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Report No: PAD1046

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED

GLOBAL ENVIRONMENT FACILITY TRUST FUND GRANT

IN THE AMOUNT OF US$9.2 MILLION

TO

INDIA

FOR AN

EFFICIENT AND SUSTAINABLE CITY BUS SERVICES PROJECT

November 19, 2014

Transport & ICT Global Practice
GTIDR

CURRENCY EQUIVALENTS

(Exchange Rate Effective July 30, 2014)

Currency Unit	=	INR
INR 60	=	US$1
US$	=	SDR 1

FISCAL YEAR
April 1 – March 31

ABBREVIATIONS AND ACRONYMS

AADT	Annual Average Daily Traffic	JDA	Jaipur Development Authority
AFCS	Automatic Fare Collection system	JMC	Jaipur Municipal Corporation
AFS	Audited Financial Statement	JnNURM	Jawaharlal Nehru National Urban Renewal Mission
ATL	Average Trip Length	KMPL	Kilometer per Liter
ASCI	Advertising Standards Council of India	LCS	Least Cost Selection
AVLS	Automatic Vehicle Location system	MBMC	Mira Bhayandar Municipal Corporation
AWP	Annual Work Program		
BAU	Business as Usual	MBMTU	Mira Bhayandar Municipal Transport Undertaking
BCLL	Bhopal City Links Limited	MIS	Management Information System
BRT	Bus Rapid Transit	MoEF	Ministry of Environment an Forests
C&AG	Comptroller & Auditor General	MORTH	Ministry of Shipping, Road Transport and Highways
CAAA	Controller of Aid Accounts & Audit	MoUD	Ministry of Urban Development
CBS	City Bus Services	MTC	Metropolitan Transport Corporation
CCTV	Close Circuit Television	NAPCC	National Action Plan for Climate Change
CEO	Chief Executive Officer	NCB	National Competitive Bidding
CPS	Country Partnership Strategy	NUTP	National Urban Transport Policy
CRZ	Coastal Regulation Zone	OM	Operations Manual
CQS	Consultant's Qualification	ORAF	Operational Risk Assessment Framework
CSE	Centre for Science and Environment	OSD	Officer on Special Duty
CTU	Chandigarh Transport Undertaking	PDO	Project Development Objective
DGS&D	Directorate General of Supplies and	PPP	Public-Private Partnership

	Disposals
DPR	Detailed Project Report
ESMF	Environmental and Social Management Framework
ESCBS	Efficient and sustainable City Bus Services
ESMAP	Energy Sector Management Assistance Program
FBS	Selection under Fixed Budget
FM	Financial Management
GDP	Gross Domestic Product
GEB	Global Environment Benefits
GEF	Global Environment Facility
GHG	Green House Gas
GOI	Government of India
GPN	General Procurement Notice
GPS	Global Positioning System
ICB	International Competitive Bidding
IFD	Interim Finance Division
IPF	Investment Project Financing
IPT	Intermediate Public Transport
ITS	Intelligent Transport System
IUFR	Interim Unaudited Financial Report
ISBT	Inter State Bus Terminal
ISP	Implementation Support Plan
ITS	Intelligent Transport systems
JCTSL	Jaipur City Transport Services Limited
PIF	Project Identification Form
PIA	Project Implementing Agency
PIS	Passenger Information System
PIU	Project Implementing Unit
PMU	Project Management Unit
PMC	Project Management Consultant
PPC	Project Preparatory Consultancy
PRAMS	Procurement Risk Assessment and Management System
QBS	Quality Based Selection
QCBS	Quality and Cost Based Selection
RBI	Reserve Bank of India
RSRTC	Rajasthan State Road Transport Corporation
RTI	Right to Information
RTIDF	Rajasthan Transport Infrastructure Development Fund
SEPA	Sistema de Ejecución de Planes de Adquisiciones
SBDs	Standard Bid Documents
SPV	Special Purpose Vehicle
SSS	Single Source Selection
STU	State Transport Undertaking
SUTP	Sustainable Urban Transport Program
TA	Technical Assistance
TOR	Terms of Reference
TTL	Task Team Leader
UT	Union Territory

Regional Vice President:	Philippe H. Le Houerou
Country Director:	Onno Ruhl
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Practice Manager:	Karla Gonzalez Carvajal
Task Team Leader:	Nupur Gupta

INDIA
GEF Efficient and Sustainable City Bus Services (ESCBS)

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PAD DATA SHEET

India

Efficient & Sustainable City Bus Services (P132418)

PROJECT APPRAISAL DOCUMENT

SOUTH ASIA

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Report No.: PAD1046

Basic Information			
Project ID P132418	EA Category B - Partial Assessment		Team Leader Nupur Gupta
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints [ ] Financial Intermediaries [ ] Series of Projects [ ]		
Project Implementation Start Date 09-Dec-2014	Project Implementation End Date 30-Sep-2018		
Expected Effectiveness Date 31-Jan-2015	Expected Closing Date 31-Dec-2018		
Joint IFC No			GEF Focal Area Climate change
Practice Manager/Manager Karla Gonzalez Carvajal	Senior Global Practice Director Pierre Guislain	Country Director Onno Ruhl	Regional Vice President Philippe H. Le Houerou

Borrower: Department of Economic Affairs			
Responsible Agency: Ministry of Urban Development			
Contact:	C.K. Khaitan	Title:	Joint Secretary (Urban Transport)
Telephone No.:	011-23061558	Email:	ck.khaitan@nic.in

Project Financing Data(in USD Million)					
[ ]	Loan	[ ]	IDA Grant	[ ]	Guarantee
[ ]	Credit	[X]	Grant	[ ]	Other

Total Project Cost:	113.00	Total Bank Financing:	9.20
Financing Gap:	0.00		

Financing Source	**Amount**

Borrower	103.80
Global Environment Facility (GEF)	9.20
Total	113.00

Expected Disbursements (in USD Million)

Fiscal Year	2015	2016	2017	2018	2019	0000	0000	0000	0000	0000
Annual	0.10	2.00	2.50	2.50	2.10	0.00	0.00	0.00	0.00	0.00
Cumulative	0.10	2.10	4.60	7.10	9.20	0.00	0.00	0.00	0.00	0.00

Institutional Data

Practice Area / Cross Cutting Solution Area

Transport & ICT

Cross Cutting Areas

[X] Climate Change
[ ] Fragile, Conflict & Violence
[X] Gender
[ ] Jobs
[X] Public Private Partnership

Sectors / Climate Change

Sector (Maximum 5 and total % must equal 100)

Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Transportation	Urban Transport	100		100
Total		100		

☐ I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.

Themes

Theme (Maximum 5 and total % must equal 100)

Major theme	Theme	%
Urban development	Other urban development	65
Environment and natural resources management	Climate change	25
Financial and private sector development	Infrastructure services for private sector development	5
Social dev/gender/inclusion	Gender	5
Total		100

Proposed Global Environmental Objective(s)
The project's Global Environment Objective (GEO) is to improve the efficiency and attractiveness of city bus transport and reduce greenhouse gas emissions in the demonstration cities.

Components	
Component Name	**Cost (USD Millions)**
Component 1: National Capacity Building for Urban Bus Sector	3.3
Component 2A: City Demonstration Projects: Physical Improvements	105.2
Component 2B: City Demonstration Projects : Technical Assistance and Capacity Building	2.9
Project Management Cost	1.7

Compliance

Policy

Does the project depart from the CAS in content or in other significant respects?	Yes [ ]	No [X]
Does the project require any waivers of Bank policies?	Yes [ ]	No [X]
Have these been approved by Bank management?	Yes [ ]	No [X]
Is approval for any policy waiver sought from the Board?	Yes [ ]	No [X]
Does the project meet the Regional criteria for readiness for implementation?	Yes [X]	No [ ]

Safeguard Policies Triggered by the Project	**Yes**	**No**
Environmental Assessment OP/BP 4.01	**X**	
Natural Habitats OP/BP 4.04	**X**	
Forests OP/BP 4.36		**X**
Pest Management OP 4.09		**X**
Physical Cultural Resources OP/BP 4.11	**X**	
Indigenous Peoples OP/BP 4.10		**X**
Involuntary Resettlement OP/BP 4.12	**X**	
Safety of Dams OP/BP 4.37		**X**
Projects on International Waterways OP/BP 7.50		**X**
Projects in Disputed Areas OP/BP 7.60		**X**

Legal Covenants

Name	**Recurrent**	**Due Date**	**Frequency**
Project Steering Committee	**X**		CONTINUOUS

Description of Covenant

Maintain throughout the period of Project implementation a Steering Committee, chaired by the Secretary, Ministry of Urban Development and consisting of senior officers from the Ministry of Urban Development and other relevant ministries to lead the implementation of the Project through the national Project Management Unit

Name	Recurrent	Due Date	Frequency
Finance Manager	X		CONTINUOUS

Description of Covenant

Shall maintain throughout the period of Project implementation, a suitably qualified finance manager at the Project Management Unit (PMU), and shall cause each of the Participating States to appoint or depute no later than ninety (90) days after the Effective Date and, maintain throughout the period of Project implementation ,a suitably qualified finance professional, at each of the respective Project Implementing Agencies

Conditions

Source Of Fund	Name	Type

Description of Condition

Team Composition

Bank Staff

Name	Title	Specialization	Unit
Om Prakash Agarwal	Sr Urban Transport Spec.	Sr Urban Transport Spec.	GTIDR
Ishita Chauhan	E T Consultant	E T Consultant	GTIDR
Neha Dhoundiyal	Financial Management Specialist	Financial Management Specialist	GGODR
Nupur Gupta	Sr Transport. Spec.	Team Lead	GTIDR
Gaurav D. Joshi	Senior Environmental Specialist	Environmental Specialist	GENDR
Jurminla Jurminla	Procurement Specialist	Procurement Specialist	GGODR
Sangeeta Kumari	Senior Social Development Specialist	Senior Social Development Spec	GSURR
Krishnamurthy Sankaranarayanan	Sr Financial Management Specialist	Sr Financial Management Specialist	GGODR
N. S. Srinivas	Operations Analyst	Operations Analyst	GTIDR
Krishnan Srinivasan	E T Consultant	E T Consultant	GTIDR

Non Bank Staff

Name	Title	City

Asha Bhagat	Financial Management Specialist	New Delhi
Brendan Finn	Bus Operations Specialist	Dublin
Rashi Grover	Governance Specialist	New Delhi
Brian McCollom	Public Transport Specialist	Washington Dc
Runze Yu	Climate Change Specialist	Beijing

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
India	Rajasthan	Jaipur		**X**	
India	Chandigarh	Union Territory of Chandigarh		**X**	
India	Maharashtra	Mumbai		**X**	Mira Bhayandar
India	Madhya Pradesh	Bhopal		**X**	

I. STRATEGIC CONTEXT

A. Country Context

1. Green House Gas (GHG) emissions from transport sector in India were 80 million tons in 1994, 142 million tons in 2007. In 2007 transportation contributed 7.5 percent of India's energy based emissions.[1]India has become the fourth largest emitter of greenhouse gases, even though it is one of the lowest in terms of per capita emissions, the Government of India is committed to achieving a sustainable development path outlined in the National Action Plan for Climate Change.[2] Among the eight National Missions included in the NAPCC, National Mission on Sustainable Habitat identifies Promotion of Urban Public Transport as one of the three pillars. The Mission emphasizes the combination of policy framework and low carbon technologies to realize emission reduction in the transport sector. The National Urban Transport Policy 2006, also emphasizes priority to public transport facilities and non-motorized modes over personal vehicles.

2. India's rapid economic growth is being accompanied by an unprecedented urban and spatial transformation. While the current level of urbanization in the country is around 31 percent (377 million persons), it is projected to increase to 40 percent or more over the next 20 years. This will result in an increase of the urban population by about 250 million persons – the largest ever urban transformation of the 21st century[3]. For the first time in its modern history, India has experienced a greater absolute increase in its urban versus rural population. At the same time, the number of towns in the country has increased from around five thousand in 2001 to around eight thousand in 2011 and there are 53 cities across the country each with a population of over 1 million people.[4] There will be a pressing need to accommodate an additional 10 million urban dwellers per year, provide them and the existing under-served urban population with adequate urban transportation networks which can create opportunities for economic development, improve productivity and competitiveness of cities.

B. Sectoral and Institutional Context

3. **Rapid urbanization and motorization in Indian cities leading to increased GHG emissions.** Urban transport demand in Indian cities is met by a range of modes. While the high income group has access to cars, the middle-income and lower- income group depends on public transport services, 2-wheelers, non-motorized modes such as walking and cycling and often other informal modes of public transport. The ill effects of rapid urbanization have resulted in severe congestion, deteriorating road safety, increasing air pollution and GHG emissions. Coupled with increasing income levels, growing population, urban sprawl and poor quality of public transport, this trend has been aggravated by an increasing reliance on motorized transport and specifically the use of personal motor vehicles[5]. Growing income levels have resulted in a shift from poor quality buses to motor bikes and then to cars. In cites that do not have any bus service, typically

[1] India: Greenhouse Gas Emissions 2007, Ministry of Environment and Forests, Government of India, 2010
[2] India's National Action Plan on Climate Change (NAPCC), Government of India, June 2008
[3] India: Urbanization Beyond Municipalities -- Nurturing metropolitan economies and connecting per urban areas India, The World Bank, 2012.
[4] Census of India, 2011
[5] As per Ministry of Road Transport and Highways (MORTH) estimates, there has been an increase in number of registered motor vehicles in India from 55 million to 142 million over the period 2001-11, a CAGR of close to 10 percent

the small and medium sized cities, the shift has been from bicycles and cycle rickshaws to motor bikes and auto rickshaws. The revamp and upgradation of existing city bus transport services and launch of quality services in new cities is urgently required to curb the shift to personalized modes of transport.

4. **Need for a structured public transport service.** The long term sustainability of cities depends on use of public transport services, as they occupy less road space and cause less pollution per passenger-km than personal vehicles. Buses can meet the public transport needs of most cities in a cost effective and efficient manner. Despite this, many of the cities do not have a structured public transport service. In fact, according to a study by the Ministry of Urban Development in 2008[6] out of 87 cities that had a population of over half a million people, only about 20 cities had a formal public bus service. These mainly included the large cities and very few mid-sized cities. In the others informal para-transit in the form of shared tempos (3-5 wheeled vehicles that take about 8-10 passengers) or poorly regulated minibuses tended to provide some kind of public transport, primarily for those who have no other options. These offer very low quality of service and the vehicles used are badly maintained, polluting and high energy consumers. Even in the cities that do have a structured public transport service, public transport mode shares had generally dwindled over the last couple of decades and fleet sizes in nearly all public bus companies did not keep pace with demand. They are generally run by state owned monopolies, and baring a few large city state transport undertakings, tended to focus more on the inter-city service than on the intra city service, as the inter-city services are more remunerative. The financial situation of State Transport Undertakings (STU) providing monopoly bus services in cities has been unsatisfactory for many years. With mounting losses, they have not been able to adequately replace old buses or expand services to keep pace with demand. The vacuum created by declining STUs or absent public transport services has been filled in by intermediate modes of public transport (auto rickshaws, jeeps, taxicabs, shared taxis and so on), a service that is often fragmented and poorly regulated.

5. **Institutional and regulatory structure for road transport.** Road transport in India is governed by the Motor Vehicle Act 1988, which endows State Governments with the responsibility for bus transport (including city buses) and the power to license routes for plying stage carriages, fix fares, and set technical standards and safety norms. Apart from the states of Maharashtra (Bombay Provincial Municipal Corporation Act) and Gujarat, where urban transport falls partly under the purview of city governments for historical reasons, in all other states it continues to be strictly regulated at the state level. The legislation was oriented towards policies that encouraged monopoly operation of road services by the STU (which were usually set up under the Road Transport Corporation Act 1950). In spite of modifications in the Act allowing for greater private sector participation, the STUs continue to dominate the road transport sector in several states.

6. Around 2005-06, there were a spate of initiatives by some cities to launch city bus services through city level Special Purpose Vehicles (SPV) with operations contracted to private operators. This marked a deviation from the traditional state run structures. These were triggered by the successful launch of a city bus service in Indore by the local administration through innovative use of public-private-partnership models. However, in several cases these closed

[6] Traffic & Transportation Policies and Strategies in Urban Areas, Ministry of Urban Development, 2008

down owing to relative inexperience on both sides, the public and private sector, and an expectation for the services to be self-sustaining without need for public support or investment in capacity building of the SPV.

7. **National Urban Transport Programs**. It is in this context that the Government of India (GoI) announced the National Urban Transport Policy (NUTP 2006) emphasizing the use of sustainable modes of travel like public transport and non-motorized modes and the National Environment Policy (2006) to reduce the global and local emissions from transport. GoI launched the Jawaharlal Nehru National Urban Renewal Mission (JnNURM), whereby approximately 30-80 percent of the total cost of urban infrastructure investment in 61 selected cities could be financed. These cities either had a population of over one million or were capitals of the state governments or had some other tourist/heritage interest.

8. **India-GEF-World Bank-UNDP Sustainable Urban Transport Program.** The $327 million India Sustainable Urban Transport Program (SUTP) under GEF4 was an umbrella program also initiated underlying the principles of NUTP and focused on: (i) developing necessary national, state and city level capacity in urban transport planning; and (ii) kick-starting the preparation and implementation of sustainable urban transport projects through some high impact demonstration projects on Bus Rapid Transit, non-motorized transport, Intelligent Transport Services (ITS) in five cities. The national capacity building component has helped create awareness and growing sensitization among the urban transport officials and larger community to the complexities in urban transport and need for priority to public transport, non-motorized transport and emphasis on capacity building. This has been possible through a series of interactive workshops around key themes and reforms, training programs and dissemination fora. Several user guides and manuals are also being developed which will further help build capacity and improve the quality of projects being implemented on the ground. The demo projects in the five cities are in various stages of implementation and efforts have been made to ensure adoption of best practices into the designs. So far, only the Mysore ITS project has been implemented. . Being the first city to implement an ITS system for its entire bus service, the Project has generated interest among Indian cities planning to implement such systems and it has secured additional grants for implementing the ITS on its entire fleet of buses beyond Mysore. It is expected that with the launch of other demo projects, a similar demonstration impact will be possible in relatively new areas of BRT systems, non-motorized transport systems and intelligent transport systems.

9. **Bus Funding Scheme** (JnNURM). In an attempt to promote public transport, GoI under the second stimulus package, on 2nd January 2009 announced that states would be provided with financial assistance under JnNURM for the purchase of buses for their urban transport systems. Under this program, GOI provided funding for purchase of buses in 61 cities[7] across India with the following objectives: (i) provide new, cleaner, more user friendly buses to cities in order to provide a higher level of service and convenience for passengers; (ii) assist in the implementation of public transport institutional and service reforms, including setting up Special Purpose Vehicles (SPV) for managing and operating JnNURM financed buses. The buses under

[7] The 61 cities included metropolitan areas such as the Mumbai Metropolitan Region (MMR) which comprises 7 municipal areas.

JnNURM were sanctioned with the condition that certain reform measures[8] would be carried out. Accordingly, a total of 15,485 buses were sanctioned to 61 JnNURM cities at a total cost of approximately US$1 bn. Many of these cities would for the first time have a bus based public transport system. As on March 31, 2014, orders had been placed for 15362 buses (99 percent) in all the beneficiary cities and 14069 (91 percent) buses had been procured in 59 of the 61 cities.

