban Development and Economic Growth in Ghana.

This component would include the following goals, to be achieved through technical advisory services and procurement of goods:

- (i) Building on other initiatives, GEF's contribution to this component would support the MLGRDE and respective MMDAs to update the urban development plans for greater Accra metropolitan area. This would be a highly consultative exercise that will include a review of existing structural plan, regulations, institutional structures, standards, and procedures with a view to supporting urban growth that is more compatible with the development of transport infrastructure and services, leading to better environmental management.
- (ii) The development plan would be subject to a Strategic Environmental Assessment (SEA) especially as it relates to urban transportation (with emphasis on walking, non-motorized use and public transport).

Component 5. Project Outcome Monitoring (Total US\$1.5 million of which IDA:US\$1.0 million and GEF: US\$0.5 million) by supporting studies, and technical advisory services.

Component 5.A: Transport and social impact indicators. The objective of this subcomponent is to collect periodically traffic and transport data to regularly monitor the

Component 5. Project Outcome Monitoring (Total US\$1.5 million of which IDA:US\$1.0 million and GEF: US\$0.5 million) by supporting studies, and technical advisory services.

Component 5.A: Transport and social impact indicators. The objective of this subcomponent is to collect periodically traffic and transport data to regularly monitor the performance of the transport system in the Accra metropolitan area and Kumasi. The indicators to be monitored will include the outcome indicators identified in Annex 3 in the Results Framework.

This subcomponent would also replicate the base line studies conducted during project preparation. The goal of this study is to better understand the travel patterns of people living in the Accra metropolitan area and the role that transport plays in their lives. It is expected that the study will be replicated on a periodic basis to examine “without” and “with” project impact of the proposed investments. Baseline indicators would allow analysis of four main attributes of transport: affordability, accessibility, acceptability, and availability. The studies would be replicated annually during the project period to examine the impact of project investments. Some of the data collected in these surveys would also assist in estimating the impact of the project on GHG emissions.

Component 5.B: Environmental impact indicators. This component will support the Ghana EPA in monitoring ambient air quality, vehicle emissions management, and estimating the impact on GHG emissions induced by the modal shift to less energy intensive transport. The results will be communicated to national policy makers and stakeholders, and incorporated in national communications to the United Nations Framework Convention on Climate Change (UNFCCC). The subcomponent will also support training and capacity building of EPA in the relevant subject matter.

Component 5.C: Capacity development indicators. This component would support management audit of the project implementing and beneficiary agencies, to examine the impact of capacity-building initiatives, as measured against the identified needs in policy, planning, and regulatory functions.

Table 1: List of all intersections

1.	Labadi Rd / Cantonments Rd	21.	Ring Rd Central / Nima Highway
2.	Lokko Rd / Cantonments Rd	22.	Achimota Rd / Nima Highway
3.	Winneba Rd / Nii Teiko Din Street	23.	Achimota Rd / New Town Rd
4.	Winneba Rd / Outer Ring Rd	24.	Motorway Phase II / Achimota Rd
5.	Bubiashie Roundabout	25.	Giffard Rd / 2 nd Circular
6.	Outer Ring Rd / Oblong Rd	26.	Liberation Rd / Airport Rd
8.	Ring Rd East / Labadi Rd	27.	Kanda Highway / Castle Rd
9.	Mataheko High Street / Outer Ring Rd	28.	Kwame Nkrumah Ave / Kinbu Rd
10.	Nsawam Rd / Abeka Junction	29.	Kojo Thompson / Adama Ave
11.	Motorway Phase II / Awoshie Rd	30.	Barnes Rd / 28 th Feb Rd / High Street
13.	Liberation Rd / J. Nehru Rd	31.	Winneba Rd / Darkuman Rd
14.	Nsawam Rd / New Town Rd	32.	Winneba Rd / Odorkor Rd
15.	Nsawam Rd / Kojo Thompson Rd	33.	Winneba Rd / Dansoman Rd
16.	Rangoon Lane / Cantonments Rd	34.	Motoway Phase II / Winneba Rd
17.	Labadi Rd	35.	Kwame Nkrumah Ave / North Liberia RD
18.	Awudome Roundabout		

Annex 5. Project Costs

GHANA: Urban Transport Project

Table A5.1: Project Costs (US\$ million)

Component	TOTAL	GOG	IDA	AFD	GEF
1. Institutional development	13.6	1.2	11.0	1.4	—
A. Support to MOT	1.3	—	1.3	—	—
B. Support to MLGRDE	1.5	—	1.5	—	—
C. Support to MMDAs	1.8	0.4	—	1.4	—
D. Support to PAO/CUT	4.0	0.8	3.2	—	—
E. Support to Kumasi MA	2.0	—	2.0	—	—
F. Support to Bus operators	1.0	—	1.0	—	—
G. Support to DUR	1.5	—	1.5	—	—
H. Support to MTTU	0.5	—	0.5	—	—
2. Traffic engineering, management, and safety	26.9	4.5	3.8	18.6	—
A. Traffic mgmt. in Accra MMDAs	11.2	0.9	—	10.3	—
B. Area-wide TSC, Accra	8.0	0.7	—	7.3	—
C. Traffic mgmt in Kumasi MMDAs	2.5	2.5	—	—	—
D. Area-wide TSC, Kumasi	2.5	—	2.5	—	—
E. Traffic enforcement & educ.	1.5	0.2	1.3	—	—
F. Design & supervision	1.2	0.2	—	1.0	—
3. Development of a BRT system	46.0	12.3	28.2	—	5.5
A. BRT infrastructure including interchanges & traffic management	40.5	12.3	28.2	—	—
B. Design & supervision	4.0	—	—	—	4.0
C. BRT public consultation	1.0	—	—	—	1.0
D. Operationalizing BRT	0.5	—	—	—	0.5
4. Integration of urban development & transport planning	2.0	—	1.0	—	1.0
5. Outcome monitoring	1.5	—	1.0	—	0.5
A. Transport and social impact indicators	0.8	—	0.8	—	—
B. Environmental impact indicators	0.5	—	—	—	0.5
C. Capacity development indicators	0.2	—	0.2	—	—
TOTAL	90.0	18.0	45.0	20.0	7.0

Annex 6: Implementation Arrangements

GHANA: Urban Transport Project

The roles and responsibilities of the various agencies involved in this project are as follows.

Urban Transport Advisory Committee

GOG has formed an Urban Transport Advisory Committee (UTAC) to ensure key technical inputs, multistakeholder consultation, collaboration, coordination and information dissemination for Urban Transport Policy development and implementation. The PAO will provide the technical and administrative support to the UTAC. The UTAC will be chaired by MLGRDE and comprise representatives of MOT, MOFEP, MOI, MLGRDE and other public and private sector stakeholders.

For the implementation of this project, the UTAC will have the following responsibilities:

- (i) Agreeing on a common policy and regulatory framework for urban transportation in Ghana
- (ii) Advising MLGRDE on directives to be issued by MMDAs in implementing urban transport policies and regulation
- (iii) Setting target dates for each urban authority to pass the necessary by-laws to implement the common regulatory framework
- (iv) Reviewing and adopting proposals for the formation of Center for Urban Transportation (CUT) and ensuring its implementation
- (v) Providing guidance for setting-up and operationalization of UPTUs
- (vi) Reviewing reports for the project and providing general direction for its implementation

The Project Advisory Office

A Project Advisory Office (PAO) has been established, with key staff, office facilities and support services. The PAO will report to the Director of DUR for all operational and management issues. It is envisaged that the PAO, after the passing of the appropriate legal instruments, will form the nucleus of the proposed CUT. The project will fund the operations of the PAO until December 31, 2009. The cost of financing the successor entity, CUT, will then be transferred on a sliding scale basis to the government over the next three years. The PAO would provide: a) advisory services to the institutions and operators involved in management and implementation of the project; and b) advisory services in planning, management, and regulation of urban passenger transport.

It will also support MMDAs to prepare bus passenger service contracts; develop regulatory, standards, licensing and route service documents including all enquiry documentation; provide technical and professional capacities to support the project; and liaise with key stakeholders to raise awareness, inform and consult on urban passenger transport issues.

The PAO will have the following responsibilities:

- (i) (monthly – reverting to quarterly) to the UTAC for the overall guidance, direction and authority to proceed with the project
- (ii) regularly on contractual implementation issues to DUR

- (iii) (monthly) to MMDAs to ensure their preparedness to make progress in implementing their respective elements of the project
- (iv) (weekly) team meetings within the PAO will be held to ensure timely coordination

During the initial phase the PAO will be staffed by a core team on secondment from the MOT and MLGRDE to meet the specified functions. The PO will request the services of additional staff on a part- and full-time basis as the project progresses. All staff will report to the PAO Team Leader for the period of their assignment.

Ministry of Transportation

MOT will have the overall sector responsibility for this project in close collaboration with MLGRDE. MOT will provide the urban transport policy framework and carry out project activities related to the setting and enforcing urban passenger transport operating and safety standards, and vehicle and driver standards. Within MOT, the DVLA is responsible for regulation of vehicle ownership, use, and setting standards. MOT will also arrange for the annual audit of the project.

The Department of Urban Roads (Ministry of Transportation)

The Department of Urban Roads (DUR) already has responsibility for the administration of roads and related infrastructure in the Municipal and Metropolitan Areas in Ghana. This responsibility is discharged through Roads Units working under each of the relevant assembly and a head office in Accra. DUR has a well-functioning procurement, contract, safeguards and financial management system with experience in working with the Bank and other development partners and will perform project management activities, with support from PAO.

With respect to this project, the DUR will have the following responsibilities:

- (i) The management of the project (including procurement, safeguards management, financial management, and monitoring and evaluation);
- (ii) Oversee all eligible expenditures under the project, in accordance with systems and procedures acceptable to IDA.
- (iii) Contract administration of traffic management and BRT infrastructure components of the project.

The DUR (with PAO/CUT support) will prepare an Annual Work Plan and Budget containing all eligible expenditures and the percentage of financing of each contract, identified by source. The Procurement Plan would indicate the source of financing for each contract and the Interim Financial Report would be adjusted to include the additional information.

Urban Passenger Transport Units

Urban Passenger Transport Units (UPTUs) will be strengthened in the following Assemblies:

- (i) Accra Metropolitan Assembly
- (ii) Kumasi Metropolitan Assembly
- (iii) Tema Municipal Assembly
- (iv) Ga east District Assembly

- (v) Ga West District Assembly
- (vi) Ejisu Juaben District Assembly

The objective is to develop both the authority and the capacity of the MMDAs for planning and managing local passenger transport services at a pace MMDAs can absorb and with support from the PAO.

UPTUs will be financially supported by the project up to December 31, 2009, by the AFD. The cost will then be transferred on graduated basis to the respective assemblies over the following three years.

The UPTUs will have the following responsibilities:

- (i) Registering all passenger transport vehicles operating in the Assembly
- (ii) Collecting data on all passenger transport routes in the Assembly
- (iii) Issuing 'Type A' route operating licenses
- (iv) Planning and implementing public transport networks for the Assembly
- (v) Issuing 'Type B' Route Operating Licenses for selected routes
- (vi) Offering route service contracts on selected routes
- (vii) Regulating, monitoring and enforcing route operations in the Assemblies

Ministry of Local Government, Rural Development, and Environment

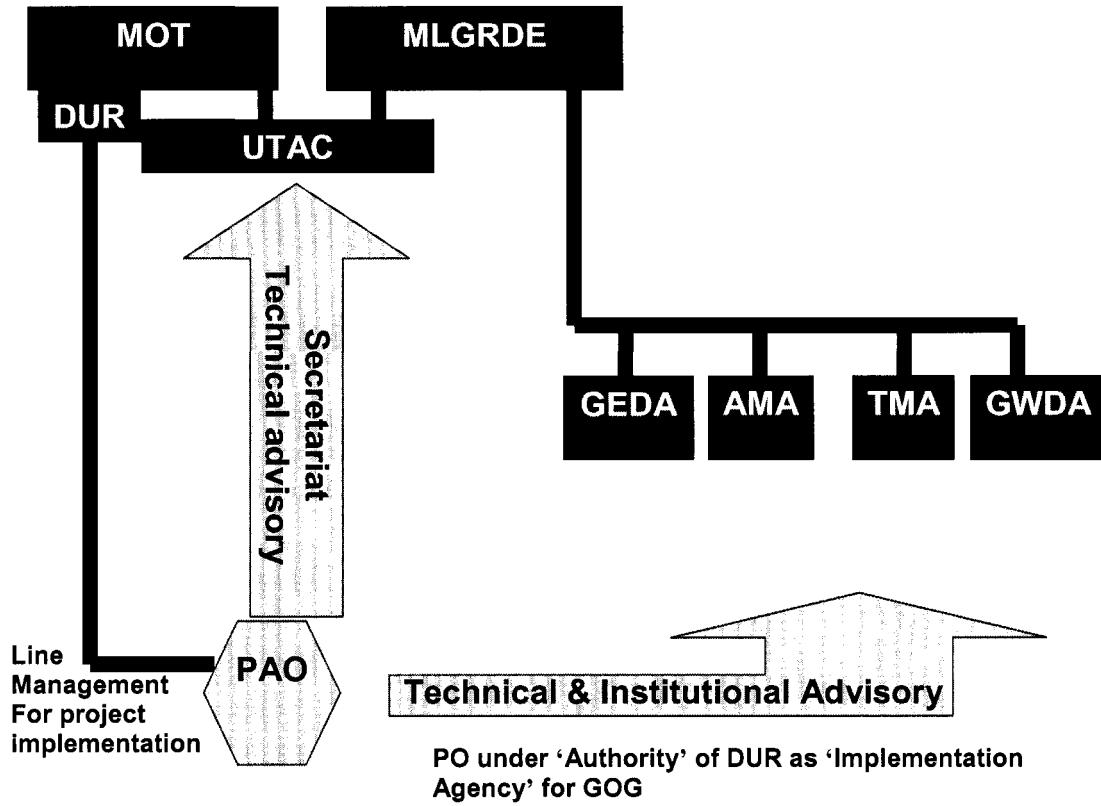
The Ministry of Local Government, Rural Development, and Environment (MLGRDE) has the overall responsibility for policy planning, implementation, monitoring and evaluation of the decentralization program of government. MLGRDE also has the overall responsibility for the regulation of Urban Passenger Transport in the assemblies. Other important agencies/departments in the MLGRDE as far as this project is concerned are: EPA, TCPD, and UDPU.

For implementation of this project, MLGRDE will have the following responsibilities:

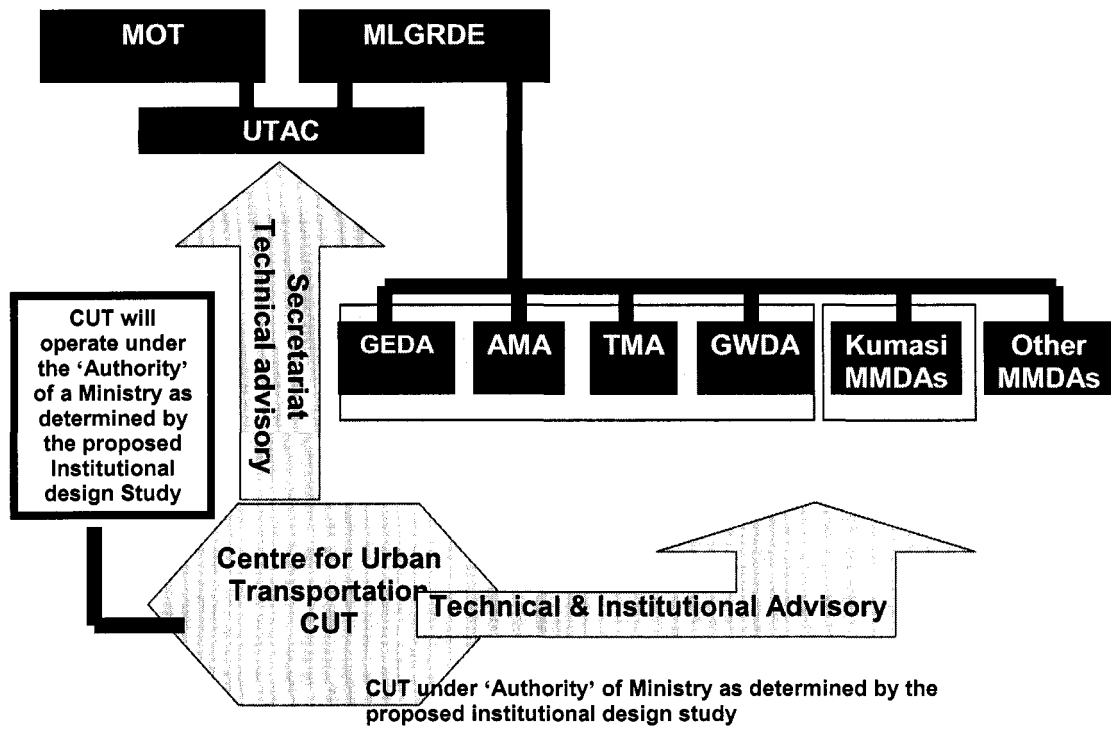
- (i) Providing the enabling environment for project implementation
- (ii) Providing the mandate, under existing laws to the MMDAs to regulate urban transport services within their respective jurisdictions
- (iii) Chairing the UTAC
- (iv) Supporting the DUR, through EPA, to implement the ESMF, RPF, EMP, and RAP for the project; and, with monitoring and evaluation of the environmental impacts of the project.
- (v) Developing the SEA for the urban development component and collecting and analyzing the environmental indicators for urban transport

Sustainable financing arrangements for PAO, CUT and UPTUs. The project would finance the staff and operating cost of the PAO, CUT and UPTUs till December 2009 after which GOG would finance the offices on a declining basis till December 2012. It is expected that these offices would develop a basis to self-support themselves beyond December 2012. Studies would be conducted to examine various options to generate the required funding from the beneficiaries.

Institutional Arrangements - Transition years 1 and 2



Institutional arrangements – Permanent, 3 years onwards



Annex 7: Financial Management and Disbursement Arrangements

GHANA: Urban Transport Project

The financial management assessment was carried out in accordance with the *Financial Management Practices Manual* issued by the Financial Management Board on November 3, 2005. The objective of the assessment was to determine whether the implementing entity has acceptable financial management arrangements, which will ensure (a) the funds are used only for the intended purposes in an efficient and economical way, (b) the preparation of accurate, reliable and timely periodic financial reports, and (c) safeguard the entities' assets.

Implementation arrangements

The Department of Urban Roads of MOT will be the main project implementing agency, through which the finance and expenditure for the project will be monitored and managed. The line management of the project will be carried out by the Department of Urban Roads (DUR) on behalf of the MOT. MLGRDE and MOT will work closely to ensure proper coordination and progress of the project activities in their respective areas of responsibility.

A Project Advisory Office (PAO) has been established, with key staff, office location and support services. The PAO will report to the Director of Urban Roads for all operational and management issues. It is envisaged that the Project Office will cease to exist on December 31, 2009 and would be transferred to the proposed CUT.

The DUR finance department will oversee all expenditures in the project in accordance with systems and procedures acceptable to IDA. It will work in accordance with the Financial Procedures Manual established for the ongoing Road Sector Development Program and ensure robust internal control arrangements for the project.

The annual audit of the project will be managed by MOT.

Country Issues

A Country Financial Accountability Assessment (CFAA) for Ghana was carried out in 2001 and updated in 2004. In response to the findings and recommendations of the CFAA, the Government of Ghana has initiated, and in some cases already implemented, several reforms. These include the promulgation of the following pieces of legislation:

- (i) Financial Administration Act 2003, to bring together all aspects of public financial management
- (ii) The Internal Audit Agency Act 2003 to set up modern internal audit in all government departments
- (iii) The Public Procurement Act, to improve the efficiency of public procurement systems and practices

The passing of the legislation is but the first step; successful implementation thereof typically takes more time and requires strong and committed leadership. To date, Ghana has demonstrated the necessary commitment, and implementation progress is impressive to date.

Risk Assessment and mitigation

The following summary risk analysis (Table A.7.1) is based on the on-going RSDP.

Table A.7.1: Summary of Risk Analysis

Risk	Risk Rating	Risk Mitigating Measures incorporated into the Project Design	Conditions of Negotiations, Board or Effectiveness (Yes or No)	Remarks
<i>Inherent Risk</i>				
Country Level	M		N	No significant risk identified.
Entity Level	M		N	No significant risk identified.
Program Level	M		N	The PO established is for the set-up period only, and will be mainstreamed into the successor institutions from year three onwards.
<i>Control Risk</i>				
Budgeting	M		N	Managing unit is successfully managing the ongoing bank supported Road Sector project.
Accounting	M		N	Same
Internal Control	M		N	Same
Funds Flow	M		N	Same
Financial Reporting	M		N	Same
Auditing	M		N	Same

Risk rating: M (modest, N (Negligible or Low Risk)

In view of the general country financial management issues and the issues peculiar to the project, the ***overall financial management risk for the project is rated moderate.***

Strengths and Weaknesses

Strengths

The implementing agency is currently implementing a Bank financed project which means that both FM and Procurement staff is fully familiar with reporting and other requirements, enabling implementation to start in high gear.

Weakness

The current project has experienced some shortcomings in the area of fixed asset management. Management has undertaken to address this by ensuring all units have asset registers, and all movements of assets are properly recorded and authorized.

Staffing

The Finance Section of DUR is fully staffed and has adequately qualified personnel. They are familiar with Bank procedures and are currently managing the finances of the on-going project as well as other donor projects.

Budgeting

Budgeting is work-plan driven and fully integrated into the MOT planning process, with an eye to efficiently managing GOG's contribution to project financing.

Accounting

DUR finances are run on Sun Accounting, a software capable of producing the reports expected during implementation. Report formats will follow those of the ongoing project. Accounting will be based on standard double-entry bookkeeping, and comply with international standards.

Internal Control

There is adequate segregation of duties within the MOT/DUR project management structures. Accounting and internal control procedures are codified in an existing Accounting Manual, which is fully complied with for the ongoing project. A review to identify the need for any additional customization for the project will be made early on to ensure that the existing manual is fully applicable to the new operation. The deadline for the finalization of this review will be three months after effectiveness.

Reporting and monitoring

The project will produce interim unaudited financial reports on a quarterly basis, using the standard format agreed for the ongoing project. Formal adoption of these formats has to be done by the time of negotiations. Annually, the project will produce financial statements, to be audited and submitted to the Bank within six months of the end of the financial year reported on. The financial statements will comply with international standards.

External Audit

MOT has auditing arrangements acceptable to the Bank, and subject to the necessary procurement clearances, could be acceptable as the new project's auditor. Finalization of the arrangement needs to be made very early in implementation. A suggestion to do this within three months of effectiveness will be made. One audit report covering all project financing will suffice. The audit report must be submitted to the Bank within six months of the end of the year audited. A management letter highlighting any deficiencies in the system of management and internal controls and a management response to the issues raised in the management letter should also be submitted as part of the audit package.

Action Plan

- (i) Customize Accounting manual within 3 months of effectiveness
- (ii) Confirm project audit arrangements within 3 months of effectiveness

Conditionalities

Financial covenants

- (i) Quarterly progress reports including procurement, physical and financial progress will be prepared and sent to the Bank no later than 45 days from the end of each quarter;
- (ii) Annual audit reports will be prepared and submitted to the Bank by June 30 of each year.

Supervision plan

Six monthly missions will be fielded, coupled with quarterly desk reviews of IFRs submitted.

Funds flow

Two USD Designated Accounts, one each for the IDA credit and GEF grant will be opened at a commercial bank under terms and conditions acceptable to IDA. The bank accounts will be under the control of the DUR finance unit. Counter part funds will be provided directly by the ministry as and when required. The ceiling value of the Designated Account advances will be advised by way of the Disbursement Letter to be issued separately.

The Government funds will be allocated as part of the annual budget of the Ministry of Transportation and agreed in the Annual Work Plan. The Annual Work Plan would contain all eligible project activities and expenditures planned for the following government fiscal year, including a specification of the sources of financing for each contract for eligible expenditures and the percentage of financing of each contract from each such source.

Disbursement Arrangements

The Transaction-based disbursement procedures, in use for the ongoing project, will continue to be used. As project implementation proceeds, the quarterly Interim Financial Reports (IFRs) produced by the Project will be reviewed. Where the reports are adequate and produced on a timely basis, and the Recipient requests conversion to Report-based disbursement procedures, a review will be undertaken by the Bank Task Team to determine eligibility for Report-based disbursements.

The disbursement arrangements would be simplified to provide greater flexibility in reallocating the proceeds of the Credit and the GEF Grant among the eligible expenditure categories and different funding sources in case the financing requirements of various activities change during the implementation of the Project. The project operational manuals and plans would clearly reflect the multiple sources of financing for the project and the relative allocation of eligible project expenditures to each of these sources, so as to allow the efficient planning, monitoring and revision (as necessary) of expenditure allocations. Review and monitoring arrangement would be established for the allocations of credit funds for goods, works, services, etc. during the life of the project through the annual work plans and budgets, procurement plans and interim financial reports (to be submitted to the Bank by November 30 of each year for the subsequent year). The format of the Annual Work Plan and Budget will be agreed as part of the Project Implementation Manual before effectiveness. The Procurement Plan would be adjusted to indicate the source of financing for each contract, and the Interim Financial Reports template would also be adjusted to include this additional information once the format of the Annual Work Plans and Budgets is finalized.

Use of SOEs

The use of SOEs will be allowed for specified expenditures. The thresholds will be set as agreed in the Procurement Plan.

Conclusions

The proposed financial management arrangements for the project to be managed by the DUR meet the minimum requirements for financial management under OP/BP 10.02.

Table A.7.2: Withdrawal of Proceeds (IDA Credit)

Category	Amount of the Financing Allocated (expressed in USD)	Percentage of Expenditures to be Financed (inclusive of Taxes)
(1) Goods, works, consultants' services including audits, Training and Operating Costs, excluding consultants' services and Operating Costs for PAO and CUT under Part 1 (d) of the Project	42,000,000	100%
(2) Consultants' services and Operating Costs for PAO and CUT under Part 1 (d) of the Project	3,000,000	100% until FY 2009; 75% for FY 2010; 50% for FY 2011; and 25% for FY 2012.
TOTAL AMOUNT	45,000,000	

Withdrawal of Proceeds (GEF Grant). The GEF Grant amount of US\$7,000,000 will finance 100% (inclusive of taxes) of Eligible Expenditures consisting of goods, works, consultants' services including audits, and training.

Annex 8: Procurement Arrangements

GHANA: Urban Transport Project

A. General

Procurement of goods and works would be carried out in accordance with the World Bank's "Guidelines: Procurement under IBRD Loans and IDA Credits" dated May 2004 and revised in October 2006; and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" dated May 2004 and revised in October 2006, and the provisions stipulated in the Financing Agreement. In the circumstances specified in the said guideline, procurement and selection of consultants will be carried out in accordance with the Ghana Public Procurement Act 663 of 2003. The general description of various items under different expenditure categories is described below. Each contract to be financed by the IDA Credit and the co-financing GEF Grant, different procurement or consultant selection methods, the need for prequalification, estimated costs, prior review requirements, and time frame are agreed between the Borrower and the Bank project team in the Borrower's Procurement Plan. The Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

Advertising: A General Procurement Notice (GPN) is mandatory and will be published in the UN Development Business and in Development Gateway Market (dgMarket) as provided under the Guidelines. The GPN would show all ICB for goods and works and all consulting services estimated to cost US\$200,000 or more. Specific Procurement Notices (SPN) will be required for contracts to be procured under ICB and NCB procedures; for consultant contracts (estimated to cost more than US\$100,000) expressions of interest (EOI) must be advertised prior to the preparation of the shortlist. The SPNs will (as a minimum) be published in a newspaper of wide national circulation. All ICBs and consultant contracts estimated to cost US\$200,000 or more will be advertised in Development Business online and in dgMarket. Sufficient time would be allowed (not less than six weeks for ICB and not less than 30 days for NCB and 14 days for EOI) to allow adequate time for bidders and consultants to obtain documents and respond appropriately.

Procurement of Works: A total of about US\$64.5 million of civil works to be procured under this project would include: rehabilitation, BRT and interchange construction, traffic management and signaling works, and road safety. Each contract for works with estimated cost US\$2 Million and above will be awarded through International Competitive Bidding (ICB). Smaller contracts for works estimated to cost more than US\$50,000 but less than US\$2 Million will be awarded through National Competitive Bidding (NCB). **The procurement of works will be done using the Bank's Standard Bidding Documents (SBD) for all ICB and for all others the National Standard Tender Documents satisfactory to the Bank.** Interested eligible foreign firms will not be precluded from participation, In all cases the award of contract will be made to the contractor who offers the lowest evaluated price for the required works, and who has the technical and financial resources to successfully execute the contract. All procuring entities will be required to carry out due diligence and verify that the qualification information provided by the contractor recommended for the works is accurate.

Procurement of Goods: A total of about US\$6.3 million goods to be procured under this project would include vehicles, accessories, as well as equipment for the operation and maintenance of BRT systems, goods and equipment relating to air quality management, traffic enforcement, inspection and management agencies, as well as equipment for the Ministry and its

agencies. Goods estimated to cost US\$200,000 equivalent or more per contract will be procured under ICB procurement method LIB would be used only if there is limited number of suppliers. Where practical, the goods to be purchased will be grouped and be procured under ICB contracts. The services of IAPSO may also be used for procurement of vehicles. Contracts below \$200,000 but to cost \$50,000 equivalent or more per contract may be procured under the National Competitive Bidding process. **The procurement will be done using Bank's Standard Bidding Documents (SBD) for all ICB and for all others the National Standard Tender Documents satisfactory to the Bank.** Contracts estimated to cost less than \$50,000 equivalent per contract would be procured using shopping procedures based on a model request for quotations satisfactory to the Bank. Direct contracting may be used where necessary, subject to Bank's prior approval.

Selection of Consultants: A total of about US\$16.20 million of consulting services will be procured under the project to carry out assignments in the areas including the following: preparation of feasibility studies and engineering designs, contract management and supervision, financial management, procurement support and other technical assistance for capacity building and project management, resettlement/environmental monitoring, financial audit, and so forth. Contracts for consulting services estimated to cost \$100,000 equivalent or more, will be awarded following the procedure of Quality and Cost Based Selection (QCBS); Quality-Based Selection (QBS) procedures would be followed for assignments that meet the requirements of paragraph 3.2 of the *Consultant Guidelines*. Contracts for consulting services, estimated to cost less than \$100,000 will be awarded following QCBS procedures, and also procedures for Fixed Budget Selection, Least-Cost Selection (LCS) and Consultant Qualification Selection that meet the requirements of paragraphs 3.5, 3.6 and 3.7 of the *Consultant Guidelines*, respectively. Single-Source Selection (SSS) procedures would be followed for assignments that meet the requirements of paragraphs 3.9-3.13 of the *Consultant Guidelines* and will always require the Bank's prior review regardless of the amount. Procedures for Selection of Individual Consultants (IC) would be followed for assignments that meet the requirements of paragraphs 5.1 and 5.3 of the *Consultant Guidelines*. LCS would be used for assignments for selecting the auditors. For all contracts to be awarded following QCBS, QBS, LCS and FBS, the Bank's Standard Request for Proposals will be used.

Training, Workshops and Study Tours: These will be carried out on the basis of approved programs on a yearly basis. The programs will identify the general framework of training and similar activities for the year, including the nature and objectives of training and study tours, conferences, workshops, the number of participants, cost estimates, and the translation of the knowledge gained in the actual implementation of project components.

Operating Costs: A total of about US\$2 million would be required to cover project implementation-related expenditures such as in-country travel, office supplies, office rentals, utilities, communication costs, etc. These will be financed by the project on a declining basis, and would be procured using the Ghana's Public Procurement Act 663 of 2003 where appropriate.

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

A procurement capacity assessment of all implementing agencies was conducted in 2000 and the report updated during the appraisal of the RSDP. The summary assessment (available in the RSDP project files) showed a medium risk for this program. The project implementation manual will indicate the capacity available in the implementing agency, in terms of designation of procurement responsibilities. The manual will also identify any shortfalls, and how the government will address the shortfalls, to ensure that project implementation will not be

impaired. DUR has implemented several Bank projects and is familiar with the Bank's procurement procedures.

To mitigate the procurement risk and to strengthen the project procurement implementation capacity, a detailed capacity strengthening plan has been developed and agreed with the Borrower and will be followed up by the Bank team throughout project implementation. This primary goals of the plan are to assess the capacities and determine the training needs for building the capacity of DVLA and NRSC to conduct effective procurement.

C. Procurement Plan

The Borrower has developed a Procurement Plan for project implementation that provides the basis for procurement methods. This plan was discussed and agreed between the Borrower and IDA during negotiations. The Procurement Plan will be made available in the project's database and on the Bank's external Website. It will be updated in agreement with the Project Team at least annually or sooner if required to reflect the actual project implementation needs and improvements in institutional capacity.

D. IDA Prior-Review and Frequency of Procurement Supervision

The following thresholds for Bank procurement prior-review are recommended:

- (i) each contract for works estimated to cost US\$500,000 equivalent or more
- (ii) each contract for goods estimated to cost US\$100,000 or more
- (iii) each contract procured on the basis of direct contracting
- (iv) each contract with consulting firms estimated to cost \$100,000 equivalent or more
- (v) each contract with individual consultants estimated to cost \$50,000 equivalent or more
- (vi) the TOR of each contract with individual consultants estimated to cost less than \$50,000
- (vii) all single-source and sole-source consulting assignments and all TORs and assignment outputs of all consulting services regardless of value

Table A8.1: Thresholds for Procurement Methods and Prior Review

Expenditure Category	Contract Value (Threshold) (US\$)	Procurement Method	Contracts Subject to Prior Review (Estimated Total Value subject to Prior Review)
Works	C >= 2,000,000 above	ICB	All contracts
	50,000 = < C < 2,000,000	NCB	All contracts >= 500,000
	C < 50,000	Shopping	None
Goods & Services other than Consulting Services	C >= 200,000 above	ICB/ LIB/IAPSO	All contracts
	50,000 = < C < 200,000	NCB	All contracts >= 100,000
	C < 50,000	Shopping	None
Consulting Services	All values	Direct Contracting	All Contracts
	C >= 200,000 above	QCBS/ QBS (international advert)	TORs & All contracts
	100,000 = < C < 200,000	QCBS (National Advert)	TORs & All contracts
	C < 100,000 firms	QCBS/ LCS/ FBS/ CQS	Only TOR
	C > 50,000 (Individuals)	IC	TORs & All contracts
	C < 50,000 (Individuals)	IC	Only TOR
	All Values	SSS	All contracts

It is estimated that some 20 percent of contracts by value would be subject to Bank prior review.

In addition, it is recommended to carry out supervision missions to conduct post review of contracts that are not subject to the above prior review requirements on a frequency of every six months. The procurement post-reviews should cover at least 20 percent of contracts subject to post-review. In addition, post reviews of in-country training will be conducted occasionally to review the selection of institutions, facilitators, and course contents of trainees and justifications thereof, and costs incurred.

Procurement audits: Audits should occur no later than three months after the end of each financial year. The MOT will have prepared a procurement audit report, by consultants selected in accordance with the guidelines for selection of consultants and TOR incorporated in the project implementation manual. The audits would (a) verify that the procurement and contracting procedures and processes followed for the projects were in accordance with the Financing Agreement ; (b) verify technical compliance, physical completion and price competitiveness of each contract in the selected representative sample; (c) review and comment on contract administration and management issues as dealt with by participating agencies; (d) review capacity of participating agencies in handling procurement efficiently; and (e) identify improvements in

the procurement process in the light of any identified deficiencies. The Borrower and IDA will review all thresholds stated in this section on an annual basis. Amendments may be agreed upon based on performance and actual values of procurement implemented. Amendments to the FA may be proposed accordingly.

Contract management and expenditure reports: As part of the PMR, MOT and the beneficiary agencies will submit contract management and expenditure information quarterly to IDA.

Publication of awards and debriefing: Results of the bidding process for all ICB goods and works will be published, and also results for consultant contracts estimated at US\$200,000 and above, in compliance with paragraphs 2.60 and 2.65 of the World Bank's *Guidelines: Procurement under IBRD Loans and IDA Credits* dated May 2004 and revised in October 2006 and paragraphs 2.28 and 2.29 of the *Guidelines: Selection and Employment of Consultants by World Bank Borrowers* dated May 2004 and revised in October 2006. Publication of all other procurement activities, including debriefing and review shall be subject to the relevant stipulates in the Public Procurement Act (663) of 2003.

Fraud and corruption: All project entities, bidders, and service providers (that is, suppliers, contractors and consultants) shall observe the highest standard of ethics during the procurement and execution of contracts financed under the project in accordance with paragraphs 1.14 of the *Procurement Guidelines* and paragraphs 1.22 of the *Consultants Guidelines*, in addition to Article 93 of the Public Procurement Act which refer to corrupt practices.

Retroactive Financing: The consultancy for the design of the BRT system will be financed out of the GEF grant. The selection of consultants (ICB) for the design of the BRT system is well advanced and has taken place in consultation with the Bank following the Bank's procurement guidelines. A contract is expected to be signed in June 2007, before the GEF grant has become effective. Retroactive financing of up to US\$200,000 from the GEF grant will be provided to finance the design consultancy.

Table A: Project Costs by Procurement Arrangements (US\$ million equivalent)

Expenditure Category	Procurement Method ¹				Total Cost
	ICB	NCB	Other ²	N.B.F.	
1. Works	42.50 (30.50)	5.0 (3.00)	0.00 (0.00)	17.00 (0.00)	64.50 (33.50)
2. Goods	5.00 (3.00)	1.3 (1.30)	0.00 (0.00)	0.00 (0.00)	6.30 (4.30)
3. Services	0.00 (0.00)	0.00 (0.00)	13.20 (11.20)	3.00 (0.00)	16.20 (11.20)
4. Training	0.00 (0.00)	0.00 (0.00)	1.00 (1.00)	0.00 (0.00)	1.00 (1.00)
5. Operating Costs	0.00 (0.00)	0.00 (0.00)	2.00 (2.00)	0.00 (0.00)	2.00 (2.00)
Total	47.50 (33.50)	6.30 (4.30)	16.20 (14.20)	20.00 (0.00)	90.00 (52.00)

Note: Figures in parentheses represent Bank and GEF financing

Details of the procurement arrangements involving international competition

Table B: Contracts for Goods, Works, and Nonconsulting Services Procured Following ICB Direct Contracting

Ref. No.	Contract (description)	Estimated cost (US\$)	Procurement method	Prequalification (yes/no)	Domestic preference (yes/no)	Review by Bank (prior/post)	Expected bid-opening date	Comments
1	Construction of BRT infrastructure	41,500,000	ICB	YES	No	Prior	November 26, 2008	
2	Procurement of contractor for traffic management in Kumasi	2,000,000	ICB	Yes	No	Prior	March 15, 2008	
3	Procurement of contractor for area wide traffic signal control in Kumasi	3,000,000	ICB	Yes	No	Prior	October 15, 2008	
4	Motor vehicles for PAO, MOT, MLGRDE	300,000	ICB IAPSO	No	No	Prior	December 15, 2007	

Note: All ICB contracts will be subject to prior review by the Bank.

Table C: List of Consulting Assignments with Short List of International Firms

Ref No.	Contract description	Estimated cost (US\$)	Selection method	Review by Bank (prior/post)	Expected proposals submission date	Comments
7	Consulting services for BRT design	1,000,000	QCBS	Done	Done	
8	Consulting services for traffic management supervision for Accra	400,000	QCBS	Prior	July 14, 2007	
9	Consulting services for the development of a business model	400,000	QCBS	Prior	November 24, 2007	
10	Consulting services for BRT options study in Kumasi	400,000	QCBS	Prior	April 15, 2008	
11	Consulting services for design and supervision of area-wide traffic study for Kumasi	400,000	QCBS	Prior	September 22, 2008	

12	Consulting services for the design review & supervision for Accra area-wide traffic study	400,000	QCBS	Prior	July 14, 2008
13	Consulting services support to the PO	1,000,000	QCBS QCS	Prior	September 15, 2007
14	Consulting services for traffic enforcement & education	600,000	QCBS	Prior	

Note: Consultancy services estimated to cost above US\$100,000 equivalent per contract will be subject to prior review by the Bank.