10. A second phase of the Bus funding Scheme was later launched in 2013. In this scheme additional 11,636 buses were sanctioned to a larger subset of Indian cities totaling 141. Based on lessons learnt from implementation issues of Scheme I, Scheme II also made additional sanctions towards ancillary infrastructure such as depot development and ITS.

11. **Current State of the Indian Urban Bus Sector.** 59 cities had procured buses sanctioned under the Bus Funding Scheme I by March 2014. As a result, there was a significant renewal of bus fleets in cities where services already existed, and 41 new cities with no formal services in the past were able to launch city bus services in their cities. The overall satisfaction level of users and non-users of city bus services based on an India wide survey of 12 cities[9] was found to be less than 40 percent and 30 percent respectively. However, three quarter of the users and two-thirds non-users surveyed expressed a willingness to use city bus services in the future provided their concerns were addressed.

12. **City bus services tend to be loss making.** In general urban bus services tend to be less remunerative than long distance operations. One of the main reasons for this is the relatively higher per unit costs on account of the higher personnel requirement and lower fuel efficiency in urban environments. The driving speeds tend to be lower, with frequent stops and starts having an impact on the fuel consumption. Available data on existing city bus services suggests that, on average, they were loss making with a cost recovery of 63.3 percent compared to 90.3 percent for the long distance operations in 2012.[10] Bangalore Metropolitan Transport Corporation (BMTC), the operator in Bangalore and one of the best performers, recorded a cost recovery ratio of 101.4 percent. BMTC has achieved this mainly through a much stronger control on per unit personnel costs and efficiency in operations. While there are a variety of factors responsible for the losses, including low fares, the pertinent point is that there is a large potential for improvements both in operational efficiency and user responsive services.

13. **Inadequate depot and maintenance facilities.** In a rush to launch or expand city bus services, in most cities, the provision of key support infrastructure for the new fleet, such as depot facilities which tend to be land intensive, was overlooked. Existing depots were either operated at over capacity or buses parked out in the streets in the open without proper access to maintenance facilities. The depot equipment in use was often inefficient and obsolete. In new

[8] List of Bus Funding Scheme Reforms including (i) Set up a SPV to manage bus services, (ii) set up a Unified Metropolitan Transit Authority (UMTA) to coordinate urban transport and use PPP for operations, (iii) Use of ITS and integration of multi-modal systems, (iv) Bus prioritization at intersections, dedicated/demarcated lanes for buses, (v) Designate a nodal department for urban transport, (vi) Formulate a policy on parking and advertising and its implementation plan, (vii) Formulate a policy on Transit Oriented Development, (viii) Set up an Urban Transport Fund, (ix) Waive/reimburse state and local taxes on public transport, (x) Mechanism for periodic revision of public transport fares, (xi) Set up a Traffic Information and Management Centre.

[9] Public Transport Review of Cities: User Satisfaction Survey, Draft Report, 2014, funded by AusAid Trust Fund and executed by The World Bank (USS)

[10] State Transport Undertakings Profile & Performance 2007-2012, Central Institute of Road Transport (CIRT)

cities, often services were launched without providing any depot facilities. As a result, the relatively new fleet of buses was already looking old and run down within 2-3 years of operation. The breakdown rate worsened between 2009 and 2012 from 0.77 to 0.97 per 10,000 km among existing urban operations, suggesting a further decline in the reliability of services being offered. MTC of Chennai recorded the lowest breakdown rate at 0.002 per 10,000 km[11].

14. **Low bus fuel efficiency levels.** The average fuel efficiency for the urban bus segment in 2012 was 3.82 kmpl compared to 5.05 kmpl for the long distance bus segment[12]. Historically, the fuel efficiency gains that are possible from better maintenance and better driving skills have not been recognized and taken advantage of, largely due to a mindset that has been more concerned with fleet utilization rather than improved fuel economies. APSRTC, one of the best performing STUs in the area of fuel efficiency, recorded an average performance of 4.61 kmpl from its urban operations. The new fleet with higher specifications (viz. low floor, air-conditioned, higher horse power) that is being procured under the Bus Funding Scheme is also responsible for delivering lower averages. Experience elsewhere suggests that interventions aimed at improving the fuel efficiency of public bus services (through improved maintenance and driver training) alone could provide fuel savings of the order of 7-15 percent in the operation of such buses[13] and corresponding savings in carbon emissions. Such improvements also have a direct impact on the financial profitability of the bus operator. The lack of adequate depot facilities is also contributing to the poor performance. Fuel efficiency pilots targeting improved maintenance and driving practices have been initiated under this project in four cities (Bhopal, Chandigarh, Jaipur and Mira-Bhayandar) and the targeted depots indicate a 4-8 percent improvement in fuel performance between October 2013 and March 2014[14].

15. **Need for attractive services and scientific service planning and rationalization.** Traditionally, bus public transit was planned for those that did not have other options for travel and the focus was on keeping costs low and services affordable. However, there is a paradigm shift, and the role of public transit has now expanded to also serve people that have choices. As such, it becomes important to provide a better quality of service that is attractive, appealing, safe and convenient and will attract the 'non user' away from personal modes and other alternatives. The survey of non-users of city bus services indicated that those not currently using bus services to travel in cities did not use them as they found them overcrowded, more time taking, causing air and noise pollution and not available during their commute time. [15] However, making services attractive also means higher costs.

16. In many cities the bus route structuring is old and has not kept pace with the changes in the travel demand. A scientific route planning and rationalization exercise could help better align the route network with the current demand patterns resulting in more attractive routes and connections, travel time savings, and better utilization of the existing fleet and other resources with its resultant positive impact on the financials of the bus company.

[11] State Transport Undertakings Profile & Performance 2007-2012, Central Institute of Road Transport (CIRT)
[12] State Transport Undertakings Profile & Performance 2007-2012, Central Institute of Road Transport (CIRT)
[13] Best Operational and Maintenance Practices for City Bus Fleets to Maximize Fuel Economy, 2011 Guidance Note, ESMAP
[14] Capacity Building Program in Fuel Efficiency funded through ESMAP Trust Fund
[15] Public Transport Review of Cities: User Satisfaction Survey, Draft Report, 2014, funded by AusAid Trust Fund and executed by The World Bank (USS)

17. **Manual operations planning and management.** Most city bus services in India, including those operating in large metros, use limited technological aids to help plan and manage operations. Modern and integrated fleet, inventory, maintenance and human resources management systems can significantly help improve efficiencies and reduce costs, especially above a certain threshold level of operations. Analysis of passenger data and its integration with improved and more demand responsive operations planning are some of the positive features of these modern management information and decision support systems. Similarly, user friendly aids such as Passenger Information Systems (PIS) can improve the attractiveness of public transit by providing timely information to potential users on the expected time of arrival of the next bus. Very few Indian cities have so far been successful in implementing these advanced Intelligent Transport Systems (ITS) in the country. In fact, Mysore, one of the SUTP demo cities, is one of the first cities to implement ITS on its city wide bus service.

18. **Competition from unorganized sector.** In the hitherto poorly serviced cities or those without any formal city bus transport, the unorganized sector had proliferated and catered to the travel demand of the residents albeit in an unstructured and chaotic manner. In the post Bus Funding Scheme scenario, these unorganized services, whether in the form of minibuses, maxi cabs or shared auto-rickshaws, continue to ply alongside the newly launched city services. The user satisfaction, in general, was lower with these unorganized services compared to the formal city bus services being operated usually for reasons of overcrowding, safety and security and availability on only specific routes. Over 40 percent of the respondents of the user satisfaction survey used shared auto rickshaws in the absence of city bus services, pointing to the important role being played by this form of transit in the city's mobility.[16]This head on competition is not only harmful for both types of operators but also for the passengers. Private operators being contracted by SPVs are even more disinclined to take on the market risk in such situations. International experience suggests that there may be sustainable options for integrating the unorganized services to provide an improved overall service to the users.

19. **Gender perspectives on city bus transport.** The transport needs of women tend to differ from those of men and traditional transport planning typically tends to ignore these specific requirements often limiting access of women to economic opportunities, employment, healthcare, education etc. Public transport if not designed well can obstruct mobility for women. Personal safety considerations, vehicle and fleet designs, trip schedules are some of the factors that need careful consideration and incorporation into the project design. The user satisfaction survey indicates that the proportion of women travelers was higher in off peak hours and that they used city bus services for a higher proportion of their trips compared to male passengers. Women found the city bus services (i) overcrowded with its attendant issues of personal safety, problems with boarding and alighting, seating/ standing space etc. (ii) non punctual and (iii) in need of wider coverage. They also indicated a preference for CCTV cameras, security presence etc. in the buses to prevent misbehavior by fellow passengers and crew.[17]

[16] Public Transport Review of Cities: User Satisfaction Survey, Draft Report, 2014, funded by AusAid Trust Fund and executed by The World Bank (USS)
[17] Public Transport Review of Cities: User Satisfaction Survey, Draft Report, 2014, funded by AusAid Trust Fund and executed by The World Bank (USS)

20. **Institutional capacity of new SPVs.** A large number of cities launching new bus services constituted SPVs as per the requirement of the Bus Funding Scheme. These SPVs typically enjoy a stake of the municipal corporation, development authority and sometimes the STU. In most instances the newly created special purpose vehicles for operating the city bus services are sparsely resourced both in terms of human resources and financial resources. There is a dearth of full time staff and bus operations expertise is largely absent. Since the operations are usually through private operators the general mindset tends to be that the SPV need not be fully staffed. However, without adequate capacity for service planning and performance management there is a real danger of poor quality services being operated not very different from the unorganized operations in the past, further fueling the shift to personalized modes of transport.

21. **India GEF Efficient and Sustainable City Bus Services (ESCBS).** The proposed project is designed to complement the baseline project, Bus Funding Scheme of the Government of India under the National Urban Renewal Mission (JnNURM), through additional activities that would help realize its full potential. It also deepens and takes forward the initiative under India SUTP for promoting public transport by focusing more comprehensively on city bus transport and treating the multiple issues - operational, financial, regulatory, fiscal - facing it. This proposed project intends to fund the incremental cost of activities aimed to enhance sustainability, energy efficiency, and quality of city bus services, and therefore the potential for GHG emissions reductions from the baseline project. Under the baseline project scenario, GoI and state governments of India would provide financial support to city bus services through replenishment of about 25,000 buses under the overall JnNURM program. In addition, the impact of the capacity development initiatives for urban transport planning, taken up under the SUTP and the demonstration projects in 5 cities would also begin to be felt at the national, state and city levels.

22. Based on an assessment of the key issues in the urban bus sector, the Project is designed to specifically focus on the following critical areas:

- Review of the legal, regulatory, institutional and fiscal constraints to operation of sustainable city bus services, identification of areas for reform and development of policy notes for initiating deliberations at the national, state and city levels for addressing these issues
- A comprehensive capacity building program for the nascent urban bus sector including training programs, knowledge and exchange events for sharing of best practices and experiences among public and private stakeholders.
- Targeted city level modernization interventions to showcase low cost high impact initiatives in bus operations and user responsive initiatives: (i) modern depot equipment, (ii) intelligent transport systems including management information systems, (iii) scientific route and business planning, (iv) bus fuel efficiency through improved maintenance and driver training practices, (v) options for mainstreaming informal / unorganized transit, (vi) marketing and branding (vii) capacity building and training etc.

23. **Selection of cities.** The city demonstration projects were selected through a competitive process with emphasis being on medium sized cities (population between 1-4 million) where a clear commitment to the project is fully demonstrated by the city/state leadership while ensuring geographic spread. Emphasis was also placed on a comprehensive set of modernization measures

so that each of these measures complement one another and the full impact of all such measures becomes visible. MoUD in agreement with the Bank, selected the following four cities as the demonstration cities under the Project: (i) Mira Bhayandar (Maharashtra), (ii) Chandigarh (Union Territory), (iii) Jaipur (Rajasthan), and (iv) Bhopal (Madhya Pradesh).

C. Higher Level Objectives to which the Project Contributes

24. The proposed project is fully aligned with the Country Partnership Strategy (CPS) for FY13-17 (Report No. 76176-IN; April 11, 2013) to support poverty reduction and shared prosperity in India. The Bank will assist India in dealing with the following inter-related challenges: (i) sustaining high growth; (ii) making growth inclusive; (iii) increasing the effectiveness of service delivery; and (d) ensuring development is sustainable, and the this Project shall contribute to addressing all four challenges.

25. The project supports the second engagement area of the CPS of *"transformation"* which has a focus on rural-urban transport and particularly on urbanization. This engagement area also places increased emphasis on supporting the efforts of national, state, and city governments to improve the management and livability of medium-sized cities and has as one of its outcomes "improved urban transport services" focusing on modernization of city bus services through improved fuel efficiency, rehabilitation of infrastructure, use of new technology initiatives and technical assistance for greater operational and financial viability, institutional and capacity development, which are the principles that also underlie support under this project. The proposed GEF financing for the project is consistent with the overall objectives of the climate change focus area.

26. The Project is in line with India's National Communication to the UNFCC (2012) which identifies the need for developing sustainable and efficient urban transport. The National Mission on Sustainable Habitat identifies Promotion of Urban Public Transport as one of the three pillars as well as the National Urban Transport Policy 2006, which emphasizes priority to public transport facilities and non-motorized modes over personal vehicles. GOI took the initiative in financing and implementing the National Portfolio Formulation Exercise (NPFE), and this Project is a part of India GEF5 programming plan, which resulted from the NPFE.

27. The "finance plus" agenda for this operation will be reflected through several dimensions of the project's design: (i) *Promoting Energy Efficient, Low-Carbon Transport and Urban Systems* through modernization of bus services in selected Indian cities, aimed at making these services more efficient and attractive to users and thereby lead to: (a) increased share of energy efficient and low carbon transport usage, (b) improved energy efficiency in the movement of non-public transport traffic due to reduced congestion, (c) reduced air pollution, easier access to affordable and efficient transport, and other local issues; (ii) *Mainstreaming gender* through incorporation of the gender dimensions (e.g. personal safety considerations, fleet designs, depot designs, trip schedules, training and sensitization of drivers and conductors).

II. PROJECT DEVELOPMENT OBJECTIVES (PDO)

A. PDO and Global Environment Objective (GEO)

28. The project's development objective is to improve the efficiency and attractiveness of city bus transport and reduce greenhouse gas emissions in the demonstration cities.

Project Beneficiaries

29. The direct beneficiaries of this Project shall be the users of public transport in the demonstration cities. Access to safe, affordable and efficient bus public transport will in particular improve access to economic opportunities for the urban poor leading to significant socio-economic impacts. Two of the four demonstration cities are the state capitals of low income states of Rajasthan and Madhya Pradesh and the impacts of improved mobility are likely to result in large gains for the overall local economy.

30. The project would also focus on women as a special beneficiary group, and promote women bus ridership through a focus on aspects currently obstructing their mobility such as personal safety considerations, trip schedules, depot layouts, behavior of conductors and drivers, etc.

31. In addition, the urban bus sector community in general and the demonstration city bus project in particular would benefit from the capacity building impact of the Project.

PDO Level Results Indicators

32. The key results indicators to demonstrate achievement of the PDO are as follows:

- Reduction in GHG emissions as a result of adoption of modernization initiatives by project cities
- Improved bus energy efficiency in kilometers per liter
- Reduction in Rate of breakdowns per 10,000 km
- Increased user satisfaction of women for travel on buses
- Project beneficiaries[18] (core sector indicator)

33. A more detailed list of project indicators and their respective baseline and annual target values can be found in Annex 1: Results Framework and Monitoring.

III. PROJECT DESCRIPTION

A. Project Components

34. The project comprises (i) a national capacity building component to be implemented by MoUD and another on (ii) city demonstration projects with select cities:

35. **Component 1: National Capacity Building for Urban Bus Sector (GEF US$ 0.7M, co-finance US$ 2.6M):** As part of this component, policy, regulatory and fiscal constraints will be

[18] Increase in number of people using improved public transport services; increase in proportion of women using public transport services

reviewed at national, state and city levels to promote efficient and high quality city bus services and policy notes developed for discussion and debate among key stakeholders on areas of reform. It will also cover capacity building initiatives involving development of knowledge materials, training activities, knowledge sharing and cross learning events, dissemination of best practices etc. in cutting edge areas aimed at development of the overall urban bus sector in the country.

36. **Component 2A: City Demonstration Projects – Physical Improvements (GEF US$ 6M, co-finance US$ 99.17M):** This component shall support physical improvements targeted at modernizing the city bus services in demonstration cities including (i) modern depot equipment for improved maintenance and life of buses, (ii) modern Intelligent Transport Systems (ITS) and Management Information Systems (MIS) - to make the services more user friendly and for improved planning and management of operations to enable optimal use of resources.

37. **Component 2B: City Demonstration Projects - Technical Assistance and Capacity Building (GEF US$ 2.1M, co-finance US$ 0.78M):** The capacity building and technical assistance component is targeted at supporting the modernization efforts of selected demonstration cities. These shall include the following kinds of activities: (i) institutional strengthening, capacity building and training, (ii) business planning including route planning and rationalization, (iii) marketing and branding, (iv) technical support with private sector participation including mainstreaming of informal sector, (v) technical support with ITS/MIS, (vi) vehicle and driver performance management with a view to improving fuel efficiency, (vii) incremental operational expenses.

38. **Project Management (GEF US$ 0.4M, co-finance US$ 1.30M):** This involves overall project management by PMU within MoUD.

B. Project Financing

Lending Instrument

39. The ESCBS project shall use the investment project finance (IPF) lending instrument.

Program Cost and Financing

40. The total program cost is estimated at US$ 113.0 million, with US$9.20 million from the Global Environmental Facility (GEF) and US$ 3.9 million from MoUD towards Component 1 and PMU Project Management, and balance US$ 99.17 million provided by the Government of India and State/City Governments as parallel costs under the GoI Bus Funding Scheme etc.

Table 1: Project Cost and Financing - Project Costs by Component *(all in USD Million)*

	Activity	GOI*	State+	PIU@	GEF	Total
A Component 1 - National Capacity Building and Technical Assistance						
1	Policy Notes, Training Programs & Knowledge Transfer	2.6	0	0	0.7	3.27
	Sub-Total (Component 1)	**2.6**	**0**	**0**	**0.7**	**3.27**
B Component 2A - Demo projects						
1	**Modern Buses**	**49.82**	**27.26**	**15.55**	**0.00**	**92.64**
2	**Depot Modernization**	**2.46**	**1.26**	**1.47**	**2.02**	**7.21**
	a) Construction of new Depots	*2.46*	*1.26*	*1.47*	*0.00*	*5.19*
	b) Depot Equipment	*0.00*	*0.00*	*0.00*	*2.02*	*2.02*
3	**ITS Upgradation (MIS/PIS/AVLS/AFCS)**	**0.67**	**0.67**	**0.00**	**3.98**	**5.32**
	a) MIS	*0.00*	*0.00*	*0.00*	*2.94*	*2.94*
	b) PIS/AVLS/AFCS	*0.67*	*0.67*	*0.00*	*1.05*	*2.39*
	Sub-Total (Component 2A)	**52.95**	**29.19**	**17.02**	**6.00**	**105.17**
C Component 2B - Capacity Building at City/PIA level						
1	Project Preparation Costs	0.46	0.13	0.19	0.00	0.78
2	TA for ITS/ MIS implementation, service & business planning, marketing, fuel efficiency etc.	0.00	0.00	0.00	1.74	1.74
3	Capacity building and incremental operating costs	0.00	0.00	0.00	0.36	0.36
	Sub-Total (Component 2B)	**0.46**	**0.13**	**0.19**	**2.10**	**2.88**
	PMU Project Management Cost	**1.30**	**0.00**	**0.00**	**0.40**	**1.70**
	Total Financing Required	**57.28**	**29.33**	**17.21**	**9.20**	**113.0**

C. Lessons Learned and Reflected in the Project Design

41. **Obtain stronger commitment through greater involvement of all stakeholders in the preparation process.** Especially for multi-city projects, it is important that all stakeholders, including participating state and city level governments demonstrate strong commitment to ensure successful implementation of the project. This can be ensured through deeper involvement of national, state and city level officials and other stakeholders, including NGOs/civil society in the project preparation and implementation process, which would help ensure: (i) a better understanding of their constraints so that the recommendations developed as part of the project are more practical and implementable on the ground, and (ii) changes in incumbency/leadership do not adversely impact interest in the project. The experience from SUTP also points towards the need for a stronger engagement with the state government from project inception.

42. **Enhance development impact by supporting capacity building through a multi-pronged effort.** This project focuses on capacity building by providing support to both capacity development activities and preparation and implementation of city demonstration projects, aiming to enhance the capacity development impact of the project. This top down and bottom up approach has in the past proven to be effective. The easy access to industry best practices, resources to convene knowledge fora, organize workshops and events to nurture a sector fraternity at the MoUD level, combined with learning by doing and hands on experience by the city agencies supported by experts is a powerful way of ensuring sustainability.

43. **Pilot similar initiatives in more than one city to develop local solutions and facilitate cross learning.** Experience with other multi-city projects has shown that it is useful to pilot similar initiatives in more than one city as this facilitates cross learning through sharing of experiences. This could be done using dissemination and discussion forums such as workshops, visits to other cities, etc. This would enable cities to discuss specific issues and problems faced at their local levels and seek solutions from each other.

44. **Strengthen national level project management.** The national government plays a critical role in coordinating project implementation activities and ensuring that project quality and fiduciary controls are met. Experience with similar projects such as SUTP has shown that a strong PMU at the national level, supported by a PMC, is required to help the government to fulfill its responsibility for the project and ensure proper oversight, supervision, monitoring of the various project preparation and implementation activities carried out by different local agencies, and enable knowledge exchange and dissemination within the project cities as well as across the country. This becomes critical to supplement the weak capacities at the local level.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

45. Arrangements similar to the ongoing India Sustainable Urban Transport Project (SUTP) have been employed for this GEF Project as well. The Project Steering Committee, consisting of the Secretary of MoUD (chairperson) and senior officers from MoUD, Department of Economic Affairs (DEA), MoEF, MoSRTH and other relevant Ministries, will guide and oversee the implementation of the Project through the national Project Management Unit (PMU) set up at the MoUD. The PMU is headed by a National Project Director, who is the Joint Secretary (Urban Transport) from MoUD and also the Member Secretary of the Steering Committee. The PMU shall comprise a full time Project Manager supported by multi-disciplinary team of specialists/experts or agencies. The PMU is responsible for advisory and technical assistance to the participating cities and state implementing agencies, coordination of the entire program at national level, and overall monitoring and evaluation. The MoUD with support of the PMU is also responsible for implementation of all activities under the Component 1, including procurement, financial management, as well as monitoring and evaluation.. The Project Steering Committee is already in place and been guiding the preparation of the Project. PMU for SUTP is also responsible for ESCBS and is functional.

46. The participating state governments, through their designated Implementing Agencies (PIAs), will be responsible for implementation of their city demonstration projects. A Project

Implementation Unit (PIU) led by a project manager has been established at each city level PIA to manage the day-to-day project implementation activities, including procurement, financial management, social and environmental management, as well as monitoring and evaluation.

B. Results Monitoring and Evaluation

47. The Results and Monitoring Framework developed for the project is included in Annex 1. The monitoring and evaluation will be the responsibility of the PIUs and PMU. The PDOs will be monitored and reported through periodic World Bank implementation support missions. The PIUs will conduct regular inspections to prepare quarterly progress reports.

C. Sustainability

48. Public transport systems are still relatively less developed in India. Considering the speed of urbanization and motorization currently and in the future, city bus services will have to assume significant responsibility within the urban transport system in the country. There is likely to be public expectation for better service, thus good examples would be of great use to the operators of city bus services.

49. The sustainability of the project will be assured from a project design perspective by strategically positioning it for abundant future replication by cities not only in India but also abroad because of a multi-pronged approach to modernizing city bus services, which would yield higher chances for successful demonstration and hence replication. In addition, the emphasis on low cost high impact interventions ensures a higher probability of their sustainability.

50. JnNURM, has helped create awareness and recognition of the urgent need for attention to urban areas and financial assistance to address the issues. With it being in place for more than 7 years, there is an established network of government organizations working in the urban transport field in India at national, state and local levels. The project can build on the network to share the experience gained through the implementation including good practices, effective technologies, and lessons learned especially through the Component I which is designed for knowledge sharing and dissemination of best practice.

51. The project will be implemented as collaboration between GEF, the World Bank, MoUD, and participating state and local governments in India. Relationships among these agencies have already been established through past collaborations including SUTP, leading to a better understanding of the urban transport environment that India is faced with. This makes it easier to extract the outcomes that could be utilized in a new environment.

V. KEY RISKS AND MITIGATION MEASURES

A. Risk Ratings Summary Table

Risk Category	**Rating**
Stakeholder Risk	**Moderate**
Implementing Agency Risk	

- Capacity	**Substantial**
- Governance	**Moderate**
Project Risk	
- Design	**Low**
- Social and Environmental	**Moderate**
- Program and Donor	**Low**
- Delivery Monitoring and Sustainability	**Moderate**
- Other (Optional)	--
- Other (Optional)	--
Overall Implementation Risk	**Substantial**

B. Overall Risk Rating Explanation

52. The overall risk rating during implementation of the project is rated Substantial. Specific risks have been listed below that may affect implementation of the project and its long term outcome:

- GoI and State Governments do not take forward the recommendations of the Policy notes in regard to regulatory, fiscal and legislative improvements for city bus services - this risk will be mitigated by greater involvement of the stakeholders during the analysis stage and securing a better understanding of their constraints so that the recommendations are more practical and implementable.
- Lack of sustained commitment of the city leadership towards the project - changes in leadership, for example, tend to impact the commitment to the project. To mitigate this, deeper involvement of state and city level officials and other interest groups, including civil society, will be ensured so that changes in incumbency do not adversely impact interest in the project. The implementing agency capacity risk is rated as 'Substantial'.
- Project understanding and awareness about related issues may hamper the progress at the implementing agency level. To mitigate this, number of workshops and events will be planned at various stages of the project so that the officials from all the participating agencies can learn and become aware of the scope of project.
- Demonstration and pilot projects will not be replicated. A well designed dissemination strategy will be provided for in the project.
- Risks relating to sustainability of improvements carried out under the project. This would be mitigated by providing adequate training for staff at PIAs to ensure that the systems are fully understood, internalized and used beyond end-of-project and ensuring that the fuel efficiency measures envisaged are simple and low cost and therefore are more likely to be sustained.
- Some cities have inadequate FM systems and limited World Bank procurement experience. Mitigation measures have been designed based on detailed FM/Procurement assessment and will be agreed with MoUD and participating city agencies. Efforts would

be made to use existing systems to the extent possible, such as e-procurement systems in use in cities/ states, etc. and to supplement gaps through hiring of experts in relevant areas.

53. The detailed Operational Risk Assessment Framework (ORAF) matrix is provided in Annex 4.

VI. APPRAISAL SUMMARY

A. Economic and Financial (if applicable) Analysis

54. As for all GEF funded projects, an **incremental cost analysis** has been undertaken which accounts for GHG reduction impacts of the project. To fully evaluate the potential benefit of the GEF investment, the analysis of Global Environmental Benefits (GEBs) is carried out at two levels.

55. **Direct effects analysis.** The first level examines the likely GHG benefits of specific investments made by the GEF funds directly for the four pilot cities. Those four cities will conduct a collective of activities to modernize their bus services, of which the following (including but not limited to) would generate direct fuel saving and carbon emission reduction benefits: (i) application of ITS and MIS technology, (ii) bus depot modernization by use of better equipment, (iii) service planning and route rationalization, and (iv) fuel efficiency improvement program amongst others. The direct effect analysis assumes an increase in public transport network coverage, increase in ridership, expected fuel efficiency gains as a result of improved maintenance and driving practices, expected modal shift to Public Transport from unorganized transit, IPT and personalized vehicles in the four demo cities.

56. **Indirect effects analysis.** It is expected that this project will catalyze replication of sustainable transport projects in multiple cities or regions, and remove barriers and bring sustainable transport technologies to a wider market, and thus it can – indirectly - accrue large GHG reduction impacts. The full incremental cost analysis is detailed in Annex 6. A more detailed analysis shall be undertaken by the PMU for more accurate estimates of the Project GEB.

Lifetime direct GHG emissions avoided in tons of CO_2	229,109
Lifetime direct post-project GHG emissions avoided in tons of CO_2	444,741
Lifetime indirect GHG emissions avoided (bottom-up) in tons of CO_2	2,291,092
Lifetime indirect GHG emissions avoided (top-down) in tons of CO_2	7,458,180

B. Technical

57. **Demonstration City Selection**. The priority for MoUD was to ensure wide demonstration impact across the country around sustainable city bus services for the beneficiaries of the Bus Funding Scheme. The pilot cities for the city demonstration projects were selected through a competitive process and where a clear commitment to the project is fully demonstrated by the city/state leadership. Emphasis was also placed on a comprehensive set of modernization

measures so that each of these measures complement one another and the full impact of all such measures becomes visible. Accordingly in May 2012, MoUD wrote to all the JnNURM cities soliciting expressions of interest. Proposals for modernization were received from 20[19] cities for participation in the GEF Project. The proposals were reviewed and a meeting organized in July 2012 where all interested cities were invited to present their proposals. Discussions were held with city/bus company officials on the proposals and based on these 10[20] cities were shortlisted for further discussion. The criteria employed for selection were (i) demonstration potential of the proposal; (ii) commitment of the implementation agency; and (iii) geographic coverage. Of these 10 cities seven cities submitted revised proposals based on the suggestions and comments shared. In addition, new proposals were received from Chandigarh and Jaipur for consideration under the project both of which were shortlisted. Thereafter, each of these 9 cities were visited and detailed discussions held on their operations, facilities, issues and challenges and areas for improvement.

58. In addition to the previous criteria, MoUD officials prioritized the criteria of small to medium sized cities as the impacts of such assistance would be highest in these categories of cities. MoUD in agreement with the Bank, finalized the following four cities as the demonstration cities under the Project: (i) Bhopal (Madhya Pradesh) (ii) Chandigarh (Union Territory), (iii) Jaipur (Rajasthan), and (iv) Mira Bhayandar (Maharashtra). A formal intimation to the cities of their selection was made by MoUD in August 2013.

59. **Fuel Efficiency Pilots:** Fuel efficiency pilots were initiated under a technical assistance activity 'Capacity Building Program in Bus Fuel Efficiency' funded by the Energy Sector Management Assistance Program (ESMAP), with the objective of customizing the ESMAP Guidelines[21] to the India context and making available necessary knowledge materials for training and capacity building on the subject for bus operators in Indian cities. Accordingly the four demo cities (Bhopal, Chandigarh, Jaipur and Mira Bhayandar) were chosen for launching the pilots in November 2013, to test and further refine the existing ESMAP manual. The initial round of targeted bus maintenance procedures showed marked improvements in fuel performance compared to the targeted driver training. This may be a reflection of the poor depot infrastructure in general and increased overall scrutiny on fuel efficiency as a result of the pilot, and the greater difficulty in changing entrenched driving habits. The overall fuel efficiency has improved gradually for all four cities showing an improvement in fuel performance of the targeted depot between 4-8 percent between October and March 2014. This is expected since the protocols affect a small portion of the buses and drivers. Larger improvements will only be seen after months of applying the protocols. The timely reporting of fuel data and its quality continues to be an issue.

[19] List of cities that submitted proposals included Belgaum, Hubli-Dharwad, Tumkur, Bangalore (Karnataka), Lucknow (Uttar Pradesh), Raipur (Chhattisgarh), Indore, Bhopal (Madhya Pradesh), Jaipur (Rajasthan), Surat, Rajkot (Gujarat), Mira Bhayandar, Navi Mumbai, Pune, Mumbai (Maharashtra), Chennai/ MidTier City (Tamil Nadu), Vizag, Vijaywada, Tirupati (Andhra Pradesh), Imphal (Manipur).

[20] List of shortlisted cities included Lucknow, Raipur, Bhopal, Surat, Rajkot, Mira Bhayandar, Navi Mumbai, Bangalore, Chennai/ MidTier City from state, and Tirupati.

[21] Transit Bus Operational and Maintenance Practices to Maximize Fuel Economy, ESMAP, 2011, targeting improved bus maintenance and driving practices.

C. Financial Management

60. *Summary of Financial Management Assessment*. This project is strategically structured to complement the bus funding scheme of GoI under JnNURM and will be implemented with the involvement of the Union Government through MoUD supported by four state level agencies under their respective state governments. It is important to note that the implementation arrangements envisage a Grant Agreement with the Government of India and separate Project Agreements with the respective states.

61. The project will be operated at two levels of implementing agencies under the overall supervision of the MoUD which will extend oversight on all the PIAs, while the actual implementation responsibility will rest with the PIAs and the concerned state governments.

- **Level 1: National level**: Ministry of Urban Development (MoUD), Government of India (GoI) for the overall management of the ESCBS project along with implementation of Component 1.
- **Level 2: State level**: The ESCBS project to be implemented in the cities of Bhopal through BCLL, Chandigarh through CTU, Jaipur through JCTSL and Mira Bhayandar through MBMC. These cities will be responsible for implementation of Component 2A and 2B.

62. As a part of preparation activity, FM assessment of all PIAs was conducted, which included detailed review of FM arrangements.

63. FM Strengths, Weaknesses and Mitigation Arrangements

a) ***Strengths***: Due to the involvement of MoUD in existing Bank funded project Sustainable Urban Transport Project (SUTP), it is adequately exposed to the Bank financial management procedures in terms of budgeting, reporting, accounting and related parameters. There are adequate systems and processes in place, which are expected to facilitate implementation of project activities.

b) ***Weakness****:*

i. Varied capacity in PIAs participating in the project: The FM assessment for this project suggests capacity weaknesses marred by weak FM staffing (most of the staff being contractual). There is significant difference in the statutory requirements of the PIAs, which also contributes to differences in financial management capacities, practices and standards.

ii. As the project is dealing with the PIAs which do not have access to the state budget directly, it poses certain challenges. The ability of the PIAs to formulate AWP and seek necessary budget allocation every year from the state government is a concern. Hence, the timeliness of fund flow is an issue.

iii. As the project is being funded by multiple agencies (GEF, GoI, State, corporations and internal funding from the PIAs), the availability of funds from all sources in a timely and coordinated basis could be a constraint.

iv. Also, the maintenance of accounts for project, depicting the sources and uses of funds for entire project cost, will entail substantial efforts on the part of the PIAs.

c) *Mitigation Measures:* The assessment suggests capacity weaknesses marred by weak FM staffing (most of the staff being contractual). The difference in statutory requirements of each PIA also contributes to differences in financial management capacities, practices and standards. Therefore, in order to ensure satisfactory FM arrangements to support GEF funds, ring fencing of arrangements is required.

64. The following table summarizes key concerns and possible mitigation measures.

Table 1 – Concerns and Suggestive Mitigation Measures

Concerns	Suggestive Mitigation Measures
Capacity weaknesses marred by weak FM staffing (most staff being contractual).	Presence of Accountants throughout the project life at all the PIAs, with qualifications and experience acceptable to the Bank.
Formulation by PIAs of AWP and necessary budget drawal each year is a concern.	Creation of budget head for the project and providing budgetary resources by the state every year Operation Manual to provide detailed guidelines for budgeting and flow of funds
Multiple funding (GEF, GoI, State, corporations and internal funding from PIAs) posing concern on availability of funds from all sources in a timely and coordinated manner.	A Participation Agreement is being signed by each state with the respective PIA to ensure timeliness of flow of funds. In case of GEF: (a) agreement with the respective state for transfer of funds through State treasury; and (b) dedicated budget head in the state budget for the project.
Accounting and auditing of entire project cost will be a challenge	Separate bank account for the project and due diligence will be limited to the part of the project cost funded by GEF grant

65. This assessment concludes that subject to the above mentioned minimum procedures and oversight arrangement being in place, FM arrangements may be considered **satisfactory** to support the GEF funds. The overall FM risk rating for the project is 'Substantial'.

66. Detailed FM arrangements are described in Annex 3.

D. Procurement

67. Procurement of goods, works and non-consulting services required for the proposed project and to be financed out of the proceeds of the Financing shall be done in accordance with the requirements set forth or referred to in the Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers (January 2011). Selection of consulting services required for the proposed project and to be financed out of the proceeds of the Financing shall be done in accordance with the requirements

set forth or referred to in the Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits by World Bank Borrowers (January 2011); and the provisions stipulated in the Financing Agreement.

68. The Ministry of Urban Development (MoUD) is the nodal agency for implementing this project. A Project Management Unit (PMU) has been established at MoUD which is operating under the overall direction and guidance of the Steering Committee. The proposed project will be implemented in 4 cities.. Each city shall establish Project Implementation Units (PIU): Bhopal- (Bhopal City Links Limited (BCLL); Chandigarh- Chandigarh Transport Undertaking (CTU); Jaipur- Jaipur City Transport Service Limited (JCTSL); and Mira Bhayandar- Mira Bhayandar Municipal Corporation (MBMC).

69. As a part of preparation process, procurement risk assessment was carried out in all the cities and accordingly, risk mitigation measures were proposed based on the outcome of the assessment. The initial overall risk rating for the proposed project is high. However, the residual risk rating after taking proposed mitigation measures will stand at "**substantial**".

70. The use of e-procurement platform for the proposed project has been discussed during preparation stage. All implementing agencies shall use e-procurement portal for conducting procurement. Chandigarh, Mira Bhayandar and Jaipur will use NIC e-procurement system, which has been assessed and approved by the Bank to be used for all Bank funded project across all states in India. Bhopal is using a different system (E-proc), which will be assessed by the Bank. Till such time, as the assessment is complete, Bhopal will use the NIC e-procurement system.

71. The preparation team also discussed use of procurement plan execution software (SEPA) for the proposed project to strengthen the procurement monitoring system. The Bank will arrange training on use of SEPA to the respective PIUs once the focal staffs are identified for the project.

72. Trainings (study tours, workshops, training for staff, etc.) and operational cost will be met from the incremental cost following recipient's procedures.

73. Details of implementation arrangements for procurement are given in Annex 3.

E. Social (including Safeguards)

74. World Bank policies of Environmental Assessment, Physical Cultural Resources, and Involuntary Resettlement will be applicable in sub-projects involving civil construction activities and removal of squatters/encroachers/cultural property of local significance. The civil construction activities are limited to Depots to be supported under the project in the candidate cities. The Environmental and Social Management Framework prepared and disclosed for the project provides the resettlement policy framework, consultation framework, process of preparation of resettlement action plan, grievance redressal framework, institutional arrangement and budget estimates. Project would only choose those depots where the land is already in possession of the local urban authority. Hence, land acquisition is not envisaged under this project. However, need for displacement of squatters or encroachers on or around the boundary of depot lands cannot be completely ruled out. Hence, all the sub activities as part of the overall

project in the select cities has been/will be subject to social screening to identify/confirm availability of land and need for resettlement, if any. Any proposed site requiring displacement shall prepare a detailed social assessment and preparation of Resettlement action plan acceptable to the Bank. A specific chapter named "social assessment and management plan" is being prepared as part of the DPR for the respective cities. Detailed information shall also be provided on the current status of available land over which the activities under the project shall be supported as part of the DPR.