Shortlists of consultants for services estimated to cost less than US\$200,000 equivalent per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the *Consultant Guidelines*.

Annex 9: Economic and Financial Analyses

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A formal economic analysis was conducted for investments to support the BRT component, accounting for about 50 percent of the IDA Credit. The investments in traffic engineering, management and area-wide traffic signal control would be spread over a number of subcomponents, throughout the Accra and Kumasi metropolitan areas. Past experience suggests that these investments provide significant benefits in terms of channelization of mixed traffic, improvement in average speed and travel time, and reduction in accident rates.

A. Economic evaluation of BRT component

Areas of influence

The area of influence of the trunk and feeder routes was identified from topographical and route mapping. Traffic zones used in the earlier Questor modelling were classified as follows:

- (i) Directly served by the trunk BRT route
- (ii) Directly served by the formal BRT feeder services
- (iii) Indirectly linked to the BRT trunk or feeder routes by informal feeder services such as taxi and tro-tro.
- (iv) Not linked to the BRT trunk or feeder routes

Mode shift to BRT

Trip matrices for the modes of Taxi, Bus and tro-tro were derived for the situation after implementation of the BRT pilot route for four analyses periods (2004 AM Peak, 2004 PM Peak, 2013 AM Peak and 2013 PM Peak). These matrices incorporated reductions in interzonal trips from the base matrices as shown in Table A9.1.

Table A9.1: Reduction in Taxi, Tro-Tro, and Bus Trips due to BRT (Percent)

From zone served by	To zone served by			
	Trunk route	Feeder route	Informal feeder route	No feeder route to BRT
Trunk	100	75	50	0
Feeder	75	50	25	0
Informal feeder	50	25	0	0
No feeder to BRT	0	0	0	0

Regulations prohibiting competing services within the BRT corridor, and effective enforcement of this restriction, were assumed to be an integral part of the BRT design. It was therefore assumed that all trips currently using the modes of taxi, bus, and *tro-tro* between two zones, each served directly by the trunk BRT route, would shift to the BRT system.

Various alternative routes exist between zones on the feeder route and zone on the trunk route. These routes do not necessarily use the portion of Winneba and Graphic Road used by the trunk BRT route. Enforcement of route restrictions on existing operators therefore may be difficult,

resulting in an assumption that the BRT system is only used by 75 percent of trips between zones served by the formal, contracted, feeder services and zones directly served by the trunk BRT.

Similarly only 50 percent of trips between zones linked to the BRT system by informal feeder services and zones located on the trunk route were assumed to shift mode to the BRT.

A similar logical process was used to derive the other mode shift values shown in Table A9.1.

Demand modelling.

Levels of travel demand on the BRT trunk and feeder routes were analysed using the Questor model developed. A 10-year horizon was deemed appropriate for analysis of the BRT system. The analysis therefore used the Questor model for the year 2013 in addition to the base year of 2004.

B. Conceptual design of the pilot BRT corridor

Operational design alternatives

Two alternative designs for bus operations are proposed. The first design is for feeder/trunk operations. The second design is for direct operations (reduced transfers). Both designs introduce some routing optimization to reduce fleet size, and include CBD circulators (Circle and Ministries).

The second operational design includes eight routes: four direct, two feeder and two trunk/circulator routes. Both of the operational design alternatives described above were taken through into the cost analysis.

Cost Estimates

Estimates included the cost of the busway, stations, terminals, interchanges, and revenue-collection equipment. The costs were based upon unit rates derived from recent civil contracts in the Greater Accra area. A number of major structural works are required for the BRT trunk route:

- (i) Grade separation of the Obetsebi Lamptey Circle, where the Ring Road intersects with Winneba and Graphic Roads. A relatively simple structure is proposed that allows free flow for the Winneba Road–Graphic Road movement, and retains the existing roundabout for all turning movements and through traffic on the Ring Road.
- (ii) Grade separation of the level railway crossing on Graphic Road by means of a road-over-rail bridge.
- (iii) Provision of three lanes per direction across the tributary of the Korle Lagoon adjacent to the railway crossing. This may be either by addition of an extra lane per direction or new construction of a six-lane bridge

Cost estimates for these major works items are given separately from the other civil works costs. For the purposes of assessing economic and financial viability, only the cost of widening has been used.

Table A9.2: Major Structural Works Items

Item	Cost (US\$ million)
Flyover at Obetsebi Lamptey Circle (four-lane bridge structure plus ramps linking to existing circle)	6.9
Road-over-rail bridge on Graphic Road (six lane)	2.2
Extra lane per direction over tributary to Korle Lagoon	0.9
Completely new six-lane bridge over tributary to Korle Lagoon	2.0
Total cost of major work items included in project cost estimate	12.0

Recurring costs for busway, terminal, modal interchanges and stations

Maintenance of the busway and associated terminal, modal interchanges, and stations was calculated based upon the following unit rates:

Busway	US\$20,000/km/lane/year
Terminal and modal interchanges	US\$150,000/location/year
Stations	US\$5,000/station/year

The trunk route is 9.1 kilometers in length, with one BRT lane per direction. For calculation of maintenance requirements, 20 lane/kilometers were assumed. The trunk route has a terminal/modal interchange at the New Gbawe junction at Mallam, and modal interchanges at Ordorkor Junction, Darkuman Junction, Kaneshie Market, and CMB. There are a further eight stations on the trunk route.

Both the CBD Distributor routes utilize a single (one-way) BRT lane. To allow for increased maintenance due to passing lanes at stations, the route length has been increased by 50 percent for purposes of maintenance calculation. The Circle CBD Distributor route is 7.1 kilometers in length, which was increased to an effective 10 kilometers for maintenance cost estimation. It has a modal interchange facility at the Railway Station, and a further nine stations.

The Ministries CBD Distributor is 6.0 kilometers long; however, a portion of the route of approximately 2 kilometers is shared with the Circle route. For the purposes of calculating maintenance costs, a length of 6 kilometers was retained after allowance for passing lanes was added. It has modal interchange facilities at Bishop and New Tema Station, and four stations.

Based upon the above assumptions the recurring costs for busway, terminal, modal interchange and station maintenance were calculated as shown in the following table:

Table A9.3: Annual Recurring Costs for Major Structural Works Items

	Effective lane/km	Terminal/modal interchanges	Stations	Annual maintenance cost
Trunk routes	20	5	8	1.19
Circle CBD Distributor route	10	1	9	0.40
Ministries CBD Distributor route	6	2	4	0.44

C. Summary of cost estimates

Investment costs

The capital investment cost for each of the items is given below:

Table A9.4: Capital Costs (US\$ million)

Description	Operational alternative 1	Operational alternative 2
Major structural works	12.0	12.0
Trunk route	18.5	18.5
CBD Circle Distributor	4.5	4.5
CBD Ministries Distributor	6.5	6.5
Vehicles	17.0	13.7
Electronic fare collection	3.4	3.5
Nonelectronic fare	0.3	0.3
Total with electronic fare collection	US\$61.9	US\$58.7
Total with nonelectronic fare collection	US\$58.8	US\$55.5

D. Revenue estimation

For the purposes of this pre-feasibility assessment, it is assumed that fares on the BRT and feeder services will be at the same level as existing *tro-tro* fares. For simplicity, a two-tier fare structure has been assumed in which users of the feeder services pay 2,000 cedis and trunk route users also pay 2,000 cedis. A user of both the feeder and trunk services would therefore pay 4,000 cedis.

The demand modeling reported estimated daily usage and daily usage of the trunk services as 217,000 passengers, based upon a ratio of peak section volume to total trips of 1 to 4. The combined daily volume of all feeder services was 316,000 passengers. Therefore it a conservative assumption to estimate revenue based upon 50 percent of passengers utilizing feeder and trunk services and the remaining 50 percent using only the trunk route. The average fare per passenger is thus 3,000 cedis per trip.

Based upon the estimated annual usage of 69,400,000 passengers, annual revenue is expected to be 208,200 million cedis, or US\$23.13 million.

E. Financial assessment

The financial assessment was based upon the preceding cost estimates. Four options were evaluated, comprising the two operational alternatives of direct and feeder-trunk services and two fare-collection options, namely electronic and paper ticket/token systems (Table A9.5). The financial analysis was based upon the discounted cash flow approach, where future costs are discounted to present value at the cost of capital. For recurring costs a 10-year analysis period

was used. The real cost of capital in Ghana (nominal rate less inflation) at the time of the study was approximately 15 percent, and this rate was used in the financial analysis.

The analysis shows that the combined lower investment and recurring costs of the direct services (operational alternative 2) yield lifecycle costs approximately 4 percent less than the feeder-trunk option shown as operational alternative 1. The slightly lower recurring costs of the electronic system of ticket collection do not outweigh the higher capital cost. Lifecycle costs for the paper ticket/token system are approximately 2 percent lower than the electronic fare collection system.

As reported earlier, daily load is expected to be 217,000 passengers. Assuming 320 equivalent weekdays per year this is equivalent to 69.44 million passengers per year. To obtain a representative cost per passenger the discounted lifecycle costs were converted to average costs per passenger by dividing by the present value of the expected passenger load over the 10-year analysis period (348.5 million passengers).

Expected average revenue of 3,000 cedis per passenger equates to US\$0.333. If all potential revenue is collected, then the fare box revenue is just sufficient to meet the full infrastructure, fleet acquisition, and operation and fare collection costs.

Some degree of revenue “leakage” is however likely, particularly with the paper ticket/token system of fare collection. Revenue losses of up to 30 percent have been reported for South American systems using paper ticket or token systems. The option with electronic fare collection was taken as the base case, and the sensitivity of the financial analysis to different options was evaluated.

As can be seen from Table A9.5, excluding the capital cost of the major structural works reduces the total cost US\$0.30 per passenger for operational alternative 1 and US\$0.29 for alternative 2.

Including the costs of major structures, but excluding the acquisition cost, has a similar effect, with the cost per passenger for both operational alternatives dropping to US\$0.29. The combined effect of excluding the major structural works and bus acquisition is to bring the costs of operational alternatives 1 and 2 down to US\$0.26 and US\$0.25, respectively.

If all major capital costs are excluded, and only the operational costs of the infrastructure, buses, and fare collection are retained, then the cost per passenger drops to approximately US\$0.17 per passenger for both operational alternatives.

F. Economic evaluation

Data was extracted from the Questor model for the trunk route portion of the BRT network to quantify the impact of the BRT on traffic in the general traffic lanes. In the “with BRT” scenario, the roadway available to general traffic was reduced to two lanes per direction for the entire length of the corridor.

The measure of effectiveness (vehicle kilometers and vehicle hours) was computed for both modes for 2004 and 2013 models, and for the before and after scenarios.

Comparison of the before and after values for the 2004 modeling reveals a number of salient points:

- (i) Total daily vehicle kilometers of travel in the corridor are expected to decrease by 19 percent as a result of the BRT.

- (ii) Vehicle kilometers for taxi, *tro-tro*, and bus decreased substantially, by 41–44 percent in the corridor.
- (iii) Volumes of private cars and trucks are expected to increase, by 14 and 13 percent, respectively, as improved traffic flow in the corridor makes the Winneba and Graphic Roads more attractive relative to other alternative routes.
- (iv) Average travel speeds for general traffic in the corridor are expected to increase by approximately 8 percent, despite the reduction from three to two lanes per direction for portions of route, and the increased volumes of private cars and trucks.

The data for 2013 displays similar characteristics as the 2004 values.

The economic evaluation was based upon the conventional before and after analysis for a 10-year analysis period. Note that this is shorter than the 20-year period used for civil infrastructure projects. Capital costs for the BRT system were estimated with the option of electronic fare collection. As the busway and structural elements conservatively can be expected to have a 20-year life, a residual value of 50 percent was applied to the major structural works, busway, and station items of capital cost.

Road user savings were quantified for the following:

- (i) Vehicle operating costs per mode for taxis, *tro-tros*, and buses were derived from HDM-4 analysis based upon road and traffic characteristics representing the Winneba/Graphic Road corridor. (The Highway Development and Management System—HDM-4—is a software system for investigating choices in investing in road transport infrastructure.) For the BRT system the total recurring costs (with electronic fare collection) were used.
- (ii) Value of time for vehicle occupants for taxis, *tro-tros*, and buses was calculated from observed operational characteristics related to route characteristics, waiting time, travel speed and stop time, and frequency. Travel time for occupants of the BRT system was calculated in a similar manner based upon the characteristics of the BRT system.

The diversion of private cars and trucks away from alternative routes to the Winneba Road/Graphic Road corridor implies that these vehicles also derive an economic benefit from implementation of the BRT. However, the analysis has conservatively excluded diversion effects.

Savings resulting from an expected reduction in collision occurrence and reduced vehicle emissions were not included in the analysis.

The results of the economic analysis are shown in Table A9.5.

Table A9.5: Results of the Economic Analysis

	Base	Excluding major structures	Cost - 20%	Cost +20%	Savings - 20%	Savings +20%	Cost +20% & savings - 20%
Operational alternative 1 with electronic fare collection							
NPV	\$15.321	\$23.100	\$24.445	\$6.197	\$3.133	\$27.509	-\$5.992
IRR	18%	23%	24%	14%	13%	23%	10%
Operational alternative 1 with paper ticket/token fare collection							
NPV	\$17.228	\$25.007	\$25.845	\$8.610	\$5.165	\$29.291	-\$3.453
IRR	19%	25%	25%	15%	14%	24%	11%
Operational alternative 2 with electronic fare collection							
NPV	\$21.269	\$29,049	\$29.712	\$12.826	\$8.572	\$33.966	\$129
IRR	21%	27%	28%	17%	16%	26%	12%
Operational alternative 2 with paper ticket/token fare collection							
NPV	\$23.316	\$31.096	\$31.234	\$15.399	\$10.736	\$35.897	\$2.819
IRR	22%	29%	29%	18%	17%	28%	13%

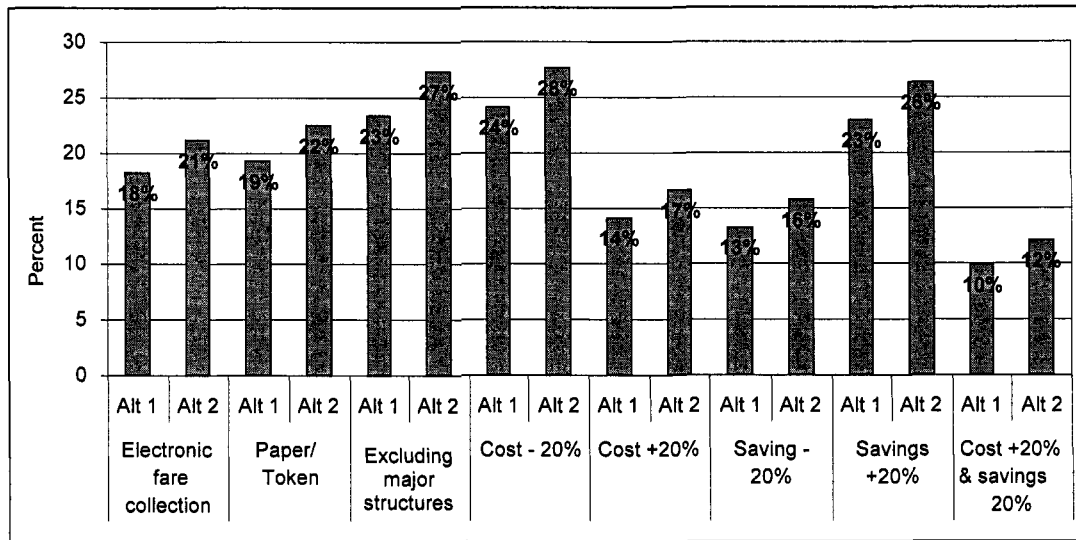
Note: NPV = net present value; IRR = internal rate of return. All figures are US\$ millions.

As shown in the financial evaluation, operational alternative 2 with direct services shows better economic performance and is thus the preferred option. It should be noted that the full cost of the major structural works—namely grade separation of Obetsebi Lamptey Circle, the Railway Line, and the bridge over the Korle Lagoon—have been included in the capital costs, but only the benefits accruing to users of the BRT have been calculated. In practice the road users using the lanes available for general traffic will also benefit from these measures, which will increase the net benefits. The base case economic analysis can therefore be considered conservative. To test the impact of this and other effects, the sensitivity analysis excluded costs of the major structural works. Doing so increased the IRR from 21 to 27 percent.

The options utilizing paper tickets or tokens in preference to electronic fare collection show slightly better economic performance due to significantly lower initial costs, and only slightly higher recurring costs. The effect of fare leakage as discussed earlier has not been included in the economic analysis.

The economic performance of the preferred option is relatively robust to changes in the input parameters as shown in Figure A9.1. Only under the combined effect of reduced road user savings and increased construction cost does the economic performance become marginal.

Figure A9.1: Sensitivity of Internal Rate of Return



Annex 10: Safeguard Policy Issues

GHANA: Urban Transport Project

A. Environmental assessments and resettlement action plans

Transport, rather than roads, is the focus of the GUTP. Transport investments, however, often include roads, and a road upgrading component is part of the project. Both rural and urban road investments (including construction and rehabilitation), , although mainly beneficial to the local communities, have adverse impacts on the biophysical environment (water and air quality, land and hydrology, vegetation, and so forth). The potential adverse impacts of the road project include noise and dust, which are presumed to induce adverse physical environmental impacts during the civil works.

An Environmental and Social Management Framework (ESMF) was prepared and disclosed in country and at the World Bank InfoShop prior to appraisal. Potential adverse environmental impacts were identified by the ESMF. No adverse environmental impacts are expected. The impacts identified are minor, and will be site specific to civil works; such impacts include runoff, soil erosion, noise, dust, and air quality. The ESMF has identified a number of specific safeguard and mitigation measures to address adverse impacts, including the preparation of an Environmental Impact Assessment (EIA) and accompanying Environmental Management Plans (EMPs). The EIA and EMPs will be prepared after the detailed design of the BRT becomes available and prior to the road-upgrading civil works along the BRT corridor. Appropriate mitigation measures and management arrangements will be designed to ensure compliance and appropriate implementation of the EMPs.

To address potential adverse social impacts of project operations, a Resettlement/Rehabilitation Policy Framework (RPF) was prepared. Land acquisition has been identified as a potential adverse impact and will trigger the Bank's involuntary resettlement policy. An entitlement matrix and a budget forecast for resettlement/rehabilitation is incorporated in the RPF. Also, a flowchart for the delivery of entitlement, defining who will do what and when, is presented. A Resettlement Action Plan (RAP) will be prepared in the first six months of the project, after the detailed design of the BRT becomes available and prior to the road-upgrading civil works along the BRT corridor, which are scheduled the second year of the project implementation. The first year of the project will focus on component 1 (Institutional Development) and component 2 (Traffic Engineering, Management, and Safety). The RAP will be submitted to the Ghana's Environmental Protection Agency (EPA) and the World Bank for clearance, before in-country disclosure and disclosure at InfoShop.

B. Safeguards related impacts

The potential adverse impacts of the GUTP implementation during civil works include soil erosion; loss of strips of residential plots along road alignments; loss of residential houses, businesses, and temporary structures; noise; and dust. Environmental protection clauses will be incorporated in the contract documents, as well as social clauses including HIV/AIDS prevention. Compliance in the implementation of the clauses will be monitored by the environmental desk of the DUR.

C. Measures to minimize adverse safeguard-related impacts

Drawing from experiences of RDSP, the road designs were required to take into consideration the road alignment location, with the aim of reducing adverse environmental and social impacts. The safeguard instruments have been subject to consultations with key stakeholders. In addition, project stakeholders, local governments, local communities, and project-affected persons along the road alignment will be continuously consulted at various stages of the project cycle, from planning to design review and implementation.

D. Participation/consultations

The expected social benefits of the proposed project include savings in travel time for users of the system (both in- and out-of-vehicle time), particularly for school children, reduced vehicle operating costs, reduced fares, and improvements in the safety and quality of transport services. In addition to mobility benefits, the project may increase labor market options for workers and diversify land-use patterns in Accra.