75. **Incorporating Gender Perspectives.** Several initiatives are already being taken by the cities to incorporate gender perspectives. Some of the initiatives reported were: a) reserving the seats for ladies, old and disabled passengers in the buses; b) Providing women only bus services for office goers and female students during specific hours of the day; c) Reserving 30 percent positions in recruitment of drivers and conductors. However, these initiatives vary from one city to the other in terms of its success. The City authorities are keen to take further steps such as providing CCTV cameras in the buses and awareness campaign. As a part of the components under GEF grant, the project would support initiatives such as: a) Depot modernization and layout such as making separate resting space for women employees and toilets, as relevant; b) communication and outreach activities; and c) capacity building and training. The cities would also be reporting on the current status of gender initiatives and further action plan as part of the Social Assessment and management plan chapter in the DPR.

76. A mid-term audit is planned to review the implementation of ESMF and Gender action plan and modifications as required and acceptable to bank.

77. The ESMF which includes a generic Environmental Social Management Plan has been disclosed in local language in the respective cities. ESMF has also been disclosed at Bank's Infoshop.

F. Environment (including Safeguards)

78. Since the activities under the project are mostly confined within respective depot premises, after appropriate siting is confirmed, most adverse impacts of activities supported by the project pertain to the construction and operation of depot facilities within premises under control of the implementing agencies. Siting related considerations are currently significant for Mira-Bhayandar due to its proximity to the sea, and presence of mangroves near some of the candidate sites. In other cities, siting related issues are not expected to be significant since most sites under consideration are already existing facilities, or ear-marked as such. During the construction of the facility, in addition to safety of workers and other users, impacts due to some cutting of trees can also occur in some sites. During operation, issues relating to the proper handling of chemicals, safety of workers, increased noise in case of new facilities, and energy consumption have been identified and are addressed under the project. The project supports several positive environmental impacts – improved buses, reduction in greenhouse gas emissions through improved fuel efficiency, energy efficient appliances, and use of solar panels as source of power in select cities where appropriate climatic conditions exist.

79. An Environmental and Social Management Framework (ESMF) has been prepared to guide the management of environmental issues during preparation and implementation of the project,

as new cities and/or sites within current candidate or new cities get identified for depot construction. It includes a screening format to identify nature and potential significance of environmental impacts and suggest commensurate strategy to manage these. The ESMF preparation has involved consultations with city officials, site visits to select candidate sites in currently identified cities, and review of applicable policies, laws, and regulations. It provides for measures to address commonly identified adverse impacts, and also measures to enhance positive impacts of the proposed activities. It also includes additional guidance to prepare more detailed EIA and EMP in case where more significant impacts are anticipated. Specific EA documents have been prepared for Jaipur and Mira Bhayandar and public consultations on these and the ESMF were completed on 18th July and 5th July respectively. Public consultations on ESMF were held in Bhopal on 28th June where the limited anticipated impacts did not require separate EA documents. Since Chandigarh is a Phase II city, public consultations on the ESMF were carried out on 18th July, further consultations in Chandigarh will be held in conformance with the ESMF requirements as project preparation activities progress.

80. For environmental management during implementation, participating cities will have adapted the ESMF requirements to the conditions at each selected site, and their individual capacities. It is expected that in most cases, the environmental and social management plan developed using the ESMF provisions will be directly integrated with the bidding/contract documents for ease of implementation. In Jaipur and Mira Bhayandar where a full EIA is prepared in line with ESMF provisions, the EMP provisions will be incorporated in the Bills of Quantity and /or specifications as appropriate. Each implementing agency, except Jaipur has designated an environmental and social officer to oversee the implementation of these customized measures. At the national level, environmental and social experts will be deployed to assist the PMU monitor and report on the progress made in the implementation of the ESMF provisions in participating cities. Documentation of good practices and lessons learnt will also be a part of the responsibilities of these experts. Prototype monitoring and reporting formats for environmental management have also been included in the ESMF for timely and robust reporting.

G. Other Safeguards Policies Triggered *(if required)*

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	X	
Natural Habitats OP/BP 4.04	X	
Forests OP/BP 4.36		X
Pest Management OP 4.09		X
Physical Cultural Resources OP/BP 4.11	X	
Indigenous Peoples OP/BP 4.10		X
Involuntary Resettlement OP/BP 4.12	X	
Safety of Dams OP/BP 4.37		X
Projects on International Waterways OP/BP 7.50		X

Annex 1: Results Framework and Monitoring

Country: India

Project Name: Efficient & Sustainable City Bus Services (P132418)

Results Framework

Global Environmental Objectives

PDO Statement

The project's Global Environment Objective (GEO) is to improve the efficiency and attractiveness of city bus transport and reduce greenhouse gas emissions in the demonstration cities.

These results are at	Project Level

Global Environmental Objective Indicators

Indicator Name	Baseline	Cumulative Target Values									
		YR1	YR2	YR3	YR4	YR5	YR6	YR7	YR8	YR9	End Target
Reduction in GHG emissions in project cities over a period of 10 years as a result of adoption of modernisation	1094,430 [22]			57000							230000

[22] This refers to cumulative GHG emissions from all demonstration city bus services over the period 2014-2023 in a Business-as-Usual Scenario

initiatives from the Business as Usual (BAU) scenario (Metric ton)											
Rate of breakdowns to not exceed 5/10,000 kms (Text)	Bhopal:4.2; Chandigarh:6.6; Jaipur:7.38; Mira Bhayandar:7.5				All demo cities						All demo cities
Improvement in bus fuel efficiency in demo cities by at least 15% relative to the business as usual scenario(Annual Average in overall fleet - Bhopal: 3.2; Chandigarh:3.4; Jaipur:2.76; Mira Bhayandar:2.8) (Percentage)					15						15
Direct project beneficiaries (Number) - (Core)	180000000				235000000						235000000
Improvement in women's user satisfaction as compared to their	Bhopal:3.56; Chandigarh: 3.51;				Two cities						Two cities

current calculated index (Text)	Jaipur:3.07; Mira Bhayandar:2.42										
Female beneficiaries (Percentage[23] - Sub-Type: Supplemental) - (Core)	0				3						3

Intermediate Results Indicators

Indicator Name	Baseline	Cumulative Target Values									
		YR1	YR2	YR3	YR4	YR5	YR6	YR7	YR8	YR9	End Target
Policy notes and recommendations developed for sustainable city bus transportation and deliberations at national and state level initiated. (Text)	Under review		Policy notes and recommendations developed for sustainable city bus transportation		At least five workshops for discussion and deliberation held at national and state level						At least five workshops for discussion and deliberation held at national and state level
At least 50% NURM cities	0	4	15		33						33

[23] Increase in female beneficiaries using the city bus services

trained in/exposed to best practices in low-carbon programs including improved fuel efficiency techniques. (Number)											
Increased use of ITS and MIS data and tools in operations planning and management (Text)	Limited use of ITS/Manual systems for data reporting in place		ITS, MIS systems have been installed and commissioned		ITS systems being used in all project cities; MIS reports developed and acted upon						ITS systems being used in all project cities; MIS reports developed and acted upon
Modern depot equipment installed in all project cities (Text)	Modern equipment not in place		Equipment installed in 65% of targeted depots		Equipment installed and functioning in all cities						Equipment installed and functioning in all cities
More efficient and user					All cities						All cities

responsive bus service plans prepared and adopted in demo cities (Text)											
Demo cities have institutional systems in place for monitoring and evaluation of bus fuel efficiency program (Text)					All cities						All cities

Annex 2: Detailed Project Description

India: GEF Efficient and Sustainable City Bus Service (ESCBS)

1. The project is designed to complement the baseline project (Bus Funding Scheme under JnNURM and SUTP) so that additional activities can be implemented, that would help realize the full potential. The project would put particular emphasis on city bus services and (1) focus on capacity building for the urban bus sector, and (2) promote modernization to enhance quality and efficiency of city bus services through demo pilots in select cities. The project comprises the following components:

2. **Component I: National Capacity Building for Urban Bus Sector (GEF US$ 0.7M, co-finance US$ 2.6M):** This component comprises the following two key activities (i) review of policy, regulatory and fiscal environment as well as the market structure for public bus services and preparation of policy notes for reforms, and\ (ii) capacity building and training of the urban bus sector community within the country.

3. Policy, regulatory and fiscal constraints will be reviewed at national, state and city levels to promote efficient and high quality city bus services. Areas such as modernization of STUs/city bus services, private sector participation, better contracting, greater decentralization to city government level, and the taxation burden on public transport vehicles will be reviewed to assess the models and frameworks in operation in different cities/ states across the country, their effectiveness, and lessons drawn. A series of policy notes will be developed and workshops organized to create awareness and facilitate deliberation at the national and state/ city level on the issue, its impact and options for addressing identified issues.

4. Capacity building initiatives involving development of knowledge materials, training activities, knowledge sharing and cross learning events etc. in cutting edge areas aimed at development of the overall urban bus sector in the country shall form part of this component. The topics would include operational, financial, technical, human resources etc. While traditionally the focus has been on long distance bus services, this sub-component shall attempt to develop capacity as well as a community specifically around urban bus systems. Training activities shall be organized through existing institutes and agencies with relevant capabilities. Training of Trainers may also be organized to ensure quality of the training being provided. This component shall also be responsible for dissemination of best practices and success stories around city bus services, in particular, from the demonstration cities to ensure higher probability of replication. For this MoUD shall organize various workshops and events on a regular basis for the benefit of cities.

5. This component shall be directly implemented by MoUD.

6. **Component 2: City Demonstration Projects (GEF US$ 8.1M, co-finance US$ 99.95M)**
A variety of low cost high impact initiatives for modernizing city bus services shall be demonstrated under this component involving (i) physical investments in modern depot equipment and technologies i.e. ITS/ MIS, and (ii) technical assistance and capacity building for better service planning, fuel efficiency and similar initiatives. These will include modern and

equipment to support the services as well as improved planning and management techniques and best practices for efficient and attractive bus services.

7. **Component 2A: City Demonstration Projects – Physical Improvements (GEF US$ 6M, co-finance US$ 99.17M):**This component shall support physical improvements targeted at modernizing the city bus services in demonstration cities including (i) modern depot equipment for improved maintenance and life of buses, (ii) modern Intelligent Transport Systems (ITS) and Management Information Systems (MIS) - to make the services more user friendly and for improved planning and management of operations to enable optimal use of resources.

8. **Component 2B**: **City Demonstration Projects - Capacity Building & Technical Assistance (GEF US$ 2.1M, co-finance US$ 0.78M).** The capacity building and technical assistance component is targeted at supporting the modernization efforts of selected demonstration cities. These shall include the following kinds of activities (i) institutional strengthening, capacity building and training, including international study tours and exposure visits (ii) business planning including route planning and rationalization for better utilization of buses, (iii) marketing and branding, (iv) technical support with private sector participation including mainstreaming of informal sector, (v) vehicle and driver performance management with a view to improving fuel efficiency, (vi) technical assistance with ITS/ MIS, (vii) incremental operational expenses.

Activity	Bhopal	Chandigarh	Jaipur	MB
Depot Modernization – Equipment/ Solar Panels*	X	X	X	X
Modern Management Information System (MIS)	X	X	X	
Modern Fare Collection System – ETM/smart card		X		X
Intelligent Transport System (ITS) - GPS/AVLS and PIS		X		X
ITS/ MIS Implementation	X	X	X	X
Fuel Efficiency Program	X	X	X	X
Comprehensive route planning study/Business Plan	X	X	X	X
Capacity building initiatives	X	X	X	X
Marketing & branding program	X	X	X	X
TA on PPP in operations and options for mainstreaming informal transit	X		X	
Study on institutional & funding options for CBS		X		
Operating expenses	X	X	X	X

**Jaipur is the only city currently proposing to invest in solar panels*

Project Management: (GEF US$ 0.4 M, co-finance US$ 1.4M). This involves overall project management by PMU within MoUD.

Total Project Costs by Component and by City (in USD$ million)

Project Costs by Component *(all in USD million)*					
Component	**GOI***	**State+**	**PIU@**	**GEF**	**Total**
Component 1	**2.6**	**0**	**0**	**0.7**	**3.3**
Component 2A	**52.95**	**29.19**	**17.02**	**6.00**	**105.2**
Cities					
Bhopal	4.8	1.9	2.9	1.5	11.1
Chandigarh	20.0	15.4	0.7	1.5	37.6
Jaipur	22.0	10.2	11.8	1.5	45.6
Mira Bhayander	6.1	1.6	1.7	1.5	10.9
Component 2B	**0.46**	**0.13**	**0.19**	**2.10**	**2.9**
Cities					
Bhopal	0.0	0.0	0.1	0.5	0.6
Chandigarh	0.0	0.1	0.0	0.5	0.7
Jaipur	0.2	0.0	0.1	0.5	0.8
Mira Bhayander	0.2	0.0	0.1	0.5	0.8
PMU Project Management Cost	1.3	0.0	0.0	0.4	1.7
Total Base Cost	**57.3**	**29.3**	**17.2**	**9.2**	**113.0**

Note:
** refers to funding from all GOI sources including from MouD and NuRM*
+ denotes from all sources from the state budget or sources (for instance RTIDF in Rajasthan) or Union Territory budget
@ indicates funding from the respective city implementation agency

9. **Project Demonstration Cities**

Bhopal

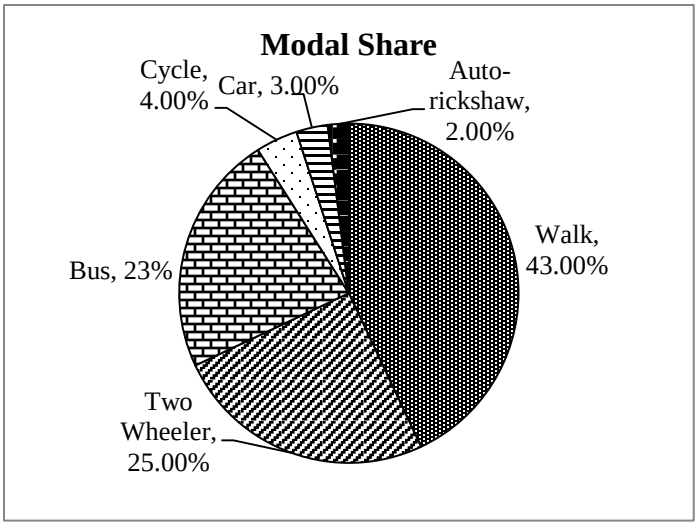
a) *Background*

Key Parameters	
Population, (2011)	1,795,648
Modes of public transport	BCLL, Mini buses, IPT
Share of public transport (2010)	23%
Average Trip Length	4.75 kms
Number of BCLL buses for city transport	225
Daily Ridership in BCLL buses	0.1 Million

Bhopal is centrally located in India and is the capital of the state of Madhya Pradesh. The city is spread across an area of 324 sq. km and houses a population of 1.8 million. The terrain of the city is uneven and is made up of several hills and water bodies. Bhopal city can be divided into two parts - the old city and newly developed area with administrative, institutional, industrial, commercial and residential activities. Bhopal is a city of administrative importance, and a large portion of its population is primarily engaged in the government sector. Other than a large set up of the Bharat Heavy Electricals Limited Company, several small scale industries can be commonly found in old Bhopal localities.

b) *Urban Transport Situation*

Bhopal has been a railroad and highway transportation hub for a long time. It is one of those rare tier II cities which has had a history of mini buses being used for public transport instead of small tempos or auto-rickshaws. Due to undulations in its terrain, bicycles and cycle rickshaws are rare to spot. The average rate of growth in registered motor vehicles in the city has been 10% since *Source*2002. The total vehicular population registered in 2011 was about 7.9 lakhs, of which 80% were two wheelers. Walking is the most common mode of mobility followed by two wheelers and buses. In order to boost its public transport system, the city has recently launched a 24 km BRT system.



: Bhopal City Bus Modernization Plan, 2014

c) *Current Bus System*

Buses contribute to 23% of the total trips in the city. Out of these, 20% of the trips are made in mini buses which are 552 in number[24]. A city bus service was launched in 2005 through a new

[24] CMP- Bhopal, 2012

Special Purpose Vehicle (SPV) on a public-private-partnership (PPP) format. The SPV currently manages operations of 225 buses which are operated by private operators. The SPV is also responsible for the BRT project in the city. The daily ridership of these buses is pegged at 0.1 million passengers.

d) *Bus operating agency*

The SPV in Bhopal, Bhopal City Link Limited (BCLL), was formed jointly by the Bhopal Municipal Corporation and the Bhopal Development Authority in 2005 and is registered under the Companies Act, 1956. BCLL is headed by a board of directors which has the Mayor of the city corporation as one of its members along with several other departmental heads. At the executive level, there is a CEO who has a staff of city engineers and administrative officers responsible for overseeing the bus operations managed by private operators. Two private operators are in place, one responsible for 150 buses for city bus operations and the second for the BRT service with 75 buses. While BCLL is a relatively compact organisation, it will need to equip itself to scale up the public transport network to fully address the mobility needs of the city. This will require a deeper understanding of private contracting modalities including mainstreaming of informal transit, contract and performance management, capacity to effectively exploit and manage modern technology tools such as ITS/ MIS.

e) *Bus operations*

In its early years of formation, BCLL managed a fleet of 39 buses operated on PPP mode. However, the service was not successful and these buses were withdrawn from service in 2010. Later BCLL was sanctioned 225 buses under the JnNURM Bus Funding Scheme. BCLL prepared a route rationalization plan that involved establishment of a hierarchy of services that would be operated by BCLL and integrated the existing mini-bus and minivan operators. This was partially implemented. BCLL has contracted the bus fleet operation to private operators on a Net Cost Contract arrangement. It constructed bus stops around the city through PPP. An ITS facility including AVL on the entire fleet of 225 buses and Passenger Information System (PIS) boards on select bus stops is operational through PPP. BCLL is now implementing an ITS system for the BRT. BCLL owns three depots, out of which the city depot is relatively small and accommodates about 50 buses, another depot facility is currently available at the Inter State Bus Terminal (ISBT) and a third depot in the city outskirts with a much higher carrying capacity has been partially handed over to the BRT operator.

f) *Major issues and challenges*

- Bhopal is a rapidly growing city with increasing mobility needs which can only be serviced through a much larger well integrated public transport system. The current bus service only partially addresses the transport demand of the city and BCLL's dependence on grant funds such as those available under the Bus Funding Scheme constrains its ability to expand the service.
- Despite its efforts to structure the informal sector (mini buses and IPT) into the formalized service plan, Bhopal has faced issues and Mini buses continue to ply on competing routes.
- The lean and mean organizational structure of the SPV along with its adopted approach of operations through private operators will require investments in modern intelligent

transport systems and management information systems to ensure efficient operations and user friendly services.