To strengthen participation and enhance inclusion, public consultations were carried out throughout the project preparation phase. The stakeholders included government agencies, users, transport unions (including private operators, *tro-tro* bus drivers, and bus owners), commercial banks, insurance companies, NGOs, and development partners. Various workshops were also carried out. The preparation of the EIA and the RAP will include social assessment and various forms of participation, from individual consultations to focus-group discussions. Consultations with various stakeholders in the transport sector were essential components in the preparation of the ESMF and the RPF; stakeholders included MOT and its agencies, the urban municipality of Accra, utility companies, and administrations. The two documents will be subject to public validation with key stakeholders before project mobilization, in view of strengthening the environmental and social safeguard partnership.

Consultations with local communities will be continuously organized during the implementation of all stages of the civil works, to minimize conflicts, enhance cooperation, and improve social benefits and performance of the works contracts.

E. Long-term adverse safeguard impacts

The safeguard impacts identified are not expected to have any long-term or cumulative effects. Metropolitan Accra, particularly its main streets, is the focus of the project activities. The streets targeted are large and have limited encroachment by permanent structures in the right of way. The selected BRT corridor is Winneba Road and Graphic Road from Mallam to the Accra CBD. This is a six-lane road with a median and is mostly free of encroachments.

F. Assessment of capacity and commitment of client to address safeguard issues

As part of the RSDP recommendations, environmental management desks were established at the three agencies (DUR, GHA, and DFR) of the MOT. DUR has an environmental management desk that will ensure compliance, supervise the mitigation of the safeguard measures, and conduct internal monitoring of the implementation. The environmental desk at DUR has had substantial experience in compensation issues and has demonstrated adequate capacity to manage both environmental and social issues.

G. Funding of safeguard mitigation measures

Cost for safeguard mitigation measures will be covered by GOG and will be incorporated into the bills of quantity.

H. References to mitigation plans in the project legal arrangements

The policy requirements of the two safeguard instruments (ESMF and RPF) will constitute part of the body of reference texts to the credit agreement. Environmental and social clauses also will be incorporated into the works contract documents.

I. Mechanisms to monitor the implementation of agreed mitigation plans

GUTP will continue to support the environmental desk of DUR to implement the ESMF and subsequent EMPs and RAPs to be prepared. The work of the environmental desk is supported by Ghana environmental law, the ESMF and the RPF. The project will also seek to strengthen the capacity of the environmental desk through training. The implementation of EMPs and RAPs will be launched and completed prior to commencement of civil works. Project progress reports will include progress in implementation of environmental and social safeguard measures.

J. Supervision arrangements including staffing and resources

Supervision and monitoring will be a continuous process. The day-to-day field supervision will be conducted by the Resident Engineer and documented in the monthly and quarterly progress reports, which will be subject to review by the environmental desk of DUR. Expropriation and compensation will be executed by a local consultant under the lead of the DUR management and the environmental desk. Periodic supervision will be conducted by the environmental desk, which will also continuously take stock of all expropriation and compensation reports and discuss them on regular basis. The environmental desk will produce quarterly progress reports on environmental and social performance. The reports will form part of the overall project monitoring system. The EPA will carry out external monitoring.

Annex 11: Project Preparation and Supervision

GHANA: Urban Transport Project

	Planned	Actual
PCN review	11/08/2004	12/06/2004
Initial PID to PIC		01/07/2005
Initial ISDS to PIC		12/16/2004
Appraisal	02/15/2007	02/23/2007
Negotiations	04/17/2007	04/19/2007
Board approval	06/21/2007	
Planned date of effectiveness	09/21/2007	
Planned date of mid-term review	04/15/2010	
Planned closing date	12/31/2012	

Key institutions responsible for preparation of the project are:

Ministry of Transportation
 Department of Urban Roads
 Ministry of Local Government, Rural Development, and Environment

Bank staff and consultants who worked on the project are:

Name	Title	Unit
Ajay Kumar	Sr. Transport Economist	AFTTR
Tawia Addo-Ashong	Sr. Transport Specialist	AFTTR
Antoine Lema	Consultant	AFTTR
Sameer Akbar	Sr. Environmental Specialist	ENV
Charles Boakye	Sr. Municipal Engineer	AFTU2
Ian Barrett	Consultant	
Brendan Finn	Consultant	EASTE
Arun Banerjee	Consultant	AFTQK
Nina Chee	Sr. Environmental Specialist	AFTS3
Yvette Laure Djachechi	Sr. Soc. Development Specialist	AFTS3
Anthony Mensa-Bonsu	Procurement	AFTPC
Jonathan Nyamukapa	Sr. Financial Management Specialist	AFTFM
Modupe A. Adebowale	Sr. Finance Officer	LOAG2
Manush Hristov	Counsel	LEGAF
Rahul Aggarwal	Legal Associate	LEGAF
Ntombie Siwale	Program Assistant	AFTTR
Charity Bofo-Portuphy	Program Assistant	AFCW1
Richard Scurfield	Peer Reviewer	SACMV
Gerhard Menckhoff	Peer Reviewer	EASTE
Sam Zimmerman	Peer Reviewer	ETWTR

Annex 12: Documents in Project File

GHANA: Urban Transport Project

Consultancy Services for the Development of an Area Wide Traffic Signal Control in Accra, January 29, 2003, K2 Associates, Ministry of Transportation, Accra, Ghana

Urban Transport Planning and Traffic Management Studies for GAMA, Sekondi-Takoradi, Cape Coast & Koforidua (*February 2004*)

Feasibility Studies and Design of Arterial Roads in Kumasi (*March 2004*)

Engineering Design Socio-Economic Feasibility of selected Feeder Roads in Ghana - Tranche 2 (*August 2004*)

Improving Urban Transport through Private Participation in Accra (May 2004), PPIAF funded study, Adam Smith Institute

Detailed Design of Traffic Management Works in Greater Accra Metropolitan Area (GAMA), (2007) Municipal Development Collaborative Ltd., Ministry of Transportation, Accra, Ghana

Installation of Traffic Data Collection System of the GHA Traffic Pilot Studies (*January 2005*)

Baseline Studies and Monitoring of Impact of road sector development programme roads on poverty reduction (March 2005)

Socio-Economic Feasibility and Environmental Impact Studies of selected Feeder Roads in Ghana - Tranche 2 (*June 2005*)

Bus Rapid Transit Options: Identification and Pre-Feasibility Study (November 2005), Department of Urban Roads, Accra Ghana

Report on Study Tour Sponsored by the World Bank (September 2006), The World Bank

Bus Financing for the Informal Sector in Accra (July 2006), PPIAF financed Study

Legislative Framework for Regulation of Road Passenger Transport Services: Issues and Options (October, 25, 2006), PPIAF Study

Regulation of Urban Passenger Transport Services by the MMDAs in the Greater Accra Area (October 2006), PPIAF Study

Institutional Structures and Capabilities of MMDAs in the Greater Accra Region (October 2006), PPIAF Study

Feasibility and Technical Studies of (a) Trunk Road Projects, (b) Urban Arterial Road Development & (c) Feeder Road Projects (*October 2006*)

Passenger Transport Industry Sector in Accra: Issues and Feedback (October 2006) PPIAF Study

Adapting BRT for Sub-Saharan Africa (February 2007), PPIAF funded Study

Environmental and Social Management Framework for the Transport Sector Development Programme (*January 2007*)

The Resettlement Policy Framework for the Transport Sector Development Programme (*January 2007*)

Feasibility Studies and Design of Arterial and Local Roads in Accra East (*January 2007*)
Detailed Design of Traffic Management Works in Greater Accra Metropolitan Area (*February 2007*)

Annex 13: Statements of Loans and Credits

GHANA: Urban Transport Project

Project ID	FY	Purpose	Original Amount in US\$ Millions						Difference between expected and actual disbursements	
			IBRD	IDA	SF	GEF	Cancel.	Undisb.	Orig.	Frm. Rev'd
P093610	2007	YGH-eGhana SIL (FY07)	0.00	40.00	0.00	0.00	0.00	39.97	0.00	0.00
P092986	2006	GH-Economic Management CB	0.00	25.00	0.00	0.00	0.00	23.22	1.73	0.00
P088797	2006	GH-Multi-Sector HIV/AIDS - M-SHAP (FY06)	0.00	20.00	0.00	0.00	0.00	17.23	1.81	0.00
P085006	2006	MSME Initiative	0.00	45.00	0.00	0.00	0.00	43.66	2.13	0.00
P081482	2005	GH-Com Based Rural Dev (FY05)	0.00	60.00	0.00	0.00	0.00	32.75	4.28	0.00
P084015	2005	GH-Small Towns Water Sply & Sanit (FY05)	0.00	26.00	0.00	0.00	0.00	16.48	3.62	0.00
P056256	2005	GH-Urban Water SIL (FY05)	0.00	103.00	0.00	0.00	0.00	88.55	36.24	0.00
P071157	2004	GH Land Administration (FY04)	0.00	20.50	0.00	0.00	0.00	14.54	8.09	0.00
P050620	2004	GH-Edu Sec SIL (FY04)	0.00	78.00	0.00	0.00	0.00	53.89	19.14	0.00
P082373	2004	GH-Urban Env Sanitation 2 (FY04)	0.00	62.00	0.00	0.00	0.00	58.01	13.63	0.00
P073649	2003	GH-Health Sec Prgm Supt 2 (FY03)	0.00	89.60	0.00	0.00	0.00	0.76	-10.66	0.00
P067685	2002	GH-GEF Northern Savanna (FY02)	0.00	0.00	0.00	7.60	0.00	1.90	1.67	-0.50
P050623	2002	GH-Road Sec Dev Prgm (FY02)	0.00	220.00	0.00	0.00	0.00	41.66	4.24	0.00
P000968	2001	GH-Agr Srvcs APL (FY01)	0.00	67.00	0.00	0.00	0.00	5.18	-1.72	-1.72
P069465	2000	GH-Rural Fin Srvcs SIL (FY00)	0.00	5.13	0.00	0.00	0.00	0.24	-0.29	-0.40
P000970	1999	GH-Trade Gateway & Inv SIL (FY99)	0.00	50.50	0.00	0.00	0.00	19.54	17.49	10.46
P045188	1998	GH-GEF Forest Biodiversity SIL (FY98)	0.00	0.00	0.00	8.70	0.00	0.21	0.21	0.00
		Total:	0.00	911.73	0.00	16.30	0.00	466.32	102.75	7.84

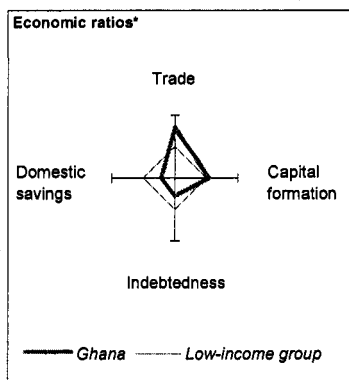
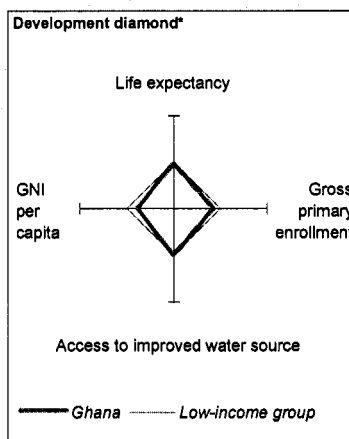
**STATEMENT OF IFC's
Held and Disbursed Portfolio
In Millions of US Dollars**

FY Approval	Company	Committed				Disbursed			
		Loan	Equity	Quasi	Partic.	Loan	Equity	Quasi	Partic.
		0.00	2.55	0.00	0.00	0.00	2.55	0.00	0.00
1990	AAIL								
1998	AEF NCS	0.00	0.00	0.53	0.00	0.00	0.00	0.53	0.00
1997	AEF PTS	0.00	0.00	0.31	0.00	0.00	0.00	0.31	0.00
1994	AEF Shangri-la	0.93	0.00	0.00	0.00	0.93	0.00	0.00	0.00
1996	AEF Tacks Farms	0.43	0.00	0.00	0.00	0.37	0.00	0.00	0.00
2006	Barclays Bnk GHA	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1989	CAL Bank Ltd	0.00	0.87	0.00	0.00	0.00	0.87	0.00	0.00
2001	Diamond Cement	2.50	0.00	0.00	0.00	2.50	0.00	0.00	0.00
2000	ELAC	0.00	0.10	0.00	0.00	0.00	0.10	0.00	0.00
1991	GHANAL	0.00	0.22	0.00	0.00	0.00	0.22	0.00	0.00
2006	Newmont Ghana	75.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00
2005	Scancom	40.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
2005	School Fin Facil	1.03	0.00	0.00	0.00	0.25	0.00	0.00	0.00
	Total portfolio:	149.89	3.74	0.84	50.00	24.05	3.74	0.84	0.00

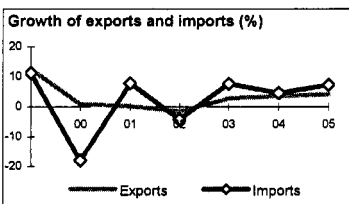
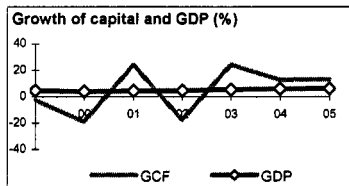
FY Approval	Company	Approvals Pending Commitment			
		Loan	Equity	Quasi	Partic.
2005	Scancom	0.00	0.00	0.00	0.00
2004	Takoradi II	60.00	0.00	0.00	0.00
	Total pending commitment:	60.00	0.00	0.00	0.00

Annex 14: Country at a Glance

POVERTY and SOCIAL	Ghana	Sub-Saharan Africa	Low-income		
2005					
Population, mid-year (millions)	22.1	741	2,353		
GNI per capita (Atlas method, US\$)	450	745	580		
GNI (Atlas method, US\$ billions)	10.0	552	1,364		
Average annual growth, 1999-05					
Population (%)	2.2	2.3	1.9		
Labor force (%)	2.5	2.3	2.3		
Most recent estimate (latest year available, 1999-05)					
Poverty (% of population below national poverty line)	40		
Urban population (% of total population)	48	35	30		
Life expectancy at birth (years)	57	46	59		
Infant mortality (per 1,000 live births)	68	100	80		
Child malnutrition (% of children under 5)	22	29	39		
Access to an improved water source (% of population)	75	56	75		
Literacy (% of population age 15+)	58	..	62		
Gross primary enrollment (% of school-age population)	88	93	104		
Male	90	99	110		
Female	87	87	99		
KEY ECONOMIC RATIOS and LONG-TERM TRENDS					
	1985	1995	2004	2005	
GDP (US\$ billions)	4.5	6.5	8.9	10.7	
Gross capital formation/GDP	9.6	20.0	27.9	29.6	
Exports of goods and services/GDP	10.7	24.5	34.5	30.4	
Gross domestic savings/GDP	6.6	11.6	8.0	10.5	
Gross national savings/GDP	5.4	17.6	26.4	27.1	
Current account balance/GDP	-5.8	-2.4	-2.7	-7.1	
Interest payments/GDP	0.7	0.9	0.7	..	
Total debt/GDP	49.8	85.1	79.3	..	
Total debt service/exports	23.6	23.9	6.7	..	
Present value of debt/GDP	27.0	..	
Present value of debt/exports	67.4	..	
	1985-95	1995-05	2004	2005	2005-09
(average annual growth)					
GDP	4.5	4.6	5.8	5.8	5.8
GDP per capita	1.7	2.3	3.6	3.7	4.2
Exports of goods and services	8.2	4.8	3.5	4.0	3.7



STRUCTURE of the ECONOMY	1985	1995	2004	2005
(% of GDP)				
Agriculture	44.9	38.8	37.9	38.8
Industry	16.7	24.3	24.7	24.6
Manufacturing	11.5	9.3	8.5	8.6
Services	38.4	36.9	37.4	36.6
Household final consumption expenditure	84.0	76.3	76.0	74.1
General gov't final consumption expenditure	9.4	12.1	16.0	15.4
Imports of goods and services	13.6	32.9	54.4	49.5
(average annual growth)				
Agriculture	2.0	4.4	7.5	6.1
Industry	3.6	4.6	5.1	6.7
Manufacturing	-3.0	4.0	6.5	7.0
Services	7.8	4.7	4.5	5.4
Household final consumption expenditure	4.1	4.3	2.7	8.2
General gov't final consumption expenditure	5.4	5.6	15.9	-2.1
Gross capital formation	3.9	3.7	12.5	13.1
Imports of goods and services	6.8	4.7	4.5	7.3



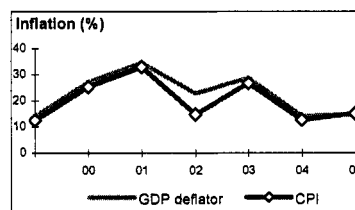
Note: 2005 data are preliminary estimates.

This table was produced from the Development Economics LDB database.

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

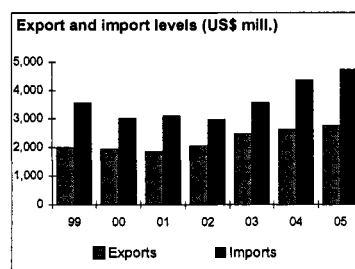
PRICES and GOVERNMENT FINANCE

	1985	1995	2004	2005
Domestic prices				
(% change)				
Consumer prices	10.3	59.5	12.6	15.1
Implicit GDP deflator	20.6	43.0	14.1	14.8
Government finance				
(% of GDP, includes current grants)				
Current revenue	11.3	21.7	30.1	29.3
Current budget balance	0.1	5.3	9.2	10.7
Overall surplus/deficit	-4.1	-8.8	-3.1	-1.8



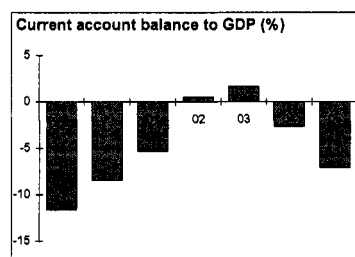
TRADE

	1985	1995	2004	2005
(US\$ millions)				
Total exports (fob)	633	1,431	2,639	2,774
Cocoa	412	390	838	875
Timber	28	191	190	198
Manufactures	56	128	249	261
Total imports (cif)	738	1,851	4,378	4,737
Food	111	278	592	623
Fuel and energy	230	207	852	862
Capital goods	207	891	1,211	1,399
Export price index (2000=100)	65	75	98	99
Import price index (2000=100)	94	110	123	124
Terms of trade (2000=100)	69	68	80	80



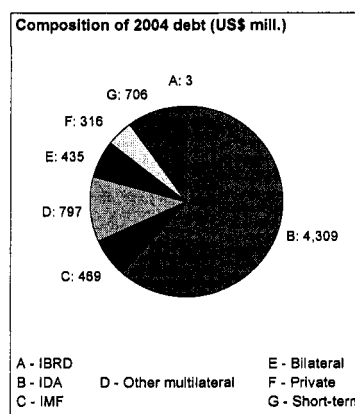
BALANCE of PAYMENTS

	1985	1995	2004	2005
(US\$ millions)				
Exports of goods and services	672	1,596	3,487	3,663
Imports of goods and services	857	2,140	5,356	6,200
Resource balance	-185	-544	-1,869	-2,536
Net income	-111	-133	-198	-158
Net current transfers	33	523	1,831	1,938
Current account balance	-263	-154	-236	-756
Financing items (net)	148	366	416	861
Changes in net reserves	115	-211	-180	-105
Memo:				
Reserves including gold (US\$ millions)	..	0	1,815	1,992
Conversion rate (DEC, local/US\$)	76.2	1,200.4	9,004.6	9,072.5



EXTERNAL DEBT and RESOURCE FLOWS

	1985	1995	2004	2005
(US\$ millions)				
Total debt outstanding and disbursed	2,243	5,495	7,035	..
IBRD	118	59	3	0
IDA	259	2,375	4,309	4,234
Total debt service	159	386	240	..
IBRD	18	21	2	2
IDA	3	25	39	99
Composition of net resource flows				
Official grants	75	238	1,817	..
Official creditors	86	306	255	..
Private creditors	35	38	31	..
Foreign direct investment (net inflows)	6	107	139	..
Portfolio equity (net inflows)	0	0	0	..
World Bank program				
Commitments	191	299	361	..
Disbursements	70	242	230	305
Principal repayments	10	23	13	67
Net flows	60	219	217	239
Interest payments	11	23	28	35
Net transfers	49	197	188	204



Note: This table was produced from the Development Economics LDB database.