- Modern depot equipment and machinery can help improve the efficiency and reliability of operations
- Fuel efficiency performance is below average, and improved driving and maintenance practices can help BCLL obtain higher fuel efficiency and therefore improved financial sustainability.

g) *City Demonstration Project*

A modernization strategy is required in Bhopal with a focus on depot modernization by use of better equipment and modern MIS. This will be required for not just its existing setup but also for the future expansion of the services. The demonstration project in Bhopal will comprise of the following activities:

- Modernization of depots with machinery and equipment
- Development of Management Information Systems for improved planning and bus operations
- Technical assistance in service and business planning, fuel efficiency, marketing and branding measures, PPP in operations and options for mainstreaming informal transit, and MIS implementation etc.
- Capacity building initiatives and operating expenses

h) *Project Costs*

S No	Cost Break up (US$)					
		GoI/ NURM	State	PIU	GEF	Total
B	**Component 2A**					
Buses						
1	Modern Buses under Scheme I - 2009/2010	4.8	1.9	2.9		9.6
Depot Modernization						
2	New Depot Construction					
2	Depot Equipment				0.45	0.5
ITS Upgradation						
3	MIS				1.05	1.0
6	ITS including PIS/AVLS/AFCS					
	SUBTOTAL COMPONENT 2A	4.8	1.9	2.9	1.5	11.1
C	**Component 2B**					
1	Project preparation costs			0.06		0.06
2	MIS implementation support				0.27	0.27
3	TA for service & business planning, marketing, fuel efficiency etc				0.16	0.16

4	Capacity Building/Training & Incremental Operating Costs				0.09	0.09
	SUBTOTAL COMPONENT 2B			0.06	0.53	0.58
	GRAND TOTAL	**4.80**	**1.92**	**2.94**	**2.03**	**11.68**

Chandigarh

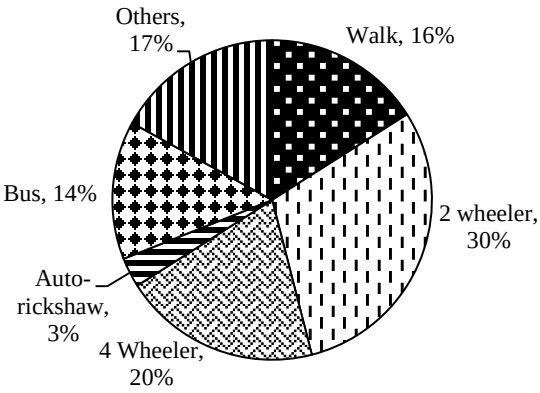
a) *Background*

Chandigarh is a Union Territory in Northern India that serves as the capital of the states of Punjab and Haryana. Chandigarh was the first planned city in India post-independence in 1947. It houses a population of 1 million and the urban limits spread over 114 sq.km. The government sector is a major employer in Chandigarh with three governments having their base in the city. Small and medium scale agro, auto and metal industries also contribute substantially to Chandigarh's economy.

Key Parameters	
Population, (2011)	1,054,686
Modes of public transport	City Buses & IPT
Share of public transport (2010)	14%
Average Trip Length	7 kms
Number of CTU buses for city transport	324 out of a total 431
Daily Ridership in CTU buses	0.2 Million

b) *Urban Transport Situation*

Chandigarh is connected to the rest of India via rail, road and air. It is one of the few cities in India that have a well-structured spatial plan and a road network based on grid pattern. Chandigarh has one of the highest percentage of households with ownership of personal vehicles including two-wheeler or four-wheeler, about 86 percent as per City Master plan 2031. Personalized motor vehicles (including 2 and 4 wheelers) contribute to 50% of the total trips in Chandigarh. Buses constitute the main public transport mode besides IPT. A metro system is also under consideration for the city.



Source: Comprehensive Mobility Plan Chandigarh, 2014

c) *Current Bus System*

Buses have a mode share of 14% in the total trips made in the city. Chandigarh Transport Undertaking (CTU) is the sole public bus operator in the city and surroundings. Buses ply on horizontal as well as vertical roads, in most cases with only one transfer being required for any passenger to reach his/ her destination from any point in the city. Daily ridership in CTU buses touches up to 0.2 million passengers.

d) *Bus operating agency*

The Chandigarh Transport Undertaking is a government undertaking under the Union Territory Administration of the Central Government which initiated its operations in 1966. It functions under supervision of Secretary, Transport, Chandigarh Administration. The Director, Transport, carries out day-to-day management of buses operating in the city as well as long distance buses. The Director, Transport is assisted by four General Managers in addition to works managers and other staff. CTU has strong bus operating experience. The organization structure of CTU is also relatively large and comprehensive. However, most of its experience comes from operating long distance bus services to the region and surrounding states. The staff would benefit from capacity building in urban operations planning, operating ITS/ MIS systems and fuel efficiency techniques.

e) *Bus operations*

CTU operates buses not only within Chandigarh but also to adjoining urban areas such as Mohali and Panchkula with whom there is daily commuting. The fleet strength of CTU is 431 buses of which, approximately 324 buses operate on routes within the city, and the remaining ply on sub-urban and long routes. In its operational fleet, 100 buses were acquired under JnNURM Scheme 1. Another 400 buses have been recently sanctioned under the JnNURM Scheme 2 and are currently being procured. For its existing fleet of 431 buses, CTU operates from 4 depots. A fifth depot site has been identified by CTU to accommodate the enhanced fleet size. It had installed an ITS systems including AVL in some buses and passenger information systems but there is a need for upgradation. Most of the operational processes are done manually with the use of simple computer programs in its depots. While most of CTU's old fleet is maintained in house, the new 100 buses received under JnNURM have been put under an annual maintenance contract with a bus manufacturer. The responsibility to develop bus shelters also rests with CTU.

f) *Major issues and challenges*

- With a mix of urban, suburban and interstate operations experience, there is a need for greater focus on skill development within CTU for sustaining urban services and making them more efficient.
- There is a need for scientific basis for route and service planning and rationalization as the service is expanding and is not in tune with the higher quality of service requirements of the city residents
- There is a need for provision of a higher quality of service to attract users with other alternatives, such as greater frequency and reliability, clean and comfortable buses, modern passenger information systems, smart card facility etc.
- Largely old and depreciated depot equipment and shortage of staff affecting proper maintenance requirements of the growing fleet.
- Manual systems resulting in more resource intensive operations and slower response time in maintenance and operations planning, especially in the context of a growing fleet size and constraints on availability of crew and maintenance staff.
- Poor bus fuel efficiency performance especially for the newer fleet of buses.
- Loss making services and need for alternate funding sources to sustain operations especially in view of the higher quality of service requirement of Chandigarh residents.

g) *City Demonstration Project*

The city bus service in Chandigarh needs a comprehensive modernization strategy with a multi-pronged approach for not just its existing setup but also for the future needs. The demonstration project in Chandigarh will comprise of the following activities:

- Modernization of depots with machinery and equipment
- Development of Management Information Systems for improved planning and bus operations
- Modern fare collection equipment – electronic ticketing machines and smart cards
- Intelligent Transport System (ITS) - GPS/AVLS and PIS
- Technical assistance in service and business planning, fuel efficiency , marketing and branding measures, Study on institutional & funding options for CBS and ITS/MIS implementation
- Capacity building initiatives and operating expenses

h) *Project Cost*

S No	Cost Break up (US$)					
		GoI/ NURM	**UT**	**PIU**	**GEF**	**Total**
B	**Component 2A**					
Buses						
1	Modern Buses under Scheme I & Scheme II	18.71	14.09	0.66	0.00	33.46
Depot Modernization						
2	New Depot Construction	0.66	0.66			1.32
3	Depot Equipment				0.45	0.45
ITS Upgradation						
4	MIS				1.05	1.05
5	ITS including PIS/AVLS/AFCS	0.67	0.67			1.34
	SUBTOTAL COMPONENT 2A	20.04	15.42	0.66	1.50	37.62
C	**Component 2B**					
1	Project preparation costs		0.13			0.13
2	ITS/MIS implementation support				0.27	0.27
3	TA for service & business planning, marketing, fuel efficiency etc				0.16	0.16
4	Capacity Building/Training & Incremental Operating Costs				0.09	0.09
	SUBTOTAL COMPONENT 2B		0.13		0.53	0.66
	GRAND TOTAL	**20.04**	**15.55**	**0.66**	**2.03**	**38.27**

Jaipur

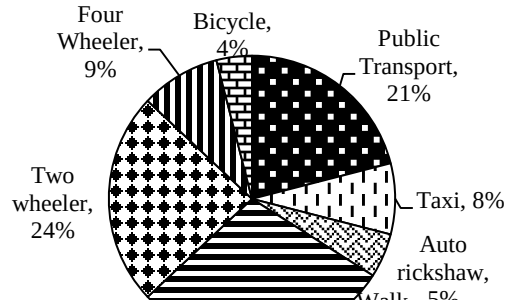
a) *Background*

Located in the west of India, Jaipur is the capital of Rajasthan state. The population of Jaipur city is about 3 million and it is spread over an area of 111.8 sq.km. Jaipur is a major tourist center with the tourism industry contributing significantly to the state's economy. Other than tourism, Jaipur's economy is dependent on its wholesale markets, industries and service sector.

Key Parameters	
Population, (2011)	3,073,350
Modes of public transport	Metro, JCTSL BRT buses and City buses, Pvt. Buses and IPT modes
Share of public transport (2010)	22%
Average Trip Length	6.5 to 7.7 kms
Number of JCTSL buses for city transport	400
Daily ridership in JCTSL buses	0.2 million/day

b) *Urban Transport Situation*

Jaipur is well linked to the rest of the country by roads, rail and air. Vehicular population has increased in Jaipur at the rate of 12-14% per annum. The total motorized vehicles breached 1.6 million in 2011-12.The modal share in Jaipur indicates that maximum trips take place by walking or in personal vehicles (29% and 33% respectively). Public transport is served by a government owned public transport operator alongside privately run buses and other forms of IPT. A BRT system has also been implemented in Jaipur to meet the mobility requirement of the city. In addition to these, Jaipur is developing a metro system which is likely to be operational from June 2014.



Source: Jaipur City Bus Modernization Plan, 2014

c) *Current Bus System*

Public transport (buses) contributes 21% of the total trips made in the city. The government owned bus company for Jaipur called the Jaipur City Bus Service Limited (JCTSL) operates 400 buses in the city. Other than the formalized bus service, estimates indicate that about 3700 informal mini buses traverse through the city roads. Apart from city buses JCTSL also operates the 7 km long BRT system. JCTSL buses carry close to 0.2 million passengers/day, while the private mini buses carry about 0.4 million passengers/day.

d) *Bus operating agency*

JCTSL is a Government Company, limited by shares, incorporated under the Companies Act 1956 in February 2008. Shareholding of JCTSL is between Jaipur Municipal Corporation (JMC), Jaipur Development Authority (JDA) and Rajasthan State Road Transport Corporation (RSRTC) - the state owned transport operating company. JCTSL operates buses through contractual arrangement with RSRTC and Private Operators. It has recently acquired over 1500 employees which include depot and bus staff with an intent of transferring part operations from RSRTC.

JCTSL Board consists of senior officials from the shareholder organizations. The executive arm of JCTSL is headed by a Chief Executive Officer (CEO) and supported by an Officer on Special Duty (OSD) who are both State Government employees. A state level urban transport fund - Rajasthan Transport Infrastructure Development Fund (RTIDF) constitutes a vital source of funding for JCTSL to carry out its operations and develop the bus network in Jaipur. The JCTSL organization structure and functioning is incommensurate with the large footprint of their city bus service, . Strengthening of JCTSL for managing the bus operations, which have grown from 200 to 400 buses and will be almost 700 very shortly, will be a critical issue that requires attention.

e) *Bus operations*

JCTSL has been sanctioned 400 buses under JnNURM I, out of which about 400 buses are currently on road. It has recently contracted operations of 120 buses to a private operator and the rest are being transitioned from RSRTC to in-house operations. In the second phase of the JNNURM scheme, another 286 buses have been sanctioned to Jaipur. The city bus network has been developed on a grid pattern with 36 urban and suburban routes. Color coding of the buses has been done for easier identification. The number of depots available with JCTSL is 2 out of which one depot has been handed over to the private operator in-charge of operating 120 buses. Due to limitations of space and maintenance facilities, JCTSL is developing an additional 2 depots for its new fleet. The RTIDF funds have been utilized for developing bus stops and now part fund the depot infrastructure. JCTSL is also in advanced stages of installing an ITS system (PIS/AVLS) on its existing fleet of buses.

f) *Major issues and challenges*

- There is a need for scientific basis for route and service planning and rationalization to effectively meet the growing travel demand.
- A large and well entrenched unorganized mini bus service that competes with JCTSL on most corridors.
- Inadequate depot Infrastructure and old equipment to properly service the maintenance and parking requirements of the growing fleet.
- A lean and mean organization with rapidly growing operations and need for latest technology and management tools to support it in operations planning and management and agile decision making.
- High fuel costs and poor bus fuel efficiency performance mainly on account of poor driving and maintenance practices.
- Loss making services and need for greater efficiency in operations.

g) *City Demonstration Project*

The city bus service in Jaipur needs a comprehensive modernization strategy for not just its existing setup but also for the future needs. –The demonstration project in Jaipur will comprise of the following activities:

- Modernization of depots with machinery and equipment and solar panels

- Development of Management Information Systems for improved planning and bus operations
- Technical assistance in service and business planning, fuel efficiency, marketing and branding measures, PPP in operations and options for mainstreaming informal transit and MIS implementation.
- Capacity building initiatives and operating expenses

h) *Project Cost*

S No	Cost Break up (US$)					
		GoI/ NURM	**State**	**PIU**	**GEF**	**Total**
B	**Component 2A**					
Buses						
1	Modern Buses under Scheme I & Scheme II	21.03	9.84	11.19		42.06
Depot Modernization						
2	New Depot Construction	1.00	0.40	0.60		2.00
3	Depot Equipment				0.65	0.65
ITS Upgradation						
4	MIS				0.85	0.85
	SUBTOTAL COMPONENT 2A	22.03	10.24	11.79	1.50	45.56
C	**Component 2B**					
1	Project preparation costs	0.24		0.07		0.31
2	MIS implementation support				0.27	0.27
3	TA for service & business planning, marketing, fuel efficiency etc				0.16	0.16
4	Capacity Building/Training & Incremental Operating Costs				0.09	0.09
	SUBTOTAL COMPONENT 2B	0.24	0.00	0.07	0.53	0.84
	GRAND TOTAL	**22.3**	**10.2**	**11.9**	**2.03**	**46.4**

Mira Bhayandar

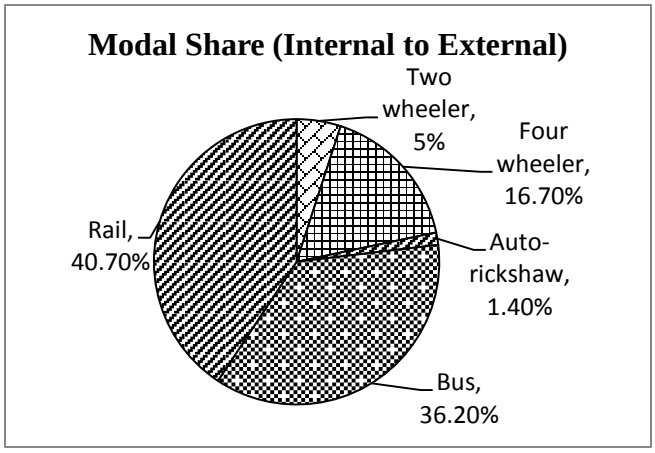
a) *Background*

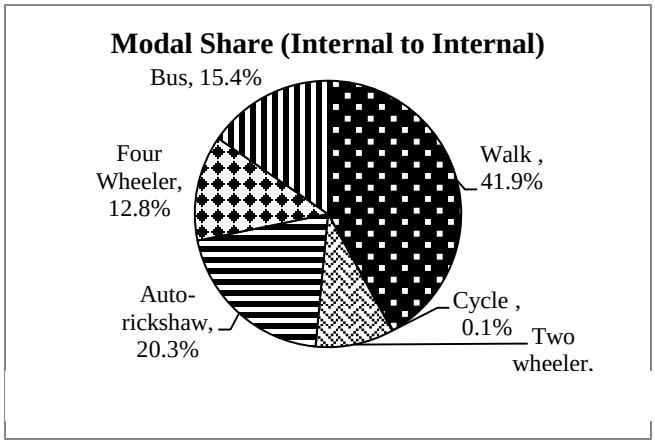
Mira Bhayandar is one of the eleven sub regions of Mumbai Metropolitan Region. The city is spread over an area of 79.4 sq.km and houses a population of 0.8 million. It is located North of Greater Mumbai. Mira Bhayandar is surrounded by hills on the Eastern side and the Arabian Sea guards the west side of the city. Due to its proximity to Mumbai, Mira Bhayandar primarily acts as a dormitory town to its population that mostly commutes to Mumbai for work.