8/13/06

Annex 15: Incremental Cost Analysis and Global Environmental Benefits

GHANA: Urban Transport Project

In accordance with OP11, significant CO₂ emission reductions can be achieved through the rationalization of the public transport system, transport demand management, improved planning and institutional arrangements, and the change of transport modes. Changing transport modes can include switching from private vehicles to public transport and the facilitation and integration of pedestrians and non-motorized transport.

Greater Accra metropolitan area, with a population of over 3 million residents, has a fleet of private motor vehicles and minibuses which is growing faster than the 3 percent annual GDP growth rate. The vast majority of trips are concentrated in the city center, with three radial routes serving over 500,000 daily person trips entering the area. These roads are heavily congested, with 200,000 private vehicles, about 10,000 *tro-tros* (14–32 seat minibuses), and 2,000 shared taxis (5 seats). If nothing is done to check their growth, GHG emissions from the transport sector are projected to increase by 50 percent by 2010, an increase of about 600,000 million tons just within the affected area. The project aims to improve operational efficiency of transport modes and influence mode choice in favor of high-capacity public transport buses. These are expected to reduce GHG and other emissions significantly over the projected baseline by approximately 10% at the end of the project period.

The key objectives of the project are as follows:

- (vi) Improve mobility in areas of participating MMDAs through a combination of traffic engineering measures, management improvements, regulation of the public transport industry, and implementation of a BRT system.
- (vii) Promote a shift to more environmentally sustainable urban transport modes and encourage lower transport-related GHG emissions along the pilot BRT corridor in Accra.

The project has the following key components with GEF subcomponents:

- (i) Design and development of BRT system and promotion of other environmentally sustainable public transport modes
- (ii) Integration of urban development and transport planning for better environmental management
- (iii) Project outcome monitoring.

Baseline (without GEF support) course of action

GOG is committed to improving urban transport environment in Accra and other cities. In 2002, GOG commenced implementation of a five-year Road Sector Development Program (RSDP), which aims to achieve sustainable improvements in the supply and performance of roads and road transport services countrywide. The project focuses on routine and periodic road maintenance; major rehabilitation, reconstruction, and upgrading; traffic management and safety; and institutional strengthening. While the need to improve the supply and performance of Ghana's road network is certain, the project is not designed to adequately address the growing congestion in the cities.

GOG has procured a large number of buses in the past year to augment supply. However, increasing the supply of buses alone is not sufficient to alleviate the serious traffic congestion and declining environmental and safety standards. What is required is a priority to movement of buses and a framework for the bus transport industry to operate efficiently.

Without the GEF project, the city is likely to continue using the available resources to invest in new buses and widen the road network, in an attempt to be responsive to the residents' immediate transport needs. These may be necessary initiatives to alleviate congestion, but their impact in absence of other complementary measures is likely to be short-lived. The concern in dealing with the immediate problems has led GOG to overlook the long-term impact of the proposed solutions. The opportunities for expanding the road network are limited and benefits of additional buses in the market, without addressing the fundamental planning, routing, and regulatory issues, are likely to be suboptimal.

GEF alternate scenario

The GEF contribution is expected to encourage development of environmentally friendly transport options and to influence decisions toward more globally sustainable solutions. GEF funds would address the most pressing problems affecting urban transport services in greater Accra through the provision of segregated busways, development of institutional capacity, undertaking a strategic environmental assessment that integrates urban development and transport planning, and monitoring and evaluation.

The project is designed to produce the following key outcomes:

- (i) Improve capacity of MMDAs in Accra metropolitan area and Kumasi to effectively operate, manage, plan, and monitor an efficient delivery of urban transport system
- (ii) Strengthen regulatory environment of the urban transport sector, both to raise the standard of service provision (including higher standards of vehicle maintenance) and improve its efficiency and productivity, thereby lowering rates of vehicle emission
- (iii) Introduce prioritized bus schemes on pilot corridors, and feeder bicycle and pedestrian paths, thereby achieving modal shifts to more efficient and less polluting forms of public transport
- (iv) Develop and an integrated urban transport development plan, which would be subject to Strategic Environmental Assessment (SEA)
- (v) Develop an outcome monitoring framework, including transport, social, environmental, and capacity development aspects.

BRT development and promotion of other environmentally sustainable public transport modes

The key strategic contribution of the GEF co-financing will be to address barriers and risks related to successful project implementation and sustainability. The GEF incremental financing will support detailed design and implementation of features (such as facilities for pedestrians, NMT, station attractiveness, interchange facilities), which would set it apart from a conventional system

The GEF financed component will enable support for the following:

- (i) **Media strategy to build awareness and knowledge of the potential benefits.** The media strategy component of the GEF alternative project will be developed based on

extensive public consultations. It will help to enlist support of the public and important stakeholders, and hence reduce the risks associated with BRT implementation. The lesson from preparation of this project thus far, as well as other international experiences, suggests that such a strategy will be critical to ensure that the BRT system is implemented as appraised.

- (ii) **Design and implementation of BRT system.** Support for development of an exclusive bus corridor and feeder routes is critical to improving bus service standards and promoting a shift from private to public transport modes. This component would also support design and supervision of stations that enhance the BRT's brand image and attractiveness and facilities for pedestrians and non-motorized modes.
- (iii) **Integration between trunk BRT lines and the rest of the bus system including BRT feeder lines.** Effective integration with the rest of the bus system is essential to achieve the benefits (including the GHG benefits) of the BRT. Without GEF support there is a risk (as with other mass transit systems including recent BRT systems in Jakarta and the metro system in Delhi) that the benefits and viability of the BRT investments would be compromised by competition from uncoordinated service offerings.
- (iv) **Development of approaches to address transport-related problems,** such as congestion, by encouraging a shift from private to public transport and reduce the overall volume of private motorized travel. An integrated set of activities illustrating the value of such instruments to address congestion, parking, and other related problems is proposed. Furthermore, the GEF will co-finance replicability efforts to maximize the demonstration potential of the Accra BRT along other corridors in the city, other cities in Ghana, and the Sub-Saharan Africa region.

Integration of urban development and transport planning for better environmental management

Building on other initiatives, GEF's contribution to this component would support the MLGRDE and MMDAs to:

- (i) Update the integrated urban and transport development plans for the greater Accra metropolitan area. This is expected to help remove barriers to result in a better integration of urban development and transport planning. This would be a highly consultative exercise that will include a review of existing structural plan, regulations, institutional structures, standards, and procedures with a view to supporting urban growth that is more compatible with the development of transport infrastructure and services, leading to better environmental management.
- (ii) Subject the development plan to a Strategic Environmental Assessment (SEA) especially as it relates to urban transportation (with emphasis on walking, non-motorized use and public transport).

Emission reductions expected from additional financing by GEF

The pilot project would capture all of the existing transit trips in the corridor as well as attract some additional trips from cars and taxis. In addition, it is reasonable to assume that with improved traveling conditions and level of service, the demand along this corridor would increase because of diverted and latent demand. The resulting increase in demand has not been included in the CO₂ emission reduction estimate. The BRT system would be designed for a daily capacity of about 60,000 person trips. In addition, improvements in traffic management in the greater Accra metropolitan area would promote mode shift (for example, from cars to buses, bicycle and

walking), improve traffic flow, and reduce congestion related delays, resulting in CO₂ and PM reductions.

Given the fleet composition in GAMA and the average number of kilometers per bus and per month, the emissions that can be attributed to public transport are as follows (Table A15.1 and Table A15.2):

Table A15.1: CO₂ Emissions

	Number of vehicles	gCO ₂ / vehicle-km	Km/month	MT CO ₂ /year
<i>Tro-tros</i>	10,000	604	40,000,000	289920
Regular bus	500	1208	1,250,000	18120
Shared taxis	2,000	383	8,000,000	36768
Total				344808

Note: assuming that a bus runs avg of 125 km per day, while a tro tro and a taxi runs avg of 200 km per day; and they all operate 20 days a month

Table A15.2: Particulate Matter Emissions

	Number of vehicles	gPM/ vehicle-km	Km/month	MT PM/year
<i>Tro-tros</i>	10,000	1.51	40,000,000	725
Regular bus	500	2.01	1,250,000	30.15
Shared taxis	2,000	1.23	8,000,000	118.08
Total				873.23

Note: assuming that a bus runs avg of 125 km per day, while a tro tro and a taxi runs avg of 200 km per day; and they all operate 20 days a month

A study was conducted for the Ghana EPA to estimate emissions of greenhouse gases and local pollutants for arterial roads in Accra by comparing the existing roads to a network with dedicated bus lanes. Accra's transportation system was modeled using the consulting firm's Questor software. The model divides vehicles on the existing network into four categories: private cars; shared taxis; *tro-tros*, and buses. This study compares a "status quo" scenario to a "BRT scenario" that includes buses on dedicated lanes as a fifth mode (Table A15.3). For trips with either an origin or destination in a zone containing a busway, the Questor model assumes that 50 percent of taxi riders and 50 percent of *tro-tro* riders switch to BRT. People traveling between zones not containing busways are assumed to remain on their current modes.

Table A15.3: Status Quo versus BRT Scenario

Mode	Share of passenger-km (%)		Share of CO ₂ emissions (%)	
	Without BRT	With BRT	Without BRT	With BRT
Car	14	14	52	51
Taxi	8	5	19	10
<i>Tro-tro/</i> bus	77	43	29	16
Large bus	—	39	—	23

Local benefits include the following:

1. The scheme will result in the displacing of small-capacity public transport vehicles (mini- and midi-bus *tro-tros* and shared taxis) by large buses. Large buses offer lower greenhouse gas emissions per passenger-place kilometer than smaller vehicles and the high occupancy that can be obtained through regulated control of the transport supply will ensure that this translates into lower levels of emission per passenger kilometer.
2. Reductions in public-transport travel time as a result of the BRT scheme should result in a modal shift away from private cars, with a corresponding reduction in greenhouse gas emissions. This effect may be reduced, however, by the relatively low displayed value of time (2,250 cedi per hour, or US\$0.28). Current traffic volume at the Accra Academy on Winneba Road is 60,100 vehicles per day. Of this traffic, 22 percent are taxis, 30 percent are *tro-tros*, and 10 percent are buses. Of the remaining 38 percent of vehicles, cars make up 33 percent and commercial vehicles (mostly light delivery vehicles) 5 percent. Occupancy levels in taxis and cars average 2.3 and 1.8 respectively, 13.1 in *tro-tros*, and 23.2 in buses. This is equivalent to a total passenger movement of 440,000 per day, of which taxis constitute 27,600, *tro-tros* 234,000, buses 138,000, and cars 36,000. Model estimates suggest a reduction in travel time of about eight minutes for bus passengers due to improved traffic management and bus priority schemes on the pilot bus-only corridor. Assuming no change in mode share after introduction of bus priority measures (which is very conservative considering the expected mode shift, as discussed later), this travel time saving amounts to roughly 45,000 hours per day, or 13,500,000 hours per year. At even US\$ 0.28 per hour of time evaluation, this represents a gain of about US\$4 million per year, which provides a favorable benefit-cost ratio.
3. Removal of on-the-road competition for passenger transport services in the corridor will greatly enhance the flow of general traffic, despite its being confined to two running lanes rather than the three that are theoretically currently available. This will result in the reduction of GHG emissions from general traffic, but may result in a small reduction in the expected modal shift to cars from public transport.
4. The increase in the functionality of the arterial road will reduce the attraction of “rat runs” (short cuts) through parallel business and residential streets, thus reducing local emissions and increasing road safety for pedestrians in particular. Diverting vehicles are also a cause of congestion where they rejoin the main traffic corridor.
5. The provision of an integral CBD distributor service as part of the BRT scheme will greatly increase the attraction of public transport to office and government workers in these areas who are users of private cars at present but face real affordability problems. This will result in significant modal shift, which will be further enhanced when premium bus services are introduced in the BRT corridor.
6. Large buses used for the BRT trunk and main feeder services will provide lower levels of exhaust pollution than the general vehicles, having Euro 1 limits at worst and mostly Euro 2. By contrast, existing *tro-tros* can be 20 years or more old (predating Euro standards) and are often in poor condition with visible smoke emissions.
7. Enhancements to operational viability as a result of the higher bus speeds obtained in the BRT scheme, and the security offered by contracts with the regulatory authority, will provide operators with the opportunity to invest in fleet renovation; tightening vehicle standards in the supply contracts will reinforce this move. This will result in the scrapping of some of the oldest and most-polluting *tro-tros* that will have become uneconomic to operate.

Table A15.4: Incremental Cost Matrix

Baseline	Alternative	Incremental
Global environmental benefits		
<p>Urban transport planning and implementation without integrating global environmental emission concerns such as GHG reductions.</p> <p>Limited awareness and understanding in the city and at the national level about the potential benefits of BRT and the integration of urban development, transport planning, and environmental management.</p> <p>Few sustainable transport options to move away from personalized transport modes to public transport.</p>	<ul style="list-style-type: none"> - Reduction of GHG and local emissions through environmentally sustainable urban transport planning and implementation. This is reflected in efficient traffic management; BRT implementation; integrated land-use development, transport planning, and environmental management; and adequate monitoring of emissions. - Increased awareness and capacity for planning and implementing sustainable urban transport, and better chances of replication in the country and region. - developed capacity for monitoring and evaluation 	<ul style="list-style-type: none"> - Remove institutional and physical barriers to introduction of BRT and demonstration of sustainable urban transport schemes. - construct 9km of BRT corridor - improve 40 km of sidewalks - reduce av. travel time on BRT corridor by 30%; increase av. speed by 20% - Promote replication in Kumasi, share information. - Structural plan updated and SEA carried out on urban development and transport planning - develop Accra BRT Website for broader dissemination - produce video clips on before and after situation to sensitize policy makers - These steps will lead to an estimated reduction of 10% in Mt CO₂ eq. during the project period.
Domestic benefits		
<p>The city is likely to continue using the available resources to invest in new buses and widen the road network, including:</p> <ul style="list-style-type: none"> - developing traffic management plans for improving local traffic flow - rehabilitating road network to improve local vehicle flow - developing a road accident data base - creating urban transport infrastructure (stations, terminals, intersections, feeder routes, and so forth) with little emphasis on 	<ul style="list-style-type: none"> - Address the fundamental planning, routing, and related regulatory issues for public transport operations. - Ensure that all plans for establishing new routes will undertake a system-wide approach following the principles of sustainable transport, including integration with NMT modes - Support the EPA in developing capacity to create a database of local and global emissions. - Establish curbside emissions monitoring stations along the 	<ul style="list-style-type: none"> - Increase understanding and capacity of decision makers and technical specialists to deliver sustainable transport solutions that lead to domestic benefits, such as reduced congestion, lower PM emissions, improved walkability and access, and road safety.

integration of NMT modes.

pilot corridor.

- Monitor vehicular performance in terms of road worthiness, fuel consumption, emissions, and so forth.

Table A15.5 Project Components

Components and subcomponents	Baseline (US\$ million)	Alternative (US\$ million)	Incremental cost (US\$ million)
1. Institutional development	13.6	13.6	—
Support to MOT	1.3	1.3	—
Support to MLGRDE	1.5	1.5	—
Support to MMDAs	1.8	1.8	—
Support to PAO/CUT	4.0	4.0	—
Support to Kumasi MA	2.0	2.0	—
Support to bus operators	1.0	1.0	—
Support to DUR	1.5	1.5	—
Support to MTTU	0.5	0.5	—
2. Traffic engineering, management, and safety	26.9	26.9	—
Traffic mgmt. in Accra MMDAs	11.2	11.2	—
Area-Wide TSC, Accra	8.0	8.0	—
Traffic mgmt. in Kumasi MMDAs	2.5	2.5	—
Area-Wide TSC, Kumasi	2.5	2.5	—
Traffic Enforcement & Education	1.5	1.5	—
Design and Supervision	1.2	1.2	—
3. Development of BRT	40.5	46.0	5.5
BRT infrastructure including design, interchanges & traffic management, public consultation and operationalization	40.5	46.0	5.5
4. Integration of urban dev. and transport planning	1.0	2.0	1.0
5. Outcome monitoring	1.0	1.5	0.5
TOTAL:	83.0	90.0	7.0

Annex 16: Ghana Urban Transport Policy

GHANA: Urban Transport Project

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Ghana Urban Transport Project (GUPT) Ghana Urban Transport Policy

This policy letter has been developed as a collaborative effort between the Ministry of Transportation (MOT), Ministry of Local Government, Rural Development and Environment (MLGRDE) and Ministry of Finance and Economic Planning (MOFEP) and summarizes the various policy measures that the Government will pursue as part of efforts to improve the urban environment. This Urban Transport Policy is a component of an overall National Transport Policy and Urban Development Policy currently under consideration by Government.

1. The National Transport Policy (NTP) Environment

The framework for the National Transport Policy is set out in the Growth and Poverty Reduction Strategy II (GPRS II, 2005) of Ghana which has a vision of achieving "middle income status (MIC) by 2015 within a decentralized, democratic environment". This requires that GDP grows by 6-8% per annum and per capita income rising from US\$365 to US\$ 1000.

The GPRS II, and for that matter, the NTP are also set within the Global and Regional frameworks such as the MDGs and the NEPAD initiative.

The key Result Areas identified under GPRS II are: Good Governance, Human Resource Development, and Private Sector Development.

Infrastructure development, including Transportation, is identified as major support service for the private sector development strategy.

The broad policy objective of the transport sector outlined in the GPRS II document is to ensure the provision, expansion and maintenance of appropriate transport infrastructure which strategically links the rural production and processing centers to the urban centers while ensuring the provision of an affordable and accessible transport system that recognizes the needs of people with disabilities.

The NTP is also set within the framework of the Multi Donor Budget Support (MDBS) mechanism used by Government to distribute centrally held funds from Development Partners as well as the following principles:

a) Government

Government will create the appropriate Policy, Governance and Institutional frameworks for the sector and provide leadership in:

- Policy formulation and coordination, ensuring that transport infrastructure and services contribute to sustainable Development in Ghana.
- Integrated Transport, Land Use and Spatial Planning
- Integrated Transport planning ensuring inter-modal solutions are properly assessed
- Monitoring & Evaluation of sectoral performance in regard to national development indicators.
- Sector-wide human resource development strategies
- Ensuring adequate funding; and
- Creating the appropriate environment for consultation, private sector participation, regulations and enforcement.

b) Private Sector

The Private Sector will take advantage of Government policy and invest in the provision of infrastructure and services and comply with transport regulations.

c) Civil Society

Civil Society will engage Government and the private sector to ensure a fair and equitable development of transport infrastructure and services.

d) Governance and Institutional Framework

The framework for governance and management of institutions is set out along the following functional areas: Policy formulation; Regulation; Asset Management; and Service Provision. These activities are coordinated within a framework of the decentralization policies of government.

e) Finance

Government will continue to invest in infrastructure development to support its economic growth and social integration policies. Where there are commercial returns the government will encourage the private sector to invest in both infrastructure and services. Where there are social and environmental benefits, government will subsidize the operation of transport services.

f) Regulations

Government through its Regulatory agencies will regulate transport service delivery. Where appropriate and covered by the necessary legislation this function will be decentralized.

g) Performance Management

Government will create an appropriate performance led governance framework for institutions, organizations and personnel to ensure clear lines of responsibility and the achievement of strategic goals. This will be set within an appropriate remuneration and reward framework and a system for monitoring and evaluation.

2. Goals of the National Transport Policy (NTP)

The Goals of the NTP are:

- a) Establish Ghana as a Transportation Hub for the West African Sub-Region.
- b) Create a sustainable, affordable, reliable, effective and efficient Transport system that meets customer needs.
- c) Integrate Land-Use Transport Planning, Development Planning, and Service Provision.
- d) Create a vibrant investment and performance-based management environment that maximizes benefits for public and private sector investors
- e) Develop and implement comprehensive and integrated Policy, governance and Institutional Frameworks.
- f) Ensure Sustainable Development in the Transport Sector.
- g) Develop adequate Human Resources and apply new Technology.

3. Vision Statement for Urban Transport

The Vision for urban transport in Ghana is:

“An affordable, safe and efficient urban transportation system that supports the overall development and competitiveness of the urban area”

4. Urban Transport Policy Objectives (UTPO)

The following UTPOs are reframed from the NTP goals focusing specifically on urban transportation:

- a) Develop an urban transport system that supports the Goal of making Ghana the Transport hub for West Africa
- b) Create an accessible, affordable, reliable and efficient Transport system that supports the competitiveness of the city.
- c) Integrate Urban Transport Planning, Infrastructure Development and Service Provision with Urban Planning and a Strategic Urban Development framework.
- d) Create a vibrant investment and performance based urban environment that ensures adequate returns for public and private investment in urban transport infrastructure and services.
- e) Develop and implement a decentralized institutional and regulatory framework for urban transportation.
- f) Ensure sustainable development of the urban transport sub-sector to minimize its adverse environmental and social impact.
- g) Develop adequate human resources and apply new technology for urban transport delivery.

5. Urban Transport Policy Statements

The policy statements made under the seven UTPOs are culled directly from the NTP as they relate to urban transportation:

5.1 Policy Objective 1: Develop an urban transport system that supports the Goal of making Ghana the Transport hub for West Africa

1.1.2 Policy Statement

1.1.3 Competition will be increased in airport and maritime port services to reduce costs and improve overall service by maximizing access to transport networks (including public transport services) and provision of adequate parking facilities.

5.2 Policy Objective 2: Create an accessible, affordable, reliable and efficient Transport system that supports the competitiveness of the city.

Policy Statements

- a) Transport infrastructure investment shall be targeted to better serve population, production and tourist centers aiming to reduce overall transport costs to Government and users by:
 - Prioritizing the maintenance of existing road infrastructure to reduce vehicle operating costs and future rehabilitation costs.
 - Improving accessibility by determining key centers of population, production and tourism, identifying strategic areas of development and necessary expansion including accessibility indicators.
- b) Mass transportation shall be prioritized in urban areas, aiming to move 80-85% of passengers by:
 - Implementing Urban Transport Projects such as the GUTP including Bus Rapid Transit and the School Busing Schemes.
 - Developing rail-based mass transport system as part of an integrated transport plan.
- c) Non Motorised Transport (NMT) Infrastructure will be developed to improve affordability and accessibility for urban and rural communities by:
 - Rehabilitating and freeing from encroachment existing NMT routes
 - Raising awareness of benefits of NMT especially the use of bicycles and pedestrian safety starting with schools and other education institutions.
 - Raising awareness for careful driver attention to pedestrians and cyclists
 - Providing adequate regulations for NMT facilities
 - Providing strict enforcement to discourage encroachment on existing NMT facilities
- d) Accessibility for women, children, the aged and physically challenged shall be considered in Transport facilities by:
 - Developing accessibility criteria and standards for transport infrastructure and rolling stock.
 - Developing guidelines and implementing their use by planners, designers and operators.

5.3 Policy Objective 3: Integrate Urban Transport Planning, Infrastructure Development and Service Provision with Urban Planning and a Strategic Urban Development Framework.

Policy Statements

a) Transport planning shall be fully integrated with development planning and service provision through:

- The establishment of the proposed Urban Transport Advisory Committee (UTAC) to offer urban transport sector stakeholders a platform for effective coordination in the areas of:
 - Integrating land use and transport planning;
 - Decentralized Management, Financing and Maintenance of transport infrastructure and services; and
 - Urban Transport Policy.
- The production of practical guidelines for development and transport planners to facilitate effective integration
- The proper acquisition and protection of land for transport infrastructure development
- The incorporation into master plans of cities, provision of inter-modal and intra-modal “break-bulk” facilities to improve the transfer of goods and passengers from one mode to another.
The collaboration with MMDAs to ensure the provision of independently managed lorry parks and other transport interchange facilities to encourage competition and improve customer services
- The consistent application of the “Road Utility Manual” by passing appropriate legislation.

5.4 Policy Objective 4: Create a vibrant investment and performance based urban environment that ensures adequate returns for public and private investment in urban transport infrastructure and services.

Policy Statements

a) The private sector shall be encouraged to invest in transport infrastructure and services where commercially viable by:

- Exploring PPP and Concession options for investment in transport infrastructure and services.
- Applying market regulation of transport services as described for the GUTP

b) The “user pays” principle will be applied to all transport services and maintenance of infrastructure by applying “user charges” to transport users to fully cover the costs of infrastructure maintenance, market regulation and administration.

c) Government shall invest in transport infrastructure and subsidize transport services where they provide mainly social and environmental benefits important to users and the country by developing criteria for targeting transport services subsidies.

- d) A performance-led approach based on clear goals and measurable performance targets, evaluated and rewarded accordingly shall be taken throughout the transport infrastructure and services supply chain through:
- The institution of performance contracts for all MMDAs
 - Contracting to the private sector for the provision of infrastructure and services using a competitive, performance led and standard based system.
 - The employment of effective financial management to maximize utilization of public funds.

5.5 Policy Objective 5: Develop and implement a decentralized institutional and regulatory framework for urban transportation.

Policy Statement

- a) An institutional framework shall be established, separating functions of Policy Formulation, Regulation, Asset Management and Services including the empowerment of the MMDAs to license and regulate all service providers for urban transport
- b) A Centre for Urban Transportation (CUT) shall be established as a centre of excellence for the delivery of urban transportation in support of the MMDAs.

5.6 Policy Objective 6: Ensure sustainable development of the urban transport sub-sector to minimize its environmental and social impact.

Policy Statements

- a) Strategic Environmental Assessments (SEA) will be carried out on ALL major transport policies, programs and plans, ensuring environmental and cost benefits and risks are considered for each transport mode.
- b) All Transport Infrastructure development and maintenance projects (above a certain threshold) will comply with existing environmental (EIA), health and safety regulations.
- c) Health and safety of communities, operatives and users shall be assured in all modes of transportation by:
- Providing STI, HIV/AIDS, malaria awareness programs of all operatives and on all infrastructure construction sites and adjoining communities
 - Developing and enforcing safety standards in transportation services including unauthorized modifications of vehicles and vehicles emissions.
 - Ensuring mechanisms are implemented to improve construction site safety
 - Developing a comprehensive educational program for road users.
 - Educating the public in first aid for accident victims.
 - Fuel efficiency, conservation and pollution control measures shall be promoted for road transportation

5.7 Policy Objective 7: Develop adequate Human Resources and apply new Technology.

Policy Statements:

- a) Key skills and competencies shall be developed to meet the demands of the Transport Sector by:
- Training personnel in the profession of Transport Planning, Traffic Management and Traffic Engineering.
 - Promoting the role of women in the transport sector as providers of services, professionals and managers.
 - Training traffic enforcement personnel and the judiciary to improve enforcement and judiciary processes.
 - Encouraging improvements in existing driver training and testing schools and encourage the establishment of driver training for heavy goods and public service vehicles.
- b) Research on all aspects of transport sector performance will be carried out and applied by public and private sector organizations by the use of modern ICT to improve the development and maintenance of transport infrastructure and delivery of transport services.

(Mr. Kwadjo Baah-Wiredu)
Hon Minister
Ministry of Finance and Economic planning
Republic of Ghana

Cc:
The Secretary to the President
Office of the President
State House
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HE the Vice President
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Annex 17. Adapting Bus Rapid Transit for Sub-Saharan Africa

GHANA: Urban Transport Project

Bus Rapid Transit (BRT) is a bus-based mass transit system that delivers fast, comfortable, and cost-effective urban mobility. Through the provision of exclusive right-of-way lanes and excellence in customer service, BRT essentially emulates the performance and amenity characteristics of a modern rail-based transit system but at a fraction of the cost.

A transit system with the complete range of BRT features has the following characteristics:

- (i) Exclusive busways utilized on trunk-line corridors, typically with median operation and stations
- (ii) Entry to system restricted to prescribed operators under a reformed business and administrative structure (“closed operating system”)
- (iii) Clean vehicle technology, with high-capacity (articulated or bi-articulated) buses
- (iv) Pre-board fare collection and fare verification (“closed station system”)
- (v) Fare-free integration between feeder services and trunk-line services

The exemplar BRT system is the TransMilenio in Bogotá, Columbia, and this has been taken as the model for urban passenger transport development in sub-Saharan Africa in schemes such as the Dar-es-Salaam Rapid Transit (DART) in Tanzania.

However the infrastructure construction cost of the first phase of TransMilenio was US\$5.3million per kilometre, and this scale of investment has proved extremely difficult to finance in the SSA region. The challenge, therefore, is to develop a high-quality bus system that is affordable in the local context while retaining as many of the most desirable BRT characteristics as possible.

City Characteristics in Latin America and Sub-Saharan Africa

Bogotá is a mega-city with a population in excess of 7 million inhabitants at a density of 230 people per hectare. The level of motorization is over 200 per 1,000 people. City development is constrained by mountainous terrain, with resultant travel demand tightly focused on a limited number of corridors (peak flow of 36,500 people per hour per direction).

Public passenger transport had been provided by full-sized buses, but in a disorganized competitive manner with a low service quality. The need for a mass-transit system to tackle urban congestion had been recognized for several decades, and the political pressure for change had increased over this period. When the reform and investment process began, there was strong political leadership (as had applied previously in Curitiba, for example).

By comparison, most major cities in sSb-Saharan Africa have 2-3 million inhabitants, with relatively low density over the aggregate urban area. Levels of wealth vary quite widely, but are typically less than 40 percent of that in Bogotá. Motorization levels are also much lower, and city development patterns are less constrained by geography (apart from those on the coast). Single-corridor passenger flows are nowhere near those found in Latin America (with the possible exception of Lagos).

Minibuses provide most of the public passenger transport, with significant large-bus undertakings (none with more than 30 percent modal share) being confined to Abidjan, Accra, Addis Ababa, Dakar and Nairobi as well as the major cities of South Africa. The pressure for change is coming from the affluent private car user, affected by congestion, rather than the wider population, affected by low transport service quality. There has been a lack of political support for change (though the DART project was promoted in an election manifesto).

In addition the general level of urban infrastructure development in Sub-Saharan Africa (in areas such as water supply, sanitation and waste management) lags behind Latin America, raising the opportunity cost of capital in this domain. The implication of these comparisons is that the levels of investment that can be justified in localized transit schemes, and hence their ability to attract finance, are considerably lower than in Bogotá. This suggests an upper limit for infrastructure costs of no more than US\$2.0million per kilometer, and preferably rather less than this.

For all these reasons, a different approach is required for Sub-Saharan Africa with the various options, particularly for technology, as discussed below. Key elements of the strategic framework for BRT systems in Sub-Saharan Africa are as follows:

- (i) Deregulated or controlled-competition regulatory regime
- (ii) Gross-cost or net-cost service contracting
- (iii) Flat or graduated fares
- (iv) Pre-board or on-board fare collection
- (v) Trunk / feeder or direct services

Option selection for BRT system design

The most appropriate design option for a BRT system will vary from city to city, and even within cities, according to the characteristics of the road reservation into which it will be built. As such there can be no clear optimal solution, but rather a framework of design tools that can be tested for insertion into the selected corridor. Solutions may need to vary along the length of the corridor, and this would then require transition arrangements to enable the busway to relocate within the road reservation. Some of the key considerations are:

- (i) Median or curbside operation
- (ii) Bi-directional or 'tidal-flow' operation
- (iii) Median or bilateral stations with median operation
- (iv) Passing lanes at stations
- (v) Active or passive lane enforcement
- (vi) On-board or pre-payment of fares
- (vii) At-grade entry into buses or conventional step-up entry
- (viii) Articulated or standard-size buses
- (ix) Trunk-feeder vs open operation
- (x) Parallel minibuses in corridor or not
- (xi) Smart-card or conventional fare collection technology
- (xii) Existing or new concrete pavement

Conclusion

Following through the options analysis, it appears that an enhanced bus transit system in sub-Saharan Africa could be very different from the advanced BRT models developed in Latin America and elsewhere and would have the following characteristics:

- (i) Segregated busways on trunk corridors, with integrated tributary services
- (ii) Entry to system restricted only to prescribed operators (closed operating system) under a reformed administrative structure, though using net-cost contracts with the regulator
- (iii) Standard-capacity buses compatible with tributary routes, but with appropriate emissions levels
- (iv) On-board fare collection or verification, with open stations
- (v) Graduated or zonal fares structures, with explicit charging for feeder services

System capacity would be somewhat lower than for a comprehensive BRT system, but still appropriate to the levels of demand found on the main corridors in most cities in the region. Offsetting the lower technical capacity of the system would be a higher recognition of real passenger needs, both through integrated and differentiated services.

Such an approach would make a very real contribution to urban mobility while only requiring resources that were affordable within the development context of the cities themselves. The proposed system would need to be branded other than as BRT given the levels of expectation associated with that nomenclature. Perhaps **EBT (enhanced bus transit)** could be used as a working title until something more imaginative is devised.

Annex 18: STAP Expert Review and Response

GHANA: Urban Transport Project

STAP Review and WB response

**Reviewer: Lee Schipper, Director of Research, EMBARQ
November 2005**

(Including Comments from the WB Team in shaded text)

Overall Comments:

I believe this proposal presents us with an opportunity to turn around, or perhaps turn for the first time one of the most difficult urban transport sectors in the world, that of SSA. I recall one day in Nairobi, not a dissimilar place, 25 years ago when a misfire of a signal caused the PM rush hour program of traffic light synchronization on the Uhuru Highway (then the main north-south dual carriageway parallel to the CBD) to be put on in the AM Rush. The result was 4 hour trips to work for everyone. Since then of course systems have improved, but urbanization and motorization rates in Nairobi and elsewhere have increased significantly. The problem of urban transport has not gotten better.

This GEF proposal represents a chance to turn in a different direction. This direction to turn is well recognized in the GEF proposal: organization and management of transport and its institutions. I find that the modest infusion of money from GEF could be deployed to fill in the kinds of gaps in management, institutions, and capacity that lead to the situation in Ghana and so many other developing country cities.

The global benefits should not be underestimated. Reductions from a baseline of CO2 emissions will be induced by the change of transport modal, e.g., bicycles and pedestrians. But as our own experience in Latin America has shown, successful demonstration of the package of institutional and infrastructure measures in this proposal, which will result in a BRT system appropriate for Ghana's conditions, could lead to similar system being developed all along SSA and even elsewhere in Africa, spelling a huge change for urban transport in Africa. In short the result is more mobility on less global emissions per unit of mobility and considerably less time and money wasted.

The emphasis given to organizing the sector is appropriate. The brief description in the GEF proposal suggests there is very little of a formally organized collective transport sector. This is one of the reasons the *tro-tros* and shared taxis (they were called *watatu* in Kenya) flourish, to the bane of any large vehicle-public system. The GEF work seems to focus rightly on getting away from the underlying conditions why *tro-tros* are so common. This reflects patterns around the developing world. BRT, with a carefully branded and identifiable fast bus service in protected corridors, is probably the most socially and economically sustainable form of fast clean transport for Accra. One reason why there are BRT systems in Bogota and now Mexico City is because individual drivers find the work as BRT drivers safer, more comfortable, and more rewarding. This is the first step in the challenge of closing a virtuous circle for the transport sector.

A project aimed at answering that challenge in a positive way, i.e., without the use of force against existing drivers, would really make progress towards reorganizing the sector. Above all the challenges to BRT or other improvements to transportation can only be met with a

focus on the social, financial, and institutional underpinnings of this sector. This is what the GEF proposal aims to do. The work is “additional” in the sense that without the GEF proposal, such challenges would not be faced. And the results have global implications if the success spreads to other cities in SSA.

Fortunately, previous work has answered the questions “why did we get here”, “what are the ways out”, and “how will BRT lead the way out”. Thus a large share of resources in the GEF proposal can go to *“Introduction of area-wide traffic management and enforcement mechanisms (US\$6.5 million)”*. This seems what the local authorities should be doing anyway, with little risk and enormous benefits. But they will not do this, if my experience in a dozen other countries is still valid. Moreover, it is the combination of traffic management/enforcement and a system like BRT that provides the most improvements possible to a traffic system. For example, the new Mexico City BRT system we helped plan has center-based bus corridors, which required the banning of left turns from one of the busiest streets in the region. Additional traffic management at many other intersections was finally called forth by the BRT and has proven successful. Fortunately the city police agreed with our needs and stepped up enforcement. Traffic in the lanes remaining flows more smoothly than before.

This work will probably provide modest GHG benefits. Part of this comes as increased fuel economy and efficiency (from better traffic flow). While total traffic may increase a small amount, the overall impact is likely to be lower fuel use in the corridors and on cross streets. The reason is that the real trouble is caused by the errant tro-tros, whose elimination helps traffic overall. A key element that helps suppress GHG emissions is the traffic control element, which will favor buses over private cars and help control or eliminate tro-tros in the corridor. (Kindly see the last section of this review for more discussion of CO2 benefits.)

Some funds here will go for better bus stations, lay-bys, etc. I sense that without GEF, such investments would not be made, hence the importance of the GEF. Without these investments to make the bus corridor better, riders will not switch. More important, perhaps and central to the GEF, is that these small improvements are made together with the BRT plan, as a way of strengthening that plan and giving visible improvements to the bus system.

Developing BRT in SSA represents a potential real breakthrough in transport for all stakeholders. But this is high-risk for local authorities. This is because of the necessity to bring an odd group of stakeholders, financiers, environmental authorities, etc. together. Developing a financial package attractive to present trotro drivers, for example, will require patient negotiations that need to be financed. Judging from experience elsewhere (Mexico, various cities in China, etc) it is hard to say exactly what should be spent, but clearly money will be needed for further talks with taxi/bus/trotro owners and operators, communication about possible BRT routes, etc. In our Mexico City work we felt these steps were the ones the authorities were the most reluctant to take, yet the most important. The GEF/Bank/EMBARQ package clearly overcame this barrier. The present GEF proposal could overcome the same problems in Accra.

“Introduction of area-wide traffic management and enforcement mechanisms (US\$6.5 million), focused on short-term and low-cost measures complemented by safety and environmental improvements and public education and enforcement plans. The specific activities would include public transport infrastructure improvements and traffic management measures, including covering of open drains, paved public transport lay-byes, improvements in riding quality of roads, pedestrian facilities, intersection

improvements and education and enforcement measures. This component would also focus on capacity development for introducing a ‘bus rapid transit’ system in a pilot corridor, with associated traffic management, non-motorized feeder services and network integration in the central business district;”

I would consider the expenditures noted in the paragraph above” as part of “institutional strengthening” in the previous paragraph. The key reason why public systems “collapse” or never take shape (as the case may be in Ghana) is primarily institutional – no enforcement of transport or safety rules, no clear establishment of the financial model for the public bus system, easy access by informal operators to the system of tro-tros and shared taxis, etc. Again this caused us to make institutional strengthening a major part of the GEF/WBank/Mexico BRT effort.

A second and equally important issue related to the paragraph quoted immediately above: By joining the BRT and traffic management efforts, there is a high probability that the benefits of better traffic accrue first to the BRT buses, rather than individual vehicles or tro-tros.

While BRT planning is usually a very ambitious undertaking I understand from the text that considerable work is underway that will move this planning forward. Similarly, I understand from the text that some vehicle emissions measurements are being made. I can make suggestions separately how a better framework for measuring and comparing vehicle emissions, the so-called “mobile source inventory” can be assembled to complete the emissions/vehicle picture given in the two tables in the text. This would facilitate systematic comparison of results with those in other countries. Similarly it is possible to establish a set of benchmarks to measure the goals and later achievements of a BRT system the present proposal helps develop. Both of these ideas would allow more rapid dissemination of results across SSA and elsewhere.

Many of the suggested expenditures (kindly see my notes in the text) get at the right issues. I would only argue for a bit more specificity in the GEF proposal. For example (taken from the Executive summary),

“Institutional capacity strengthening (US\$1.0 million). The institutional strengthening program, designed as an outcome of a diagnostic and capacity assessment exercise carried out jointly with the expected beneficiaries, aims at laying the groundwork for the success of the project. The additional activities include institutional strengthening and capacity building both for the public sector bodies managing the system, including the necessary monitoring and evaluation capability, and the private sector operators providing the transport services.”