Key Parameters	
Population, (2011)	815,000
Modes of public transport	Rail, Bus, IPT
Share of public transport (2010) within city	15%
Average Trip Length	3.8km
Number of MBMTU buses for city transport	63
Ridership in MBMTU buses	0.07 million/day

b) *Urban Transport Situation*

The city is very well connected with Mumbai via Rail and a major Highway. As per vehicle registration data, Two wheelers occupy the maximum share (58%) followed by cars (22%) of the total traffic. The suburban rail forms an important means of inter-city public transport (40.7%) for workers who live in Mira Bhayandar and travel to Mumbai and surroundings for work. Buses (36.2%) are the second most popular mode of transport for inter-city trips[25].Internal trips made within Mira Bhayandar constitute a high percentage of pedestrians (42%) followed by auto-rickshaws (20.3%) and buses (15.4%).





c) *Current Bus System*

With a 51.6% total internal and external trip share, Mira Bhayandar city bus system consists of buses operated not only by the local municipal corporation but also those from surrounding municipalities/ organization (Thane, Mumbai- BEST etc.). The buses owned by the bus operating

[25] CMP – Mira Bhayandar, 2013

authority (Mira Bhayandar Municipal Transport Undertaking-MBMTU) carry about 0.07 million passengers/day.

d) *Bus operating agency*

Mira-Bhayandar Municipal Transport (MBMT) is a Municipal Undertaking of Mira Bhayandar Municipal Corporation (MBMC) and has been constituted under the provisions of Bombay Provincial Municipal Corporations Act. It was formulated in September, 2005. MBMTU being a municipal undertaking is headed by the Transport Committee and the designated Transport Manager oversees operations. Operations of city buses has been contracted out to a private operator. Absence of full time staff designated to the MBMTU, especially those with understanding of traffic planning, depot management and contract management poses a challenge to the development of the bus service in the city.

e) *Bus operations*

In a total fleet of 63 buses 55 buses have been procured under the JnNURM Bus funding Scheme I. The remaining buses were part of their old fleet. The buses have been contracted out to a private operator for a period of 10 years on the basis of an upfront and daily route authorization fee. In addition to the 63 buses, a sanction of additional 100 buses has been finalized under the JnNURM Bus Funding Scheme II. These buses are currently being procured. MBMTU is presently operating buses on 27 intra city routes at an average headway of 39 minutes. There are no terminals or depots in Mira Bhayandar, and buses are being parked and maintained on the roads or under flyovers. There are approximately 200 bus stops in the city. While an ITS system including AVL and PIS had been installed, it is in limited use and in need of upgrade.

f) Major issues and challenges

- In the absence of bus depot facilities, existing buses are parked on the road and without any facilities for maintenance and repair. As a result despite the fleet being fairly new, the buses appear old and worn out.
- High fuel costs and low fuel efficiencies due to lack of proper maintenance facilities and limited access to driver training.
- There is a need for scientific basis for route and service planning and rationalization in order to meet the growing travel demand of the city residents and ensure better integration of services with suburban rail.
- No intermodal transfer facilities for buses operated by surrounding municipalities within Mira Bhayandar.
- There is a need for provision of a higher quality of service to attract users with other alternatives, such as greater frequency and reliability, clean and comfortable buses, modern passenger information systems, smart card facility etc.

g) *City Demonstration Project*

A comprehensive modernization strategy is required in Mira Bhayandar with a multi-pronged approach. This will be required for not just its existing setup but also for the future needs. The demonstration project in Mira Bhayandar will comprise of the following activities:

- Modernization of depots with machinery and equipment
- Development of Intelligent Transport Systems for improved planning and bus operations and modern fare collection system – ETM/smart card.
- Technical assistance in service and business planning fuel efficiency, marketing and branding measures, ITS implementation
- Capacity building initiatives and operating expenses

h) *Project Costs*

S No	Cost Break up (US$)					
		GoI/ NURM	State	PIU	GEF	Total
B	**Component 2A**					
Buses						
1	Modern Buses under Scheme I & Scheme II	5.28	1.42	0.82		7.53
Depot Modernization						
2	Depot Construction/Upgradation	0.80	0.20	0.87		1.87
3	Depot Equipment				0.45	0.45
ITS Upgradation						
4	ITS including PIS/AVLS/AFCS				1.05	1.05
	SUBTOTAL COMPONENT 2A	6.08	1.62	1.69	1.50	10.90
C	**Component 2B**					
1	Project preparation costs	0.22		0.06		0.28
2	ITS implementation support				0.27	0.27
3	TA for service & business planning, marketing, fuel efficiency etc				0.16	0.16
4	Capacity Building/Training & Incremental Operating Costs				0.09	0.09
	SUBTOTAL COMPONENT 2B	0.22		0.06	0.53	0.81
	GRAND TOTAL	**6.3**	**1.6**	**1.7**	**2.0**	**11.7**

Annex 3: Implementation Arrangements

India: GEF Efficient and Sustainable City Bus Service (ESCBS)

A. Project Institutional and Implementation Arrangements

1. ***Steering Committee and PMU.*** Arrangements similar to the ongoing SUTP have been employed for this project. The Project Steering Committee under the chairmanship of the Secretary, MoUD, GoI has been constituted and consists of senior officers from MoUD, DEA, MoEF, MoSRTH and other relevant Ministries. The Bank is an invited member to all Steering Committee Meetings. The Steering Committee will guide and oversee the implementation of the ESCBS (see Figure 1 for the overall structure of project management).

2. The Steering Committee will oversee the implementation of ESCBS through the PMU (set up at MoUD with logistics support from IUT). The PMU is headed by Joint Secretary (Urban Transport) of MoUD, who is also the Member Secretary of the Steering Committee. The PMU comprises a full time ESCBS Project Manager, a Transport Specialist, a Finance Manager, and a multi-disciplinary team of specialists/experts or agencies (ITS Specialist, Bus Operations Specialist, Procurement Specialist, Social Development Specialist, Environment Management Specialist, Training/Institutional Development Expert and GHG emissions specialist). . The PMU is responsible for overall management of the ESCBS, including the following responsibilities:

- Plan, program and execute ESCBS and provide advisory and technical assistance to the participating cities in project preparation and implementation.
- Manage the implementation of Component 1 of ESCBS.
- Evaluate and appraise the projects submitted by the participating project implementing agencies, as also any restructuring requests, and advice the GoI to take decisions and accord approvals.
- Coordinate the activities among the many project implementing agencies, the State Government and other Ministries of GoI to ensure on-time implementation.
- Monitor progress of project activities during the project period, compile project reports prepared by cities, develop lessons learnt in implementing the various activities and ensure dissemination of success stories to the larger city bus community.
- Provide training for PIU staff to ensure they will properly follow the Operations Manual requirements.
- Complete the processes required for closing the project after its implementation at the end of project period.

3. ***Implementation of Component 1.*** The PMU will be also responsible for implementation of all activities under the Component 1, including procurement, financial management, technical review as well as monitoring and evaluation.

4. ***Implementation of Component 2.*** The participating state governments, through their designated Implementing Agencies (PIAs), will be responsible for implementation of their city demonstration projects (as listed in Table 1). PMU at MoUD will provide overall project management services for all PIAs.

5. ***Project Implementation Units (PIUs).*** Each PIA has set up a PIU to manage the day-to-day project implementation activities including procurement, financial management, social and environmental management, as well as monitoring and evaluation. The PIUs will be responsible for monitoring and evaluation of the respective city projects and submit quarterly progress reports to PMU. Each PIU consists of a project manager who is supported by, at least, a project officer cum public transport expert, an Accountant, a Procurement officer, and a Social/Environment officer.

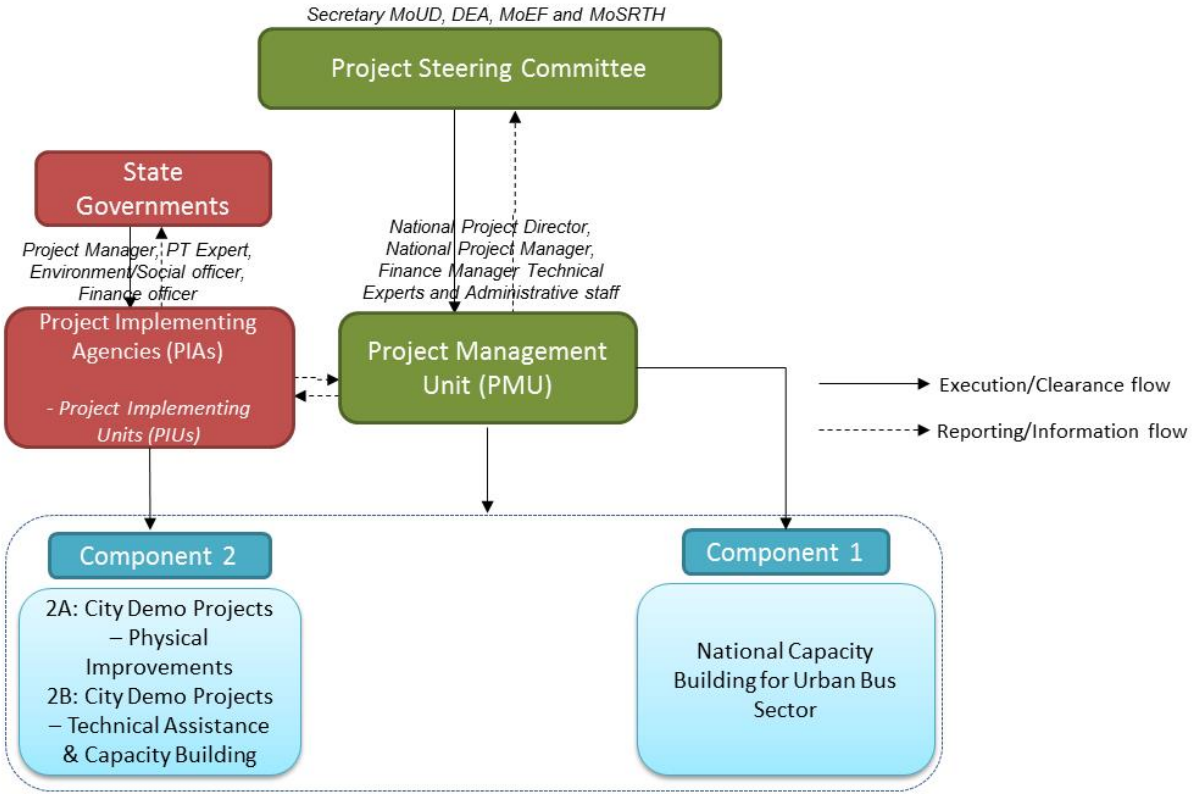


Table 1: List of State Implementing Agencies and City Demonstration Projects

City	State	Projects	Implementing Agencies
Bhopal	Madhya Pradesh	MIS, Modern Depot Equipment, TA on service cum business plan, fuel efficiency, strategies for informal transit, capacity building	Bhopal City Links Ltd
Chandigarh	Union Territory	ITS (PIS, AVLS, AFCS), MIS, Modern Depot Equipment, TA on service cum business plan, fuel efficiency, institutional options, capacity building	Chandigarh Transport Undertaking
Jaipur	Rajasthan	MIS, Modern Depot Equipment, TA	Jaipur City Transport

City	State	Projects	Implementing Agencies
		on service cum business plan, fuel efficiency, strategies for informal transit, capacity building	Services Ltd
Mira Bhayandar	Maharashtra	ITS (PIS, AVLS, AFCS), Modern Depot Equipment, TA on service cum business plan, fuel efficiency, capacity building	Mira Bhayandar Municipal Corporation

6. ***Phased Implementation.*** To ensure quality of the preparation and implementation of city demonstration projects, demo cities will not be allocated funds until their project designs are completed and appraised by the Bank. Performance-based criteria shall be agreed with MoUD and PMU for excluding non-performing states/cities and re-allocating funds from them to other states/cities from time to time.

7. ***Monitoring and Quality Assurance.*** Each city project has an M&E component which will be carried out either by PIAs own staff or by consultants, following the M&E framework developed by PMU for each city. In addition to general oversight on the project implementation carried out by the concerned state departments (Department of Urban Development in all states except Chandigarh where the Department of Transport will be responsible), PMU will also monitor the key milestones of each city project and coordinate overall implementation of all city project at the national level. PMU will provide necessary technical assistance and training to participating states and cities, etc.

8. ***Operations Manual.*** The PMU has developed a draft Operations Manual (OM), which contains detailed requirements and procedure for project preparation and implementation. The OM has been finalized.

9. ***Participation Agreement.*** After selecting demonstration cities, MoUD has sought commitment letters from all participating states which agree to fully support implementation of the city demonstration projects in accordance with the requirements of the ESCBS. MoUD has received signed ESCBS Participation Agreements from Chandigarh (Union Territory), Jaipur (Rajasthan) and Mira Bhayandar (Maharashtra). All agreements shall be in place before Board Approval.

B. Financial Management and Disbursements

Implementation arrangements

10. The project will be implemented by four different agencies in four states with oversight by respective state governments and the MoUD at the level of central government. The implementing agencies are Jaipur through Jaipur City Transport Services Limited (JCTSL), Chandigarh through Chandigarh Transport Undertaking (CTU), Bhopal through Bhopal City Links Limited (BCLL) and Mira Bhayandar through Mira Bhayandar Municipal Corporation

(MBMC). The PIAs will be responsible for all aspects of project implementation. Oversight responsibility will vest with the respective state governments. Control framework as per statutory and governance requirements of the concerned PIA will apply. The PIAs (through professional accountants) will be responsible for preparation of budgets, following up with the state government for allocation of budget and its release, maintenance of separate books of accounts, presentation of claims and submission of accounts to external audit.

11. MoUD acting through a PMU will be responsible for coordination of all financial matters including budgeting, reporting, accounting and auditing through the state governments.

12. The following table summarizes the project cost (GEF funding) by components:

Table 2 – GEF project cost – Component wise

Components	Description of Activities	IA	MoUD Contribution (US $ million)	GEF financing (USD million)
Component 1	National Capacity Building for Urban Bus Sector	MoUD	2.6	0.70
Component 2 A	Demonstration Projects: Physical Improvements	4 cities		6.0
Component 2 B	Demonstration Projects: Technical Assistance & Capacity Building	4 cities		2.1
	PMU Project Management	MoUD	1.3	0.4
Grand Total			**3.9**	**9.20**

Budgeting

13. For Component 1, MoUD will incur expenditure on project activities through its budgetary mechanism and will draw the amount from the treasury. The MoUD will be required to create a budget head for this project and make suitable provision each year. The annual project plan will be budgeted under the head of 'externally aided project' by the MoUD. This budget will be equal to the annual outlay on the project, including the share of the GoI and the World Bank. The PAO will be responsible for transfer of funds as per sanctions from the PMU. No separate bank account is envisaged at the MoUD level and the PAO will maintain accounts as per the government accounting system.

14. For Component 2A and 2B, all the state PIAs will open a dedicated budget head for the project. In case of SUTP states, the budget head already opened for SUTP can also be used for the ESCBS. Each year, all the PIAs will prepare annual budgets based on DPRs equivalent to GEF and related counterpart share. The PIA accountants will ensure that the budgetary requirement of the PIA (state as well as GEF funds) is incorporated into the state budget every year in a timely manner. Also, the PIA needs to ensure drawal of the budget into the dedicated bank account of the project.

Flow of Funds

15. For component 1, all payments will be made by the PAO, MoUD using the treasury system and no separate bank account is envisaged. For Component 2A and 2B, funds (GEF as well as State share) for the project will flow through the dedicated budget head of the state treasuries into the dedicated project bank account of the PIAs. The state must ensure adequate and timely funds flow to PIAs for smooth implementation of project activities.

16. World Bank will reimburse the government on the basis of expenditure reported through Interim Unaudited Financial Reports (IUFRs). These IUFRs will be submitted separately for each PIA for components 2A and 2B and for MoUD for Component 1 and project management staff. The IUFRs shall be reconciled with the Audited Financial Statements (AFS) annually and the amount held under objection by audit will be disallowed and recovered from future applications.

Staffing

17. All the 4 PIAs will designate or hire professional accountants. In addition, MoUD will hire a Manager (Finance) whose key tasks are mentioned below:

a) Follow up with the PIAs to ensure that the provision for annual budgets of PIAs is made in the state budget
b) Preparation of budget for the PMU and ensure appropriate budget provision in MoUD budget for Component 1.
c) Training of PIA accounts staff to strengthen their capacity apropos the FM section in the OM.
d) Accounting and reporting for PMU level activities
e) Conduct limited review of quarterly IUFRs submitted by the PIAs, consolidate and file timely claims with Bank.
f) Exercising overall budgetary control on project activities.
g) Maintain overall financial information for the project.
h) Coordinate timely submission of annual statutory audit reports to the Bank for the project.

Accounting and Financial Reporting

18. Accounting for Component 2 will be maintained by the PIAs for their sub-projects. Separate books and records will be maintained for each sub-project by the PIAs. The accounting for each sub-project will include all sources of funding, including GEF. Accounting records at the PIAs will comprise the following:

a) Statement of Sources and Application of Funds
b) Statement of Forecasted Expenditures
c) Schedules Annexed to Project Financial Statements:

- An Annual Statement reconciling the claims received and actual expenditures incurred, both quarter by quarter and annually[26].
- Statement comparing budgeted estimates with actual expenditures by the IA.
- Statement of Commitments by the IA for the sub-project (for the entire period).
- Significant Accounting Policies and Explanatory Notes (based on FM Manual).
- Statement of Reconciliation between the releases by the State government, amounts claimed and amount received by the IAs.
- Contract-wise information.

19. All the above mentioned statements will be submitted to the Bank on a quarterly basis and will be designated as IUFRs. The IUFRs will form the documentation for submission of applications for withdrawal to the Bank.

20. The Financial Management section of the Operations Manual (OM) will include information on accounting records (including formats) to be maintained at all accounting centers.

Disbursement

21. Each PIA will submit a quarterly IUFR to the PMU for the purpose of financial reporting and reimbursement. The same will be compiled by the PMU and submitted to the Bank within 45 days of the end of the quarter. All expenditures reported in the IUFRs will be subject to confirmation/certification by the annual project audit reports. Any difference between the expenditure reported in the IUFRs and reported in the annual audit reports will be analyzed, and those expenditures which are confirmed by the Bank as being not eligible for funding (refundable to Bank) will be adjusted in subsequent disbursements.

22. Eligible expenditures will be financed at 100%. Since the funding from other sources will be parallel funding, it will be treated as program costs and will be kept outside the purview of the Bank fiduciary follow up. The IUFRs and audit reports will cover only the activities funded by GEF.

23. The following table specifies the categories of Eligible Expenditures that may be financed out of the proceeds of the Grant ("Category"), the allocations of the amounts of the Grant to each Category, and the percentage of expenditures to be financed for Eligible Expenditures in each Category:

Category	Amount of the Grant Allocated (expressed in USD)	Percentage of Expenditures to be Financed (inclusive/exclusive of Taxes)
(1) Non-consulting services, consultants' services, and	700,000	20%

26 The statement will provide a reconciliation between expenditure reported as per the Statement of Sources and Application of Funds and expenditure claimed from the World Bank through reimbursement of IUFR.

training for Part 1 of the Project		
(2) Goods and non-consulting services for Part 2(a) of the Project	6,000,000	100%
(3) Goods, non-consulting services and consulting services for Part 2(b) of the Project	2,100,000	100%
(4) Non-consulting services, consulting services and incremental costs for PMU	400,000	40%
TOTAL AMOUNT	**9,200,00**	

External Audit

24. The audit of the project will be limited to activities funded out of GEF grant. The statutory audit of the project accounts for MoUD and Chandigarh PIA will be carried out by the C&AG through its offices in the respective states/UT in accordance with the agreed ToR. For other PIAs, since these are audited by CA firms with supplementary audit by the C&AG, MoUD will appoint a CA firm empanelled with the C&AG as a project auditor, which will audit the PIAs and submit the audit report to the MoUD for further submission to the Bank.

25. It may be noted that there will be six audit reports which will be monitored in the Bank system. The ToRs have been already agreed with the Bank and the C&AG and will be part of the Operational Manual. In case of Jaipur, Mira Bhayandar and Bhopal, the auditors will be a firm of Chartered Accountants empanelled with the C&AG.

26. The following annual audit reports will be monitored by the Bank:

Table 3 – List of Audit Reports

Audit Report	Implementing Agency	Auditor	Due Date
MoUD	MoUD	C&AG	31 December
Chandigarh	Chandigarh Transport Undertaking	C&AG	31 December
Jaipur	Jaipur City Transport Services	CA firm empanelled with the C&AG.	31 December
Bhopal	Bhopal City Links Limited		31 December
Mira Bhayandar	Mira Bhayandar Municipal Corporation		31 December

FM Manual

27. A FM Manual has been developed for the project and will be included in the Operational Manual. The FM Manual includes detailed FM arrangements for the project on budgeting, flow of funds, accounting, reporting (including IUFR formats), disbursement, audit and FM staffing.

Supervision

28. The project will require intensive supervision in the initial year since the PMU will have limited capacity. Reviews of transactions and books and records will be undertaken periodically at all four PIAs and the PMU. Desk reviews of internal and statutory audit reports, compliances and actions taken will also be done. Reviews of IUFRs and comparisons with annual audited statements will be undertaken.

Disclosure of Financial Information

29. All PIAs will disclose the audited financial statements on their websites.

Key FM Action Points

30. The following table summarizes key FM actions to be completed during preparation of the project:

Table 4 – Key FM Actions

S. No.	Action	By When
1.	Creation of budget head and budget provision for FY 2014-15 by MoUD and by states for the PIAs	By next Parliament/State Assembly Session
2.	PMU Finance Manager to be appointed	By Negotiation
3.	FM Manual to be agreed with the Bank and included in the Operational Manual	By Negotiation: action completed
4.	PIA Accountants to be designated/appointed	Within 3 months of Effectiveness

C. Procurement

31. Procurement of all goods, works and non-consulting services required for the proposed Project and to be financed out of the proceeds of the Financing shall be done in accordance with the requirements set forth or referred to in the Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers (January 2011). Selection of consulting services required for the proposed Project and to be financed out of the proceeds of the Financing shall be done in accordance with the requirements set forth or referred to in the Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits by World Bank Borrowers (January 2011); and the provisions stipulated in the Financing Agreement.