Here are a few kinds of issues that may have been confronted in the background documents. They should be summarized in the main text so that an outside reader knows you will examine them.

- (i) Schedules and dispatching. Are bus schedules meaningful? Does anyone check to see where buses are? Do drivers rests when then get to the end of the line, or turn around immediately? In Mexico City, no drivers in the new BRT system had watches, and there was no clock at the main bus terminal at the north end of the system. So for two weeks there was almost no dispatching as we know it!
- (ii) Fares and fare collection? In some cities it is impossible to collect fares from all riders. Or the fares are collected by not turned in properly.

- (iii) Maintenance. Indications are that maintenance is very informal. This is clearly a problem where safety, fuel economy, and emissions are concerned.
- (iv) Personal security. Do the large buses present security risks for travelers? Even if they do not, is there the perception that they do?

These matters are crucial to the success of BRT – its speed and dependability, financial security (which allows the operators a profit while keeping fares down), reliability of vehicles (including low emissions, and attractiveness as an alternative to private cars. If these are address in the summary then an outside reader will recognize that you have caught the major issues that have paralyzed transport in so many countries up to now.

1.1.4 Vehicular emissions inventory

The World Bank ‘World Development Indicators’ has no data on CO₂ emissions for Ghana.

The Inception Report on the Vehicular Emissions Inventory Component of the DANIDA funded Transport Sector Support Phase II, prepared by Consia Consultants in November 2004, identified the almost total lack of existing data in the sector. It suggested a work program to fill these gaps both through detailed surveys of vehicle use and monitoring of vehicle emissions in selected corridors in both Accra and Kumasi.

The 2005 Second Quarterly Report of the Energy Resources and Climate Change Unit of the Ghana Environmental Protection Agency advises that the survey program in the two cities commenced in July 2005, with the target of capturing 25% of all vehicles in operation. However vehicle emissions monitoring was delayed because of equipment procurement problems, and was not expected to start until September 2005. Because of this delay, and the time being taken to input DVLA data on vehicle populations onto a computerized database, the actual data analysis and modeling was not due to start until the Fourth Quarter of 2005.

In summary, we have a complete data vacuum but positive steps are being taken to fill this within a timescale that is relevant to GUTP implementation. Further the vehicular emissions database will be well aligned with the pilot BRT implementation in that Route 1 of the Accra emissions survey covers the same corridor of Graphic Road through Winneba Road to Mallam Junction.

1.1.5 Fuel volumes as a proxy for greenhouse gas emissions

The Consia Inception Report identified fuel consumed nationally as its first data need, and anticipated that volumes from the Tema refinery would provide the necessary figures because there is no export and import of road transport fuel in Ghana. However no figures have been reported by the ERCCU of EPA in its two quarterly reports to date.

In any case, such figures will need to be treated with a degree of caution. Ghana has traditionally priced its fuel below international levels, whereas its immediate neighbors have not. Given this price differential, the long borders, and the impact of the strife in Cote d’Ivoire, it seems likely that some at least of Ghana’s fuel has been smuggled out of the country in the past. This will complicate any trend analysis of available data.

With regard to fuel sales from stations in Accra, the figures will reflect both local consumption and that obtained for regional and long-distance travel. Disaggregating such figures would be problematic.

As such, the best indicator of GHG reductions in the corridor as a result of the BRT scheme will be traffic counts by mode. Hopefully bus number increases will be more than offset by *trotro* decreases, and car numbers can be monitored against growth trends on the other main radial corridors covered by the ERCCU. See comments on Global Benefits in last section below.

1.1.6 Traffic volumes and modal mix in the pilot corridor

Current traffic volumes at the Accra Academy on Winneba Road are 60,100 per day. Of this traffic, 22% were taxis, 30% were *tro-tros* and 10% were buses. Of the remaining 38% of vehicles, cars made up 33% and commercial vehicles (mostly light delivery vehicles) 5%. Occupancy levels in taxis and cars averaged 2.3 and 1.8 respectively, 13.1 in *tro-tros*, and 23.2 in buses. The apparently low level for buses reflects the widespread use of midi-buses in this corridor, with the larger buses of MMT not having made an impact at the time of the survey. Total passenger demand in the corridor is 217,000 per day. Passenger load at the peak cross section in the morning peak hour is 13,500, with 6,500 in the contra-flow direction. The evening peak is much less intense, with 6,900 passengers outbound and 4,400 passengers inbound. Current *tro-tro* fares in the corridor are Cedi 2,500 (US\$0.28) from Mallam to the CBD, and Cedi 1,800 (US\$0.20) from Mallam to Kaneshie Market. The cost of feeder services varies significantly. The highest fare is Cedi 2,500 from Kasoa to Mallam, but other origins such as Anyaa require two feeder legs which increases the feeder fare. An average fare for existing feeder services to the pilot BRT corridor is Cedi 2,000 (US\$0.22). Estimated productivity of *tro-tros* is 125 kilometres per day operated. With 12,000 *tro-tros* registered in GAMA, but only half operational at any one time, this indicates about 750,000 kilometers operated per day. With an average occupancy of 12 passengers (excluding the driver), this equates to some 9.0 million passenger-kilometers per day. Surveyed travel time in the corridor for a one-way trip averaged 79 minutes of which 26 minutes were spent walking to and from the service and 16 minutes waiting for a vehicle / departure. Weekday and peak hour travel both added a few minutes to the average trip time. Any further data will need to await the analysis of the detailed traffic surveys recently undertaken by ERCCU.

Project Relevance: In the SSA context, this project will lead to a breakthrough, untying the Gordian knot of poor urban transport all through the region by organizing urban transport in a way that is replicable elsewhere. At first glance, the relationship with PAD, which seems to be primarily inter-city roads, rural roads, is unclear. Strengthening that relationship might help the proposal. How about if section 1.4 said “In particular a common problem in developing countries is the lack of interface between urban transport and intercity/rural transport.” In short, people can get to the edge of cities but cannot move around once they get there. Or they cannot get to the edges. This project will address that shortcoming. In particular, in both Mexico City and a project we are discussing with Porto Alegre, the BRT system allows a main intercity bus station to remain at the edge of a superhighway, from where travelers can connect efficiently to other destinations in the city, including other bus and fixed rail facilities. Such language connects the GEF proposal to the larger loan in the PAD.

Agreed. The relevant section has been added in the main text.

Background Information: As I note throughout the text, it would strengthen the case for this proposal to have more information on overall GHG emissions, road transport’s share, road transport’s fuel mix, and some rough estimates of “Accra” in those balances. I suspect much of this is already known, in part through work done for the overall project. I would still urge that the GEF executive summary contain a clear table of modal shares (including NMT), average daily distance traveled, average time spent traveling (if known), vehicle fleet (numbers by vehicle type and fuel, distinguishing if possible between private cars, commercial or government cars, and taxis.)

Please see the explanation above.

Other Features: The project takes a participatory approach in which various stakeholders are involved. This is essential for resolving the problems and future extension of the concept of BRT. Transport industry actors (vehicle owners and drivers) should be mentioned explicitly as an active partner. Their participation can be useful for acceptance of major changes, training and confidence building about reorganizing transport, and above all success of a BRT initiative.

Capacity building is an important component of the project, which is useful for its large-scale application to realize the potential. There should be a few concrete examples of this in the GEF document. For example, creating and empowering a group to “run” the BRT system is important – it won’t run it self. The GEF could perform a vital function by helping create such a group.

My strong belief is that elements of the project are replicable and hence can contribute to improved transport climate change mitigation in other regions also. By identifying more concrete issues that will be addressed this makes it easy for the “next city” to see where to start.

The project appears to have made the links with previous work in Latin America on both BRT and sector reorganization, as well as a BRT project in Dar Es Salaam. Former Bogota Mayor Penalosa was in Accra and Dar if I’m not mistaken. I would not necessarily plan a trip to LA for the Ghana stakeholders, but one might consider some event in Ghana that would bring key players on the planning level to Accra? We have brought many of those who carried out key planning functions in Bogota to many important potential BRT sites, with very positive results.

Agreed. A number of these steps have been taken during the preparation phase, including a trip to Bogota by key stakeholders. More such dissemination trips will be organized during preparation for a wider group of stakeholders, including drivers and operators, policy makers and technical staff.

Scientific and Technical Assessment – My main comment here is that the overall thrust of the proposal would be stronger with a number of summary tables and other data taken from the many background reports. The executive summary could mention briefly approaches to the following issues, many of which have been addressed in other documents related to the project. These represent the most common kind of “check list” for bus systems in general and BRT in particular.

- (i) Need for better description of the present Ghana and Accra transport systems-vehicles, passenger and freight activities, fuel use, emissions.
 - (a) Tables that give PM and CO₂ should also include estimates of impacts of cars, two wheelers, delivery trucks, heavy trucks, any other mobile sources. The reader will ask “What % of the PM and CO₂ are on the table in this proposal? Even if the estimates are rough, they should be given.
 - (b) Where is goods movement? Probably worth mentioning, since a bonus from the BRT is that goods-movement – particularly delivery -- may be improved. My experiences in Mexico, India, and China are that this alone may save fuel and

certainly boost economic productivity, but we always leave it out. No need for a detailed quantification. In Kenya, watatu transport significant amounts of freight, such as goods going to/from market, etc. This kind of informal goods transport should be recognized, too, in case that causes problems with BRT.

- (c) The GHG Emissions inventory, if it even existed for Accra alone, would not show measurable changes that would be traceable to the proposed BRT project. Sales data on which such inventories are based at a national level are too inaccurate for seeing a small dip from one project. Moreover, natural growth in the entire sales of fuels (and thus the year on year changes in the GHG inventory) are almost always larger than the small savings from one BRT corridor, however, great those savings would be locally. This does not mean one cannot show some “restraint” in emissions – kindly see my note at the end.
- (ii) Stakeholder engagement- who matters today, which groups would win, which would lose by a sounder organization of the transport sector. A simple table in the proposal would indicate that the authors have identified the key stakeholders, their roles as veto-holders, possible stoppers, passive, or supporters.
 - (iii) Financial assessment of the present transport sector. Is there one in existence? I would give indicators of fares on the bus system, tro-tros, and shared taxis to give us an idea of the differences between these modes.
 - (iv) Financial options for BRT and its components thinking of context in the previous comment. Is it envisioned that BRT fare will be higher than that of regular buses, in exchange for better service?
 - (v) Levels of BRT that might work. It is clear that there is a hierarchy of BRT, from barely-demarcated lanes (Los Angeles’ Rapid Bus) to fully segregated lanes with graded crossings and large stations (Brisbane Australia.). The project need could identify what might be appropriate for Accra, and how the project could support and strengthen that option.
 - (vi) Branding. I think that with a little thought and some paint, even older used buses would serve a system. Just running older buses in protected lanes increase ridership and decreases fuel use and emissions. The key issue is that the BRT has a clear brand. This should also be identified as a task for the GEF, something we spent considerable time and effort doing in Mexico.
 - (vii) Speed. Comfortable buses that allow quick boarding (a prerequisite) are what makes BRT tick. There is no question that used buses might work. The GEF summary should indicate that this is the case. Recently more than a dozen older buses were rehabilitated to work in Mexico City’s new BRT because the overwhelming demand could not be met by the 80 new buses. So there is a good case for taking older buses and rehabilitating them.
 - (viii) Feeder options for the BRT lines – I presume these are treated in separate documents? They represent an important extension of the BRT by increasing its range. If a map of potential BRT lines were shown, indicating the feeders would show the potential of BRT to cover a large part of Accra.
 - (ix) The wording of this section seemed backwards: Why do we want informal private operators to succeed if they are in many ways the cause of the problem that undermines the success of BRT or other more organized transport. I would consider wording this differently, as I think it is meant that private entrepreneurs driving buses should succeed in the new system, the model on which much of Latin America is built.

“Rationalization of bus transport supply would eradicate predatory competition, increase ridership and fare box revenues, and reduce operating costs. This would make the public transport industry more profitable and allow informal private operators to secure funding, thereby improving chances of financial sustainability.”

- (x) Desperately need a map of Accra to illustrate the potential long-term BRT system and the proposed pilot line. Indicators such as passengers/hour should be drawn in on the proposed routes. (P15 of my marked up edition.)

- 1a For the reasons given in the opening section, we cannot provide this level of detail now. However I believe that we will only have to wait till the turn of the year.
- 1b Our corridor doesn't have significant heavy-goods movement, as the port traffic generally passes to the north on the Motorway Extension. However there is significant movement of market goods associated with Kaneshie for which the BRT services will not be appropriate. As noted in the BRT Options and Pre-feasibility Study, considerable care will need to be taken both in the detail design and the subsequent enforcement in this area. Goods traffic will not benefit significantly, but its adverse effect on general traffic can be reduced.
- 1c See my section on monitoring GHG emissions, above.
- 2 Following is a first stab at a stakeholder analysis, but this will need further development

Table 1

Stakeholder	Project impacts
Passengers	Faster, more regular, and more reliable service; no increase in fares unless full recovery of infrastructure investment cost is intended.
General traffic	Reduced congestion in corridor, allowing time and cost savings.
Pedestrians	Improved safety in corridor through smoother traffic flows, and on parallel rat-runs that will be used much less intensively.
Population in corridor	Reduced pollution as a result of reduced congestion.
Residents off corridor	Reduced noise and emissions as a result of less rat-run traffic
PT drivers	Less job opportunities, but better working hours in a regulated environment; greater security and reliability of income; less hassle from enforcement authorities.
PT owner/drivers	Relatively few in number, but will be offered the opportunity to migrate to bigger buses and build a significant capital stake.
PT owners	Vehicles will no longer be permitted on the trunk route and its high-capacity feeders, but growth of the metropolis should absorb these vehicles elsewhere in the network; tighter enforcement of safety and environmental regulations will result in scrapping of worst vehicles; opportunity will be given to migrate to bigger buses.
PT unions / associations	Loss of regulatory role to Licensing Authority, but will still manage feeder terminals and interchanges; driver members will tend to benefit, but owner members will tend to lose; potential framework within which owner-driver sector could develop.
Local Assemblies	Development of institutions to enable them to fulfil their statutory

	duties in the urban transport domain; visible investment in the sector with obvious political benefits; potential to recycle financial surplus from BRT scheme to support socially desirable services elsewhere in the network.
Vehicle supply industry	Opportunities for sales and service support, including development of contract maintenance.
Investment community	Opportunity for productive investment outside the property sector; development of innovative finance mechanisms for the informal sector that will have wider development implications.

- 3 See section on traffic volumes and modal mix, above.
- 4 BRT infrastructure will be seen as a public investment, only the maintenance of which will be recovered from the system users. This will enable a significant financial surplus at current fares levels, and hence generate funds for sector development. It is not intended to increase fares to reflect the better level of service, but it is intended to offer the opportunity for premium services in the BRT corridor capable of attracting current car users.
- 5 Options have been identified and selected through the study referred to at 1b above. BRT scheme will have fully segregated lanes along its trunk alignment, with a graded crossing at the major intersection with the Ring Road. High-capacity feeder services will operate in the general road network, but with traffic management improvement measures as appropriate. CBD and Ministries distributor services will be segregated where practicable, and will use bus-only streets at the heart of the CBD.
- 6 Metro Mass Transit has already been established as an appropriate brand for high-quality bus services in the metropolis. Further rebranding would probably be confusing at this time.
- 7 It is envisaged to use MMT buses in the first instance, as these are only up to 1.5 years old at present and will still be fully serviceable at scheme implementation. These buses are semi low-floor, and have two wide doorways, so should provide acceptable boarding speed even without any special boarding-ramp technology.
- 8 BRT system map is presented as a separate file. High-capacity feeder routes are an integral part of the BRT concept, and these will form part of the core service network to be regulated under the 'limited competition' regime that will be introduced.
- 9 It needs to be understood that the PT industry in sub-Saharan Africa is rather different to that in Latin America. In SSA, the typical vehicle owner is not an operator but rather a vehicle lessor who is looking for a rapid return on a relatively small investment. He has no commitment to the industry, and will often leave it when faced with a heavy expenditure for mechanical or accident repairs. This contrasts with the Latin American experience of the owner-driver who is committed to the industry, even though he could only afford a low capital investment. We need to move SSA more towards the Latin American model, and see the necessary process as the formalization of the informal sector operating within a contractual framework that will enable it to access and service vehicle finance. We cannot leave the informal sector outside the new system, as they would then have every incentive to sabotage its success.
10. The map is attached in the main document.

Global Benefits:

One can claim “less CO₂ than otherwise”, arising from these factors that contribute to slowing the growth in CO₂.

- Significantly reduced emissions/passenger-km from the BRT system (more passengers/bus, smoother running) compared with *tro-tros*
- Likely gains of a few percent of individual drivers who find BRT faster, or from others who detour from *tro-tros* or taxis to take the faster BRT even if slightly out of the way
- Small reduction in fuel use/km for cars and other vehicles because of smoother traffic among the two remaining lanes in each direction of the corridor.

The reason why local GHG inventories cannot be used to measure project outcomes (noted above) is that they are too aggregate. Even taking fuel sales from official figures for the Accra area will probably not show an identifiable glitch because of the BRT per se. But a few years out one can probably show that for the number of vehicles, people, and movements at that time, overall fuel use for transport is somewhat less that would have been expected. Spot surveys of vkt, fuel use and fuel economy, passenger, loads, etc. *Tro tro* and bus drivers can be surveyed, too. EMBARQ is working on an approach that combines a number of measurements (some of which even Accra is probably already making), models, etc.

We have a simple diagram that illustrates this problem of the “dynamic baseline”, i.e., the situation where with a project CO₂ emissions still rise, but rise less rapidly than without the project. Happy to share it with this effort.

Greenhouse gas emissions correlate closely with vehicle fuel consumption. However the operators who were interviewed during the study on improving urban transport failed to monitor their typical fuel consumption rates, and these had to be derived from other interview questions. Small minibuses, such as the Nissan Urvan, appear to use around 15 liter per 100 kilometers in heavy urban traffic; with a passenger capacity of 14, that equates to 1.07 liter per 100 passenger place kilometers. Larger *tro-tros*, such as the Mercedes 207, appear to use around 19 liter per 100 kilometers; with a passenger capacity of 22, that equates to 0.86 liter per 100 passenger place kilometers. However a large bus would be expected to use around 40 liter per 100 kilometers in similar circumstances; with a passenger capacity of 100, that equates to 0.40 liter per 100 passenger place kilometers. With the gains in smooth operation from the BRT system bus fuel consumption could improve by a further 20%, bringing the rate down to 0.32 liter per 100 passenger place kilometers.

Countering this effect, average vehicle occupancy in the BRT scheme is likely to be significantly lower than with the current *tro-tro* fill-and-run practice. Observed load factors in the current system are in the order of 85%, whereas these might be expected to drop to around 50% with a scheduled high-frequency service throughout the travel day. Were this to be the case, then the predicted saving of between 63% and 70% in fuel consumed per passenger place kilometer reduces to 37% to 41% per passenger kilometer.

Fuel consumption savings for cars in the BRT corridor might be in the order of 10%, but this effect would be partially offset by extra traffic attracted by the freer running conditions. However the effect should not be ignored, because consumption rates for a single occupancy petrol-engined vehicle can be 10 liter per passenger kilometer or worse.

In comparison, route diversion impacts are likely to be insignificant.

Annex 19: GEF Secretariat and other Agencies' Comments and IA/ExA Response

GHANA: Urban Transport Project

Q1. Indicate references to a commitment by Accra Municipality to achieve the objectives of this project and how those objectives reflect development and environmental priorities of the city

Response

The newly elected President of Ghana, as part of his electoral campaign in 2004, identified improvements in public transport as one of the top priorities of his agenda. He has set up a 23-member Committee, including Ministers of State, representatives of Metropolitan, Municipal and District Assemblies, Regional House of Chiefs and Institute of Planners. The objective of the Commission is to determine the economic, social, sectoral and environmental policies for development of the metropolitan area and supervise their implementation. Central to the Commission's agenda is improvements in urban transport in the metropolitan area with a view to improving its competitiveness, bankability and growth.

A Project Preparatory Office (PPO) has been established in the Department of Urban Roads of the Ministry of Road Transport under the management of its Director. This Office is responsible for the successful preparation of the project and its acceptance by the Government of Ghana and its development partners. It is proposed to transform this office as a dedicated Unit within the DUR, in the short-term, to effectively manage project implementation of the additional Grant component. The Unit would work with the Urban Transport Working Group (UTWG) that has already been established, under the Chairmanship of the Deputy Minister of MRT, to supervise the work at the technical level. The working group has representation from the MRT, DUR, Ministry of Tourism and Modernization of the Capital City, metropolitan and municipal assemblies, traffic police and the private operator.

The Accra Metropolitan Assembly, in coordination with the Ministry of Transport and other stakeholders is organizing an urban transport workshop in Accra on December 5, 2005 to discuss the project concept and its impact on development and environmental agenda of the city.

In the long-term, it is proposed to structure this Group in the form of the Greater Accra Urban Transport Authority which will coordinate and manage the multiple urban transport planning and regulatory activities. The Authority is expected to be set up in the Accra Metropolitan Assembly, with representation from Tema Municipal Assembly (TMA), and Ga District Assemblies (GDA), Ministry of Environment and Ministry of Transport..

Q2. Please demonstrate that lessons learned and experiences of the WB and other GEF IAs have been incorporated in this project design.

Response

Drawing upon its international and regional experience, the Bank is in a strong position to support the Government in formulating strategies to explore alternative solutions to complex traffic and transport management issues. The Bank has extensive experience in supporting projects on urban transport systems. For example, in Brazil and Chile, the Bank supported the concept of physically separating buses from worsening traffic congestion. In Bogota, the Bank is supporting

a second phase of separated bus corridors as part of the successful TransMilenio bus rapid transit system, which was first introduced in Curitiba. A project has been designed in Lima, partly with support from GEF funds, along the lines of TransMilenio. The experience gained in Brazil, Chile, and Colombia in this sector will play a key role in assisting Accra municipality efforts to improve the urban transport system. The Bank can also utilize the experience gained from SSATP and other regional initiatives to support the reform agenda.

The advantages of a participatory design process Prior to the HSIP, the Bank financed transport operations in Ghana in various forms: road, urban transport and feeder roads projects; port and railway projects; and finally, rural roads components under agricultural projects. These projects all attempted, with some results, to introduce reforms in the transport sub-sectors. The more recent of these completed projects, plus the on-going HSIP, have provided an opportunity for the Bank to establish a substantive dialogue with the Government on the major issues in the transport sector. The MRH drew up an overall strategy for the sector, and developed this into strategic plans for each sub-sector. Acceptance of these plans by the public and by particular interest groups was obtained through extensive debate in Cabinet, Parliament, and parliamentary sub-committees, and through outreach activity and stakeholder consultations by MRH (formerly MRT). In this fashion, agreement has been obtained, for instance, on concessioning of the railway and on successive increases in the fuel levy for the Road Fund, without disruptive confrontations. The main lesson learned from this is that although the process is slow, it is both in accord with Ghanaian tradition, and in the end, probably more effective than a faster but less inclusive process.

The need for donor coordination and consultation Other donors have been active in the transport sector. They have participated in program design and co-financing arrangements, often based on their own sub-sector preferences. During implementation, coordination has sometimes been inadequate leading to imbalances in the sector program. The practice of regular consultations between donors and MRH, the annual GOG/donor meeting instituted under the HSIP, and the stakeholder consultations arranged by MRH, have demonstrated the advantage of continuous contact between all actors and interested parties.

The importance of accompanying stable maintenance funding with better programming The positive experience with the reform of the Road Fund is significant and is incorporated in the design of the program. The reformed Fund improved revenue-raising immediately. However, the lack of clear work programs caused a build-up of liquid funds, which were then diverted to other uses, sometimes the payment of arrears. The lesson is that stable raising of revenue for road maintenance does not in and of itself insure that the maintenance is done. For this to occur, proper advance work planning and programming must be present, together with implementation capacity in the private sector and managerial capacity in the executing agencies.

The importance of coordinating activities of multiple agencies Multiplicity of organizations responsible for urban transport planning and implementation is not conducive to efficient operations. As part of the GEF grant, it is proposed to set up a semi-autonomous urban transport authority, responsible for planning, management and monitoring of transport services.

Q3. Please clarify the other sources of co-financing

Response

The GEF financing would blend with an existing project in the road sector in Ghana, supported by the Bank and other development partners. Of the total amount, about US\$152 million remains

to be disbursed and will support achievement of an efficient and effective transport sector in the country. In urban transport, IDA financing will specifically support detailed design of a bus rapid transport system, traffic management and road improvements, development of an urban transport policy and capacity building.

Q4. Please consider reducing the amount requested for both components 2 and 4 (bus way design and implementation and NMT design and implementation)

The preparation phase of this project has involved several focus group discussions and workshops involving government agencies, users, private operators, tro tro bus drivers, bus owners, commercial banks, insurance companies, NGOs and development partners. Different workshops were conducted to design the project. As a result, project components have been redesigned, as explained in the executive summary. Considerable investment for traffic management (road improvements, demand management, side walks, NMT) is envisaged using Bank financing. The GEF financing would allow focused attention on a pilot corridor to improve traffic flow for bus transport (bus lanes) with considerable transport and environmental benefits.

**Comments from BMZ (Federal Ministry for Economic Cooperation and Development),
Germany and Response**

Recommendation: Germany objects to the project proposal and asks to defer it for consideration at the next regular meeting of the Council.

According to its Operational Strategy, the GEF finances only the agreed incremental costs of measures for achieving agreed global environmental benefits. The project proposal does not meet this principle. The proposed GEF financing covers a lot of the activities of the overall program and does not demonstrate that those measures produce global environmental benefits. Only to take one example: The development of road safety strategy in general does not generate effects on the global environment. Same is true for traffic management. The “improved capacity in the area of traffic scheduling and BRT”, “study tours” and “implementation of urban transport policy” would all be part of a sensible baseline and it remains doubtful to what extent these activities have effects on the global environment. It has to be specified that the GEF grant only finances activities that makes environmental-friendly transport more attractive.

Response.

We have carefully considered the German comments and, in consultation with the Ghanaian authorities, redesigned the project to directly address the issue of incremental costs and global benefits. In view of the specific comment regarding inclusion of road traffic management and the development of a safety strategy and their weak links to global environmental benefits, the related components have been included as part of the base line. The redesigned proposal takes into account the recent commitment of US\$25.0 million from IDA to prepare an urban transport project. This new commitment is in addition to the already committed US\$220.0 million from IDA to support the road sector development program.

The revised proposal clearly identifies the base line activities, to be supported by IDA/GOG and the incremental activities for which GEF support is requested. In brief, the base line activities include strengthening the institutional and financing arrangements, capacity building (study tours, technical assistance) and civil works (road upgrading, traffic management and safety, NMT network, bus terminals, intersection improvements) and monitoring (social impact studies, data base management). The specific activities to be supported by GEF include building capacity for strategic environmental assessment, vehicle emission management and measurement, creating bus exclusive lanes in support of BRT system, and evaluation (improving environmental performance, standard of fuel-injection equipment and monitoring smoke levels in vehicle exhausts).

The GEF financing would supplement the IDA/GOG financing of road rehabilitation and grade separation at intersections by financing creation of exclusive bus lanes along the BRT corridor. Without the exclusive bus lanes, the improvements of roads and traffic management may have the unintended impact of promoting vehicle-kilometers traveled, which may increase rather than decrease GHG emissions. By financing exclusive bus lanes with GEF support, movement of mass transport will be facilitated, bus operations will become profitable and financial incentives will be created for the bus owners and operators to finance clean large buses and substitute them for old small vehicles. This is expected to promote modal shift to more efficient and less polluting forms of public and freight transport. This initiative would provide an opportunity of reduction in GHG emissions and promote technologies whose cost will drop significantly with economies of scale in manufacture and increase in demand.

It is also expected that some of the support activities will be commercially viable after GEF support has ended, through creation of additional domestic benefits such as reduction of congestion and pollution and creation of technological innovations. For example, support for a BRT system would provide financial incentive to private bus operators to replace the small polluting buses with large clean buses. The framework would be replicable along other corridors. The demonstration of improved mobility of people on a pilot BRT corridor and development of an evaluation and monitoring framework using this grant, will in turn, lay the basis for additional financing from multilateral and bi-lateral development partners.

In line with GEF's Operational Policy on Sustainable Transport (OP11) and GEF Strategic Priority in Climate Change focal area (CC-6), this GEF proposal aims at reducing greenhouse gas emission reduction from urban transport through: (a) long-term modal shift to more efficient and less polluting forms of public transport; (b) strategic land-use and transport planning to the local and global environmental objective of reducing air pollution and GHG emissions; and (c) developing a demonstration project with clear benefits, such as reduced uncertainties about costs, performance and market acceptance.

Further Comments from Germany (letter dated June 23, 2006)

Recommendation:

Germany agrees to the project proposal. Changes outlined below should be made during further planning steps and during project implementation.

Comments:

We appreciate the redesign of the project proposal and acknowledge that a lot of activities that were not eligible for GEF financing, but were nevertheless planned to be financed from the GEF grant, are now part of the baseline or taken out of the project proposal.

However, the estimation of the CO₂ reduction potential of the project has to be refined and made more transparent. The potential of 22% reduction is too general and it is not clear which emissions are assumed as relevant for this reduction potential (the whole city? Just the pilot BRT corridor?).

Moreover, the links between the individual GEF-funded project components should be strengthened. The activities are rather diverse (e.g. "compilation of GHG data", "vehicle inspection", "contribute to the development of a transport master plan", "design BRT"). The chances for replication will increase if the project manages to integrate them into a coherent package that can be used as a model in other cities.

Annex 20: Stakeholder Participation Plan

GHANA: Urban Transport Project

A Public Participation Strategy is considered an important element of the BRT project component. This bus way system would have significant benefits for many residents of the city and is a key to the sustainable development of the city in the future. The current riders will see a higher level of service, congestion will be alleviated as riders switch from private modes to PT, the growth of the city can be facilitated along the corridors as accessibility increases and high density development can be promoted. Still, the introduction of a BRT system could face significant challenges. *First*, the concept of BRT is not clearly understood. It is seen by many as investment in infrastructure or big buses. The “systems” aspect of BRT is not well understood. The more difficult aspects of the approach, particularly the institutional and regulatory reforms are often seen as less important and more challenging. *Second*, the current private operators may see this as an effort by Government to marginalize them and eventually drive out of the market. In absence of a comprehensive participation and dissemination plan, the private bus operator will not participate and frustrate efforts to bring regulation to the sector. *Third*, the commercial banks and investment community may not provide necessary financing for purchase of large buses, frustrating the efforts of the private bus operators to participate in the franchising process. *Fourth*, the users may not get enough confidence in the new system and may continue with their dependence on private modes. A strategically planned and well-executed public consultation strategy is an important element of the city’s plan to manage these challenges.

The Stakeholder **Participation Plan** will include the following:

- (i) Organize workshops with key Ministry and Municipality staff to inform them of the challenges and to share “best” practices from successful examples across the world
- (ii) Organize focus group discussions with the Unions, drivers and Associations to understand their point of view and inform them about the proposed changes
- (iii) Consult the public on the BRT, and seeking their input primarily through scheduled “town hall” meetings
- (iv) Generate public awareness, involvement and enthusiasm and transforming that into sustained political support for the BRT
- (v) Institute ways to generate interest in BRT through the media
- (vi) Organize study tours

The preparation phase of this project has involved several consultations organized by the GOG, including focus group discussions and workshops involving government agencies, users, private operators, trotro bus drivers, bus owners, commercial banks, insurance companies, NGOs and development partners. Different workshops were conducted to design the project. In a two day workshop, representatives of the private sector, government, commercial banks and other stakeholders were involved in detailed discussions - formulating ideas on options to improve the urban transport environment. Based on the discussions, institutional, financial, regulatory, technical and environmental strategies were developed and presented in a second workshop. The project design was modified further based on discussions and this was presented in a third high-level workshop, with participation of the Office of the President and other key stakeholders. In addition, a number of focus group discussions were organized with the bus operators and users to inform on the project design. Communication programs were developed to target high-level actors (ministry officials, city authority, local community leaders, local employers, etc) in order to build support for the program at the decision maker’s level.

Following is an outline of stakeholder analysis.

Table A20.1: Government Stakeholder Analysis

Government stakeholders	Project impact
Ministry of Transportation	Development of institutions to enable them to fulfill their statutory duties in the urban transport domain; visible investment in the sector with obvious political benefits; potential to recycle financial surplus from BRT scheme to support socially desirable services elsewhere in the network.
Ministry of Local Government, Rural Development and the Environment	
Accra Metropolitan Assembly, Tema Municipal Assembly, Ga East District Assembly, Ga West District Assembly, Kumasi Metropolitan Assembly, and Ejisu Juaben District Assembly	
Driver and Vehicle Licensing Authority	
Environmental Protection Agency	

Table A20.2: Nongovernment Stakeholder Analysis

Nongovernment stakeholders	Project impacts
Passengers	Faster, more regular, and more reliable service; no increase in fares unless full recovery of infrastructure investment cost is intended.
General traffic	Reduced congestion in corridor, allowing time and cost savings.
Pedestrians	Improved safety in corridor through smoother traffic flows, and on parallel rat runs that will be used much less intensively.
Population in corridor	Excellent public transport mobility opportunities. Reduced pollution as a result of reduced congestion.
Residents off corridor	Reduced noise and emissions as a result of less rat-run traffic.
PT drivers	Less job opportunities, but better working hours in a regulated environment; greater security and reliability of income; less hassle from enforcement authorities.
PT owner/drivers	Relatively few in number, but will be offered the opportunity to migrate to bigger buses and build a significant capital stake.
PT owners	Minibuses and lower-quality vehicles will no longer be permitted on the trunk route and its high-capacity feeders, but growth of the metropolis should absorb these vehicles elsewhere in the network; tighter enforcement of safety and environmental regulations will result in scrapping of worst vehicles; opportunity will be given to migrate to bigger buses. Greater security on contracted routes and opportunity to recover investments and make profit.
PT unions/associations	Loss of their informal regulatory role and their informal management of terminals and interchange to the UPTUs of the MMDAs. Driver members will tend to benefit, but owner members will tend to lose; potential framework within which owner-driver sector could develop.
Vehicle supply industry	Opportunities for sales and service support, including supply of

	higher specification vehicles and development of contract maintenance.
Investment community	Opportunity for productive investment outside the property sector; development of innovative finance mechanisms for the informal sector that will have wider development implications.

Table A20.3: Stakeholder Participation Plan

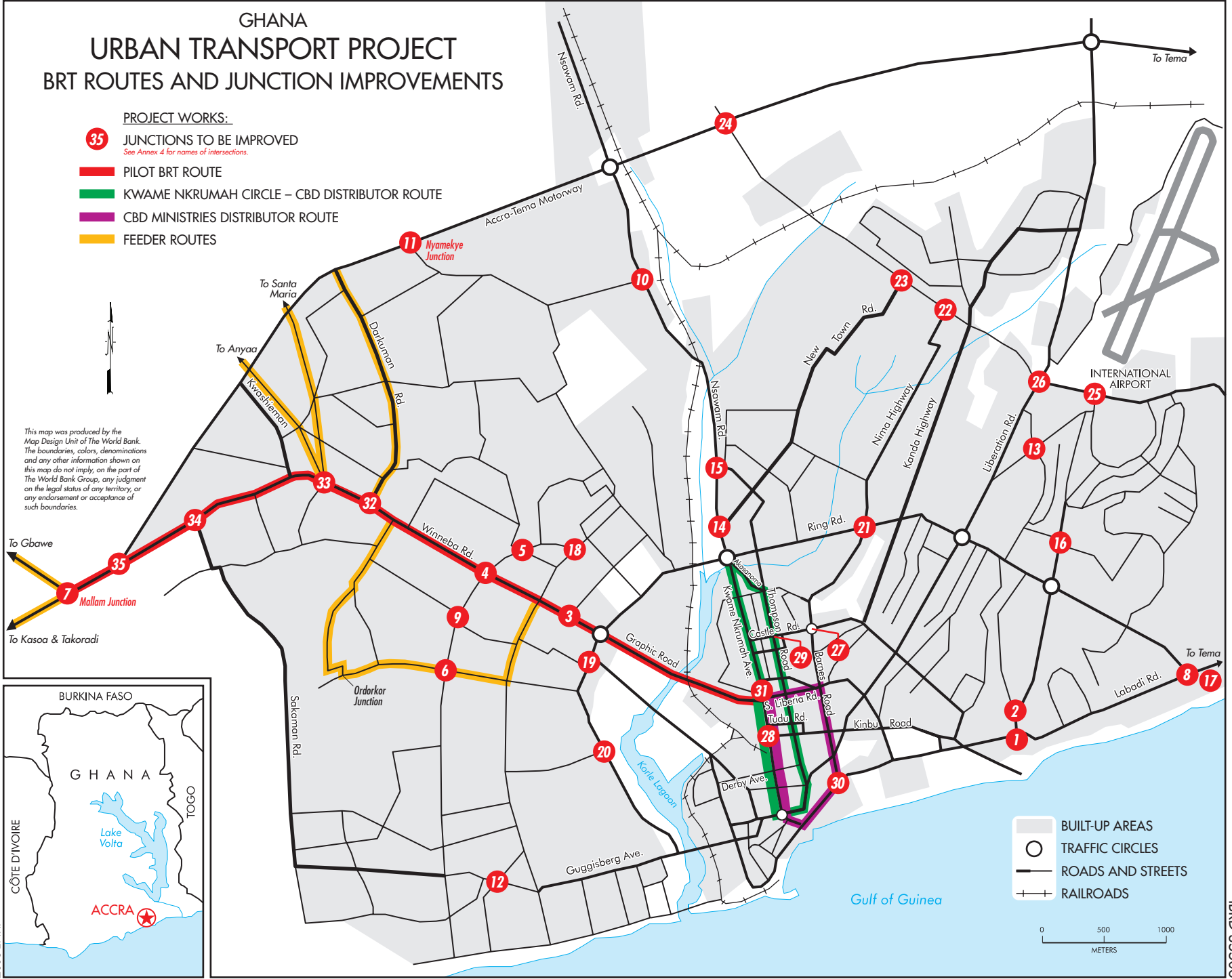
Objective	Audience	Activity	Intervention	Time
<i>Building stakeholder constituency</i>	Key public and private transport stakeholders (unions of transport operators, local governments, NGOs and ministries, public transport users)	Repeated one-day workshops with all stakeholders Estimate size & distribution of mobility benefits and impact of BRT on labor market using HH surveys	Present the urban transport project idea	During project preparation, 2005, and 2006, and during implementation
<i>Endorsement of project concept</i>	Key public and private transport stakeholders	Consultations with various stakeholders	Present the urban transport project concept	During project preparation, 2005, and 2006
<i>Endorsement of project document and operations</i>	Key public and private transport stakeholders (unions of transport operators, local governments, NGOs and ministries)	Review of project concept and operations	Send project document to key stakeholders for comments	During project preparation, 2005, and 2006
<i>Capacity building and income generation opportunities</i>	Civil society and public sector	Recruitment of individuals and businesses for project implementation	Execute project activities	Project implementation 2006–2008
<i>Monitoring and evaluation</i>	Key public and private transport stakeholders (unions of transport operators, local governments, NGOs and ministries, users)	Workshops Continuation of baseline surveys	Evaluation of project performance and outcomes	Project completion

Annex 21: Ghana Map
IBRD 35506

GHANA URBAN TRANSPORT PROJECT BRT ROUTES AND JUNCTION IMPROVEMENTS

- PROJECT WORKS:**
- 35 JUNCTIONS TO BE IMPROVED
See Annex 4 for names of intersections.
 - █ PILOT BRT ROUTE
 - █ KWAME NKRUMAH CIRCLE – CBD DISTRIBUTOR ROUTE
 - █ CBD MINISTRIES DISTRIBUTOR ROUTE
 - █ FEEDER ROUTES

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LEGEND

- BUILT-UP AREAS
- TRAFFIC CIRCLES
- ROADS AND STREETS
- RAILROADS

0 500 1000
METERS