32. For each of the contracts to be financed by the grant, the different procurement methods or consultant selection methods, prior review threshold, timeframe etc. are agreed in the Procurement Plan. The Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity. General Procurement Notice (GPN) was published on June 13, 2014 in UNDB and Specific Procurement Notice (SPN) shall be published against corresponding contract packages when it becomes ready. All goods, works and services financed under the proposed project shall be procured using the Bank's Standard Bidding Documents (SBDs) and Standard Request for Proposals (SRFPs).

Implementation Arrangement for the Project

33. The government of India has constituted a Steering Committee under Chairmanship of the Secretary, MoUD. The Steering Committee consists of members from MoEF, MoSRTH, DEA, Planning Commission and MoUD. It is the approving authority for all policies and executive decisions related to this project. It would also provide overall directions and guidance to the city level implementing agencies and monitor the progress of the project.

34. The MoUD is the nodal agency for implementing this Project. The Project Preparation Consultant (PPC) is on board and will assist PMU in recruiting the multi-disciplinary specialists/experts or agencies. The PMU will provide technical assistance to MoUD and PIUs in 4 cities in planning, preparation, procurement, fund management and reporting. The PMU is headed by a National Project Director, a senior officer from MoUD and has a full time National Project Manager on board. The Project Director and Manager are an interface between PMU and various committees of the Project like the Steering Committee. In order to effectively function as the PMU, MoUD will augment the PMU's capacity by recruiting the multi-disciplinary specialists/experts or agency for strengthening project implementation. The PMU will have various specialists including the procurement specialist, having experience in Bank Procurement, for overall coordination with all PIUs to provide guidance to PIUs on procurement matter and will facilitate uniformity and consistency in the procurement procedures and documents of all PIUs.

35. All implementing agencies shall use e-procurement platform for the proposed project. Chandigarh, Jaipur and Mira Bhayandar are already using e-procurement system developed by NIC which has been assessed and approved by the Bank to be used for all Bank funded project across all states in India. Bhopal is using a different system (E-proc), which will be assessed by the Bank. Till such time, as the assessment is complete, Bhopal will use the NIC e-procurement system.

36. The proposed project has 2 components. The first component shall be directly implemented by PMU in MoUD. This component consists of capacity building and technical assistance on policy, regulatory, fiscal issues etc. A series of policy notes will be developed and workshops organized to create awareness and facilitate deliberations at the national and state level on the issues, its impact and options for addressing identified issues. The cost for policy notes shall be met from GEF funding while capacity building and training shall be met form the counterpart contribution.

37. The second component has 2 parts; 2A - City Demonstration Projects – Physical Improvements; and 2B – City Demonstration Projects – Technical Assistance and Capacity Building. Activities under these two sub components will be implemented by respective cities under the supervision and guidance of PMU. Each PIU in the identified city shall prepare a separate Procurement Plan for the first 18 months and submit it to PMU for onward submission to the World Bank for clearances.

38. The GEF funding shall cover the cost of procurement of depot modernization equipment, MIS, ITS etc. as discussed below.

- Activities under component 2A shall support physical improvements targeted at modernizing the city bus services in identified cities and includes: (i) modernization of depots with machineries and equipment; (ii) development of ITS including GPS/AVLS and PIS for performance management such as vehicle tracking, passenger information systems and automatic fare collection – to make the services more user friendly; (iii) modern MIS - for inventory management, vehicle dispatch and crew scheduling, maintenance management etc. to enable optimal use of facilities. The GEF funding shall cover the cost of procurement of depot equipment, MIS, ITS etc.

- *Bhopal City Links Limited (BCLL):* under the component 2A, BCLL will procure depot modernization equipment and modern MIS. The modern depot equipment shall be installed in the existing depot facility. BCLL has also placed supply order of busses and it expected to deliver in early 2015.

- *Chandigarh Transport Undertaking (CTU)*: the GEF funding shall cover procurement of modernization of depot equipment, modern MIS, fare collection system, and ITS. CTU already has existing bus depot facility and they have also placed supply order for the busses.

- *Jaipur City Transport Service Limited (JCTSL)*: JCTSL shall procure depot modernization equipment, solar panels and modern MIS. JCTSL already has 2 existing depot and they plan to have another 2 bus depots. The procurement of modern depot equipment will take place in a phased manner.

- *Mira Bhayandar Municipal Corporation (MBMC)*: MBMC shall procure depot modernization equipment, modern fare collection system and ITS through GEF funding. MBMC has already placed supply order for the buses which is expected in delivery in December 2014. The procurement of depot equipment is expected to happen in early 2015 following construction.

- Activities under component 2B shall include but not limited to (i) institutional strengthening, capacity building and training; (ii) business planning including route planning and rationalization for better utilization of buses; (iii) marketing and branding; (iv) technical support with private sector participation including mainstreaming of informal sectors; (v) vehicle and driver performance management with a view to improving fuel efficiency; (vi) technical assistance for ITS/MIS, (vii) operating expenses etc.

39. PMU shall carry out quality check on all procurement by the PIUs and then forward the same with its recommendations to the Bank for prior review and clearance. In addition, the PMU shall conduct prior review of all those contracts, which are subject to post review by the Bank. Procurement of equipment for ITS/MIS shall be prior reviewed by the Bank irrespective of its threshold values for all the implementing agencies in 4 cities.

Capacity Assessment of the Implementing Agencies

40. A procurement capacity assessment has been conducted for all the implementing agencies using Procurement Risk Assessment Management System (PRAMS). The assessment found out that implementing agencies do not have staffs who are experienced in Bank procurement procedures. The existing staffs handling procurement in implementing agencies are not conversant with the Bank's procurement procedures and therefore, it is critical for the project to pay attention in capacity building of the implementing agencies. Further, PIUs are using their own procurement system which has several deviations with respect to Bank procurement system.

41. The risk has also been further aggravated by the fact that there are multiple entities implementing the project, lack of prior experience in Bank funded procurement, existence of purchase preferences, two/three envelope system, absence of grievance mechanism etc. Based on the result of capacity assessment, a number of mitigation measures have been proposed and some of them have been implemented during project preparation. Therefore, the overall risk after taking some mitigation measures has been rated as Substantial.

Table 5 - Risk and Mitigation Measures

Risk factor	Rating	Mitigation measures	Residual risk
Non-availability of permanent procurement unit in MoUD	High	MoUD has established PMU which is supported by PPC and Project Director has also been appointed. The PMU in MoUD will be supported by multi-disciplinary specialists/experts or agencies	Substantial
Capacity of PIUs in all identified cities	High	The PIUs have identified focal person for procurement but none of them have experience in implementing Bank funded project. The PIUs shall receive handholding support from the PMU which will have finance, transport, environment and procurement specialist that will augment the capacity of PIUs. The focal procurement officers shall attend training on Bank procurement procedures at ASCI or NIFM.	Substantial
Inconsistencies in procurement system	High	• Use of Bank SBD and model bidding documents as agreed with GoI task force including NCB conditions. • Use of operation manual; • Attending training/workshops etc.	Substantial
Lack of transparency,	High	Adopt e-procurement system, establish	Substantial

fairness and grievance mechanism system in procurement process		system of public disclosure of information such as creating web link for GEF 5 project in MoUD website, establish grievance mechanism system	
Overall residual risk			**Substantial**

42. Procurement risk and the progress on various mitigation measures will be re-assessed during the implementation phase and risk rating will be done accordingly. Further, Bank will conduct post review of those contracts falling under Bank's post review threshold level. Therefore, concerned IA's are required to make all relevant documentation available to the Bank or its nominated auditors, as and when required.

Methods of Procurement and Prior Review Threshold

Selection of Consultants:

43. All implementing agencies shall use Standard Request for Proposal (SRFP) for selection of consultants. Procurement of consultancy services shall involve recruiting consultants for ITS and MIS. The following methods will be adopted depending upon size and complexity of assignments and as agreed in the Procurement Plan.

- Quality and Cost Based Selection (QCBS);
- Quality Based Selection (QBS);
- Selection under Fixed Budget (FBS);
- Least Cost Selection (LCS);
- Selection based on Consultant's Qualification (CQS);
- Single Source Selection (SSS); and
- Individuals.

44. The PMU shall carry out quality checks on all procurement documents to be prepared by the PIUs. In addition, the PMU shall conduct prior review as per threshold mentioned in table 6 for all those contracts, which are subject to post review by the Bank.

Table 6 - Prior review threshold for the Consultancies

Selection Method	Prior Review by the Bank	Prior review by PMU at MoUD	Remarks
Competitive Methods (Firms)	>US$ 500,000	>US$ 200,000 and <US$ 500,000	
Single Source (Firms)	>US$ 10,000	All	All single source contracts shall be subject to prior review by PMU
Individual Consultants	>US$ 200,000	>US$ 100,000 and <US$ 200,000	

45. Short list of consultants for services estimated to cost less than US$ 800,000 equivalent per contract may be composed entirely of national consultants in accordance with the provision of paragraph 2.7 of the Consultants Guidelines.

Procurement of Goods, Works and Non-consulting Services

46. **International Competitive Bidding (ICB)**: There is no ICB contract for the proposed project.

47. **National Competitive Bidding (NCB)**: Procurement of goods, works and non-consulting services shall be conducted in accordance with paragraph 3.3 and 3.4 of the World Bank Procurement Guidelines. For the proposed project, no works contracts are foreseen. For the procurement of goods, all IAs will use Bank Standard Documents (SBDs) and the following additional provisions shall apply:

- Only the model bidding documents for NCB agreed with the Government of India's Task Force (and as amended from time to time), shall be used for bidding.
- Invitations for bid shall be advertised in at least one widely circulated national daily newspaper (or on a widely used website or electronic portal with free national and international access along with an abridged version of the said advertisement published in a widely circulated national daily inter-alia giving the website/electronic portal details from which the details of the invitation to bid can be downloaded), at least 30 days prior to the deadline for the submission of bids.
- No special preference will be accorded to any bidder either for price or for other terms and conditions when competing with foreign bidders, state-owned enterprises, small-scale enterprises or enterprises from any given State.
- Except with the prior concurrence of the Bank, there shall be no negotiation of price with the bidders, even with the lowest evaluated bidder.
- Extension of bid validity shall not be allowed with reference to Contracts subject to Bank prior review without the prior concurrence of the Bank (i) for the first request for extension if it is longer than four weeks; and (ii) for all subsequent requests for extension irrespective of the period (such concurrence will be considered by Bank only in cases of Force Majeure and circumstances beyond the control of the Purchaser/ Employer).
- Re-bidding shall not be carried out with reference to Contracts subject to Bank prior review without the prior concurrence of the Bank.
- The system of rejecting bids outside a pre-determined margin or "bracket" of prices shall not be used in the project.
- Rate contracts entered into by Directorate General of Supplies and Disposals (DGS&D) will not be acceptable as a substitute for NCB procedures unless agreed with the Bank on case to case basis. Such contracts will be acceptable however for any procurement under the Shopping procedures.
- Two or three envelope system will not be used (except when using e-procurement system assessed and agreed by the Bank)

48. **Shopping:** Shopping method in accordance with paragraph 3.5 of the Procurement Guidelines shall be adopted for procuring readily available off-the-shelf goods of value less than

US $ 100,000, or simple civil works of value less than US $ 100,000. For shopping procedure, list of vendors/contractors already registered with government departments may be used for inviting quotations. The procurement plan should determine the cost estimate of each contract, and the aggregate total amount. The borrower should solicit at least three price quotations for the purchase of goods, materials, small works, or services (non-consulting), to formulate a cost comparison report.

49. **Direct Contracting:** Goods, works and non-consulting services which meets the requirement of para 3.6 of the Bank Procurement Guidelines may be procured following Direct Contracting method.

50. The PMU shall carry out quality checks on all procurement documents to be prepared by the PIUs. In addition, the PMU shall conduct prior review as per threshold mentioned in Table 7 for all those contracts, which are subject to post review by the Bank.

Table 7 - Prior review threshold for procurement of goods, works and non-consulting services

Procurement Method	Prior Review by the Bank	Prior review by PMU at MoUD	Remarks
NCB (goods)	>US$ 1 million	>US$ 500,000 and <US$ 1 million	
Shopping	>US$ 100,000	>US$ 50,000 and <US$ 100,000	
Direct Contracting	>US$ 10,000	<US$ 10,000	All direct contract shall be as per para 3.7 of the Guidelines

51. Advance Procurement: Retroactive financing up to an amount of 20% of the project amount will be available for financing expenditures incurred 12 months prior to grant signing.

52. The following methods of procurement shall be used for procurement under the project. It has been agreed that if a particular invitation for bid comprises of several packages, lots or slices, and invited in the same invitation for bid, then the aggregate value of the whole package determines the applicable threshold amount for procurement and also for the review by the Bank.

Table 8- Procurement Methods

Category	Method of Procurement	Threshold (US$ Equivalent)
Goods and Non-consulting services(including IT contracts)	*ICB*	*>3,000,000*
	LIB	*wherever agreed by Bank*
	NCB	*Up to 3,000,000 (with NCB conditions)*
	Shopping	*Up to 100,000*
	DC	*As per para 3.7 of Guidelines*
	Force Account	*As per para 3.9 of Guidelines*

	Framework Agreements	*As per para 3.6 of Guidelines*
Works		
	Shopping	*Up to 100,000*
	DC	*As per para 3.7 of Guidelines*
	Force Account	*As per para 3.9 of Guidelines*
Consultants' Services	*CQS/LCS*	*Up to 300,000*
	SSS	*As per para 3.9-3.11 of Guidelines*
	Individuals	*As per Section V of Guidelines*
	QCBS/QBS/FBS	*for all other cases*
	(i) International shortlist *(ii) Shortlist may comprise national consultants only*	*>800,000* *Up to 800,000*

Prior Review by the World Bank

53. The Bank shall prior review the following contracts:

- Goods: All contracts more than US$ 1million equivalent;
- Services (Other than consultancy):All contracts more than US$ 1 million equivalent;
- Consultancy Services: Above US$ 500,000 equivalent for firms; and US$ 200,000 equivalent for individuals

First contract issued by each implementing agency shall be prior reviewed by the Bank irrespective of value. In addition, the justifications for all contracts to be issued on LIB (if agreed in PP), single-source (>US$ 10,000) or direct contracting (>US$ 10,000) basis will be subject to prior review. These thresholds are for the initial 18 months period and are based on the procurement performance of the project, these thresholds will be modified. The prior review thresholds will also be indicated in the procurement plan.

54. Supervision mission: In addition to the prior review to be carried out by the Bank office, procurement staff will participate in 2 formal review missions annually, along with the implementation support mission which will include Procurement Post Review (PPR).

55. Procurement Planning: PMU/PIUs shall prepare Procurement Plan covering first 18 months of the project implementation. The Procurement Plan shall be agreed between the Borrower and the Bank before negotiation and shall be subsequently updated annually (or earlier/later, if required) and will reflect the changes in prior review threshold, if any. All Procurement Plans, their updates or modifications shall be subject to Bank's prior review and no objection before implementation. In addition, the Bank will carry out an annual ex-post procurement review of the procurement falling below the prior review threshold mentioned above.

56. **SEPA**: An online Procurement Plan Execution System (SEPA) shall be adopted to prepare Procurement Plan once the initial Procurement Plan has been finalized and agreed. It is a web-based tool owned by the Bank which helps in tracking dates of the different stages of a procurement activity that is planned or under implementation. The system establishes a new, easy to use, and more efficient way for Bank teams and Bank clients to interact, while at the same time providing an audit trail of the process. The Bank will make arrangements to train the staff of IAs in operating SEPA.

57. **Complaint Handling Mechanism**: PMU/PIU shall establish complaint handling mechanism to address complaints/grievances from contractors/suppliers more effectively. On receipt of complaints, immediate action will be initiated to acknowledge the complaint and redress within a reasonable timeframe. All complaints during bidding/award stage as well as complaints during the contract execution along with the analysis and response of the PMU/PIU shall invariably be submitted to the Bank for review.

Anti-Corruption Measures

58. **Disclosure Requirements**: The project shall comply with the disclosure requirements stipulated in the Banks' Procurement Guidelines and Consultant Guidelines, January 2011. Accordingly following documents shall be disclosed on the project's website: (a) Procurement Plan and all subsequent updates; (b) invitations for bids (IFB) for goods and works; (c) requests for expression of interest (REOI) for selection/hiring of consulting services; (d) short list of consultant; (e) awards contract; (f) lists of contracts following Direct Contracting (DC), Consultant Qualification Selection (CQS), or Single Source Selection (SSS) on a quarterly basis; and (g) action-taken reports on the complaints received on a quarterly basis.

59. The following details shall be published by PIU through client connection or sent to the Bank for publishing on their behalf on the Bank's external website and UNDB *online*: (a) General Procurement Notice (GPN); (b) requests for expression of interest for consulting services estimated to cost more than US$ 300,000; and (c) contract award details of all consulting services, with estimated cost of more than US$ 300,000. The proposed shall also publish on its website any information required under the provisions of disclosure, as specified by the Right to Information Act of India.

Environmental and Social (including safeguards)

60. The cities have agreed to the ESMF and are/will be preparing their city-specific plans to mitigate adverse environmental and social impacts. They have also carried out screening of the candidate sites already identified to establish the extent of impacts in advance.

61. Each city will designate an environmental and social officer for the project who will ensure the implementation of the ESMP and/or EMP/RAP where required. This officer, along with other city officials, will be trained in line with the ESMF to familiarize them to the potential issues. Some of the implementing agencies have prior experience of handling construction, while others like Jaipur and Chandigarh intend to outsource supervision of construction to the respective specialized agencies – RSRTC and Chandigarh PWD respectively. These agencies' staff will also be briefed on the requirements of the ESMF through the environmental and social

officer .A summary of the ESMF and the relevant formats have been included in the Operations Manual to facilitate implementation of these measures and reporting on the progress on these by each implementing agency. At the national level, environmental and social experts will be deployed to assist the PMU monitor and report on the progress made in the implementation of the ESMF provisions in participating cities. Prototype monitoring and reporting formats for environmental management have also been included in the ESMF for timely and robust reporting.

62. A mid-term audit is planned to review the implementation of ESMF and Gender action plan and modifications as required and acceptable to Bank.

Annex 4

Operational Risk Assessment Framework (ORAF)

India: Efficient & Sustainable City Bus Services (P132418)

Stage: Appraisal

Risks

1. Project Stakeholder Risks						
1.1 Stakeholder Risk	Rating	Moderate				
Risk Description: (a) Risk of staff opposition to new technology or measures (b) Risk of possible public opposition to project due to say, unannounced route changes or other service improvements.	**Risk Management:** (a) The project envisages better communication of proposed changes to staff to gain their buy-in in addition to technical assistance and knowledge sharing workshops to sensitize them on benefits of any new technology/systems prior to implementation. (b) Build awareness of the proposed project through full disclosure on website(s) in each city and conduct public consultations and outreach program. (c)					
	Resp: Client	Status: In Progress	Stage: Both	Recurrent: ☑	Due Date:	Frequency: CONTINUOUS

2. Implementing Agency (IA) Risks (including Fiduciary Risks)		
2.1 Capacity	Rating	Substantial
Risk Description:	**Risk Management:**	

(a) Lack of sustained commitment and frequent changes in leadership (b) Risk of poor quality DPRs, poor supervision and contract management which may impact work quality and lead to cost and time overruns. (c) Risk of inadequately trained staff leading to delays/errors in accounting and reporting. (d) Risk of inadequate funds provided in budget and delayed fund flow to PIAs by the states.	Under this project: (a) Deeper involvement of state and city level stakeholders to ensure that changes in incumbency do not adversely impact the project (b) The implementing agencies will have technical support from expert DPR and project management consultants, their own and from MoUD, thereby strengthening their review/control of project preparation and implementation processes. (c) Trained nodal officers for finance along with necessary qualified staff will be recruited/designated in the PIAs to maintain accounting system and ensure timely reporting. This risk will also be mitigated by using the established FM system developed for the first project. (d) The commitment of PIAs and the MoUD, and greater participation and involvement of state governments will ensure that adequate funds are available for project implementation. The state government's commitments for budgeting as well as fund transfer to implementing agencies would be documented in the Project Agreement. Also, the team would ensure that appropriate budget heads with sufficient allocation are created by the states by negotiations.					
	Resp: Bank	Status: In Progress	Stage: Both	Recurrent: ☑	Due Date:	Frequency: CONTINUOUS
2.2 Governance	Rating	Moderate				
Risk Description: (a) Risk of bus service improvements not tangibly benefiting users due to limited user benefit orientation. (b) Risk of user concerns on social, environmental and/or road safety aspects not incorporated in city bus improvements	**Risk Management:** (a) Enhance the existing complaint handling systems at implementing agencies to include registration and tracking of project-related complaints that are received online, by email and regular mail. (b) The project has already conducted a baseline user survey and will support periodic user surveys to elicit stakeholder feedback on the demo projects.					
	Resp: Client	Status: Not Yet Due	Stage: Implementation	Recurrent: ☑	Due Date:	Frequency: CONTINUOU

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3. Project Risks						
3.1 Design	Rating	Low				
Risk Description: (a) Demonstration and pilot projects will not be replicated. (b) Risk of demonstration projects not being successful. (c) Risk of change in priorities for pilot city and non performance	**Risk Management:** (a) Active dissemination of the successes will be provided for in the project through workshops etc. including under Component 1. In addition, peer to peer learning among the cities will ensure greater learning and replication. (b) Demo projects are screened through several tiers including by the Bank, PMU and at the MoUD, and would harness best practices, which should ensure that they are successful. The multi-pronged approach of addressing multiple issues shall ensure higher probability of success. (c) Project shall provide for in built flexibility to reallocate funds from non performing cities to those performing well and also induction of new cities.					
	Resp: Both	Status: In Progress	Stage: Preparation	Recurrent: ☑	Due Date:	Frequency: CONTINUOUS
3.2 Social and Environmental	Rating	Moderate				
Risk Description: (a) Risk of delays in the implementation owing to delays in land transfer (b) Delay in obtaining regulatory environmental and CRZ clearances may affect project execution. (c) Measures to improve city bus services for women passengers not effective (d) Agreed EMP implementation	**Risk Management:** (a) Site availability a pre-condition for accessing MoUD support for depot facilities; in addition, project designed around available sites (b) Sites requiring environment/CRZ clearances designed as Phase 2 activities with clearance as a prerequisite for bidding to ensure that clearance conditions are adhered to during the implementation stage (c) User feedback surveys conducted and focus group discussions held to seek women input into areas of concern and possible mitigation (d) Designate one official in each city as responsible for managing environmental and social aspects; and if needed include additional inputs on these aspects through the Project Management Consultant to be hired under the PMU					

may not be timely/effective resulting in higher than anticipated impacts	Resp: Client	Status: In Progress	Stage: Both	Recurrent: ☑	Due Date:	Frequency: CONTINUOUS
3.3 Program and Donor	Rating: Low					
Risk Description: (a) Uncertainty about counterpart funds	**Risk Management:** (a) Bus Funding Scheme I is largely over with 90% of the sanctions already released to all cities. Cities are in an advanced stage of placing orders under the Bus Funding Scheme II, even if the Scheme II sanctions are somewhat delayed, all four project cities are already managing operations with the fleet they have received under Scheme I.					
	Resp: Client	Status: In Progress	Stage: Preparation	Recurrent: ☑	Due Date:	Frequency: CONTINUOUS
3.4 Delivery Monitoring and Sustainability	Rating: Moderate					
Risk Description: (a) Risk of poor quality of depot equipment procured. (b) Risk that the ITS/MIS systems are not robust operational/functional by end of project. (c) Risk that systems developed under the project are not used beyond project period. (d) Risk that fuel efficiency measures piloted in the cities will not be continued	**Risk Management:** (a) Quality of works will be ensured through technical assistance from sector experts. (b) The TOR for the ITS/MIS systems would be vetted by experts and the systems would be tested and cleared by PMU to ensure their robustness and functionality (c) The ITS/MIS services would include adequate training for staff at PIAs to ensure that the internal processes are streamlined with the new systems. (d) The fuel efficiency measures envisaged are simple and low cost with high potential gains. In addition, efforts to ensure institutionalization of these measures shall ensure a high likelihood of sustainability.					
	Resp: Client	Status: Not Yet Due	Stage: Implementation	Recurrent: ☑	Due Date:	Frequency: CONTINU

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4. Overall Risk	
Overall Preparation Risk: **Low**	**Overall Implementation Risk:** **Substantial**
Risk Description: Given that a similar project involving different urban transport projects in 5 different cities is ongoing, this risk is low.	Risk Description: Considering that the implementing agency capacity is weak, fiduciary risk is rated substantial, this risk is rated substantial.

Annex 5: Implementation Support Plan

India: GEF Efficient and Sustainable City Bus Services (ESCBS)

Strategy and Approach for Implementation Support

1. The primary focus of implementation support provided by the Bank is to support the PMU at the MoUD and participating state governments in demonstration cities in achieving environmentally sustainable city bus transport services. The Bank team will work closely with the PMU and the participating state governments through their designated PIAs and PIUs to support ESCBS implementation. The focus will be on risk mitigation, knowledge management, capacity building and technical assistance. Towards this end, the Bank team will be maintaining regular dialogue with the key stakeholders at the national and state levels, undertaking periodic joint reviews, undertaking field reviews on a sample basis, identifying and offering need based technical advice, and supporting exchange of experience and learning. The Implementation Support Plan (ISP), as described below, will be a live document and will be reviewed regularly and revised as and when required during the implementation, at least on a half yearly basis.

2. The key roles of the Bank team in supervision are:
   a. *Intensive support during early implementation stage:* Close support needs to be provided for capacity building and technical assistance and initiating city demonstration projects in the first year to ensure that the foundational project activities (staffing, recruitment of key consultancies) are completed on time.
   b. *Technical support anchored in Delhi:* The TTL will be stationed in Delhi and will provide support for the foundational activities that will determine the success of the project. The TTL will work in close collaboration with the sector urban transport specialists based in Washington DC and elsewhere. In addition, most of the Bank specialists on the team (procurement, financial management, safeguards, and project monitoring) will be stationed within Delhi.
   c. *Provision of multidisciplinary technical expertise:* The Bank team will need to maintain a multidisciplinary expertise during the implementation phase. Specialized expertise would be needed in the areas of city bus transport, ITS/MIS, fuel efficiency, communication, sector formalization, monitoring and evaluation. This expertise would be sought internally as well as through partnerships with specialist reputed institutions and individuals.

Implementation Support Plan:

3. Project implementation and supervision will be conducted through:
   a. Project launch, to be conducted soon after the project approval, to bring all project functionaries together and ensure a clear understanding of the project scope, design, process and responsibilities.
   b. At least two regular supervision missions during the project duration for the duration of the project
   c. Intermediate technical missions by specialists, as needed
   d. Quarterly implementation progress reports prepared by the PMU/PIUs

e. ICR at the end of the project to assess achievement of environmentally sustainable city bus services objective and lessons

4. The main focus of implementation support is summarized below.

Table 2: Resource estimate for implementation support

Time	Focus	Skills Needed	Resource Estimate	Partner Role
First twelve months	Finalizing Project Components and initiating TA Studies and Pilots	Urban Transport Specialist(s)	8 SW	
			6 SW	
		Procurement specialist(s)	4 SW	
	Fiduciary and Safeguards	Environment Specialist(s)	6 SW	
		Social Development Specialist (s)	6 SW	
		FM Specialist(s)	3 SW	
	Project Monitoring	Project Monitoring Specialist		
	Team leadership	Task Team Leader	8 SW	
12-60 months	Implementation support in reviewing outputs of TA studies/pilots and in adoption of various study recommendations	Urban Transport Specialist(s)	5 SW/year	
		Procurement specialist(s)	4 SW/year	
		Environment Specialist(s)	4 SW/year 2 SW/year	
	Fiduciary and Safeguards	Social Development Specialist	4 SW/year	
		FM Specialist(s)	2 SW/year	
	Project Monitoring	Project Monitoring Specialist		
	Task leadership	TTL	7 SW/year	

5. Skills Mix Required

Table 3: Skills Mix required

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
Task Team Leader	8 SW first year, 7 SWs annually in the following years	4	Country office based
Urban Transport Specialist(s)	6 SWs first year, then 5 SWs annually in the following years	3	Country office based/HQ Based
Procurement Specialist(s)	6 SW first year, then 4 SW annually	1	Country office based
Environment Specialist(s)	6 SWs first year, then 4 SWs annually in the following years	2	Country office based
Social Specialist(s)	6 SWs first year, then 4 SWs annually in the following years	2	Country office based
FM Specialist	6 SWs first year, then 4 SWs annually in the following years	2	Country office based
Project Monitoring Specialist	3 SWs first year, then 2 SWs annually in the following years	2	Country office based

Annex 6: Incremental Cost Analysis

India: GEF Efficient and Sustainable City Bus Services (ESCBS)

Overview

1. The proposed project intends to fund the incremental cost of activities aimed to enhance sustainability, energy efficiency, and quality of city bus services, and therefore the potential for GHG emissions reductions from the baseline project. Under the baseline project scenario, GoI and state governments of India would provide financial support to city bus services through replenishment of 25,485 buses under the overall Jawaharlal Nehru National Urban Renewal Mission (JnNURM) program. In addition, the impact of the capacity development initiatives for urban transport planning, taken up under the Sustainable Urban Transport Program (SUTP) and the demonstration projects in five cities would also begin to be felt at the national, state and city levels. Therefore the incremental cost analysis accounts for both direct and indirect GHG reduction impacts from the project.

Analysis of "Business-as-Usual" Scenario

2. The baseline projects consist of two major funding program: JnNURM and SUTP under GEF4. The JnNURM program supports purchases of buses in 61 Indian cities, including the four pilot cities under ESCBS, as well as facilitates implementation of public transport institutional and service reforms. However even though the newly procured buses are in place, cities lack practical know-how of implementing institutional and service reforms, as well as technical capacity of effectively operating and managing their public transit systems.

3. The SUTP program addressed challenges in NUTP implementation, by (i) developing necessary national, state and city level capacity in urban transport planning and (ii) kick starting the preparation and implementation of sustainable urban transport projects through some high impact demonstration projects on Bus Rapid Transit, Non-motorized Transport, and ITS applications in five non-ESCBS cities.

4. However, SUTP was not designed to systematically address the bus services and operations challenges in mid to small sized cities. On the service side, most cities have not recognized and taken advantage of the fuel efficiency gains that are possible from better maintenance and better driving skills, largely due to a mindset that has been more concerned with fleet utilization rather than improved fuel economies. On the operation side, due to poor passenger information systems and mismatched route network with current demand patterns, bus services are losing patronage and those who can afford it are shifting to other modes. International best practices have demonstrated that operations, planning, and economics[27] weigh as much as, if not more than, the physical fleet of the public transit network[28] in terms of fuel saving effects and GHG reduction benefits. Initial estimates suggest that interventions aimed at improving the fuel efficiency of public bus services (through improved maintenance and driver training) alone could provide fuel savings of the order of 10-23% in the operation of such buses and corresponding savings in carbon emissions from the urban transport sector in the city.

[27] Refer to transit agency operations, economics and marketing, transit fares collection and structure, and the financing of transit.
[28] Vukan R. Vuchic, 2005, *Urban Transit : Operations, Planning and Economics*, Wiley

5. As a result of the above, it is assumed that the BAU condition in the absence of the ESCBS financing would be a program of multi-city projects intended to advance the NUTP, using a combination of JnNURM, SUTP, state, and local finance. However, the deficiency in services and operations identified from discussions above leave three particular vulnerabilities or risks that could lead to higher CO_2 emissions than would be the case if these vulnerabilities could be addressed (that is, the with-GEF-project condition).

- Unbalanced implementation focusing on new bus fleet addition and infrastructure construction, while neglecting the key role of effective operation and management through ITS applications and route rationalization;
- The mismatch between expanding bus fleets and limited service capacity at bus depots and;
- Lack of practical know-how of achieving fuel savings by improving driving skills and maintenance practices;

6. The fundamental incremental value of the proposed ESCBS project, then, is to reduce the risk that these vulnerabilities pose. These themes outlined above recur in the discussion of the individual cities' pilot demonstration projects that follows.

Bhopal. Bhopal City Link Limited (BCLL) is operating 225 city buses procured under JnNURM and has recently launched a 24 km long BRT system which will operate a portion of the 225 buses. Under the BAU scenario, BCLL will be constrained in efficient operations for lack of management information systems. It will also fall short of funds for equipment and tools to equip its new Bairagarh depot and to modernize the existing City and Habibgunj depots.

Chandigarh. Serving a city with a population over one million and one of the highest per capita income, the Chandigarh Transport Undertaking (CTU) is managing a fleet of 431 buses, which will be expanded by another 400 buses by JnNURM Bus Funding Scheme II in the BAU scenario. Obviously for Chandigarh, challenges not only lie in managing and maintain such a fleet, but also in promoting its transit service to make it more attractive to daily commuters. A User Satisfaction Survey[29] on public transport of Chandigarh indicated that there was need for better infrastructure as well as services from city bus service provider. As deep down analysis suggests that even among those preferring to use city bus services only 60 percent are actually using it due to several reasons.

Jaipur. Jaipur city has a population of 3.5 million but currently the Jaipur City Transport Services Limited (JCTSL) operates about 400 buses, with a clear gap between the transit demand and supply. Under the BAU scenario, Jaipur's bus fleet will keep expanding with JnNURM funds, and the national study supported by SUTP may provide limited guidance to the transit agency as Jaipur is not one of the SUTP pilot cities. It is also noteworthy that there are about 3000 mini-buses transporting people in Jaipur urban areas, a 7 km BRT line operating and a metro line being constructed. Without the incremental funding from ESCBS, components in Jaipur's urban transport system will remain loosely connected; as for the bus fleet (around 700

[29] Marketing & Development Research Associates. Interim Report on Public Transport Review of Cities Part 1: User Satisfaction Survey- Chandigarh, 2013.

diesel vehicles) would generate significant air quality and climate change impacts due to lower operational efficiency and service capacity bottleneck of current bus depots.

Mira-Bhayandar. Mira-Bhayandar is mainly a bedroom community with most residents employed in nearby Mumbai. Primary transport demand is therefore between the residential areas and the two railway stations. Under the BAU scenario, the JnNURM will add another 100 buses by 2015 to the existing 63vehicle fleet. However, there are no terminals or depots in the city providing parking and maintenance space for the fleet. Without the ESCBS funding, the city transit system is facing challenges resolving issues including route rationalization, ITS assisted operation.

7. With the bus fleet expansion plan to be financed by the baseline project (JnNURM), the baseline level of GHG emissions for the four pilot cities reaches 1,094 kiloton over the time period from 2014 to 2023.

Analysis of Global Environmental Benefits and Strategic Fit

8. The proposed project is consistent with the focal area of Climate Change Mitigation of GEF5, specifically with its objective 4, "*Promote Energy Efficient, Low-Carbon Transport and Urban Systems.*"

9. The goal of the ESCBS is to support improvements in the policy and regulatory environment and modernization of bus services and operations in four selected Indian cities, aimed at making these services more efficient and attractive to personal motor vehicle users and thereby lead to savings in fuel and a modal shift for affordable and efficient transport usage with lower environmental impact. This project is built on the existing India SUTP programs and expected to generate impacts on both national and local levels.

10. To fully evaluate the potential benefit of the GEF investment, the incremental cost analysis of GEBs is carried out at two levels. The first level – termed "direct effects" for the purpose of the analysis – examines the likely GHG impacts of specific investments made by the GEF funds directly for the four pilot cities: Bhopal, Chandigarh, Jaipur and Mira-Bhayandar. These four cities will conduct a collective of activities to modernize their bus services, of which the following (including but not limited to) would generate direct fuel saving and carbon emission reduction benefits:

- application of ITS/MIS technology
- bus depot construction or renovation
- route rationalization and
- fuel efficiency improvement program.

11. The direct-effect analysis follows the ASIF framework[30], which is a bottom-up approach and so far the most acceptable framework in measuring energy consumption (and GHG

[30] Lee Schipper, Herbert Fabian, and James Leather. 2009. Transport and Carbon Dioxide Emissions: Forecasts, Options Analysis, and Evaluation. ADB Sustainable Development Working Paper Series

emissions) from transport. Broadly speaking, emissions (G) in the transport sector are dependent on the level of travel activity (A) in passenger km (or ton-km for freight), across all modes; the mode structure (S); the fuel intensity of each mode (I), in liters per passenger-km; and the carbon content of the fuel or emission factor (F), in grams of carbon or pollutant per liter of fuel consumed.

12. Activities included in the proposed project individually or jointly will generate the following benefits: improving energy efficiency of buses and reducing energy intensity of every passenger km travelled by bus. These benefits will primarily influence the "I" factor (fuel intensity) as defined in the ASIF and thus generate GHG emission reductions (assuming other ASIF parameters remain unchanged). Improved transit services and operations from project activities may also shift passengers from other modes to buses, which will influence the "A" factor and "S" factor in the ASIF framework.

13. Particularly, modernized and renovated bus depot will boost service level for bus fleet, with well-maintained buses of lower fuel intensity. The fuel efficiency improvement program focuses on bus driving skills, which has been proven to enable considerable fuel efficiency gains[31]. Proper route structuring/rationalization, and the use of intelligent transport systems (ITS) such as GPS, scheduling, and passenger information systems will not only increase bus operational efficiency and thus lower the fuel intensity, but will also help a mode shift in favor of public buses from personal vehicles and thus affect the travel activities and mode structure.

14. The indirect-effect analysis examines likely demonstration effects from the four pilot cities, and potential impacts of national and local capacity building and technical assistance on overall transport CO_2 emissions, as a result of the ESCBS project. The orders of magnitude of emissions reductions range from potential effects from likely replications of the ESCBS in other places/markets, to what could be expected if all JnNURM cities enacted a suite of measures on sustainable transport as demonstrated in the ESCBS.

Incremental Cost Reasoning and GEF Role

15. Under the GEF scenario, the ESCBS projects will deepen and take forward the earlier initiative for promoting public transport by focusing more comprehensively on services, operation, and maintenance of bus fleets.

16. Particularly, GEF funding is providing needed capital to invest in critical missing key elements towards upgraded services and efficient operations in pilot cities, including depot modernization, ITS applications, route rationalization fleet operation and maintenance, etc. The involvement of the Bank and GEF will also provide key expertise and guidance for efficiently operating cities' transit services, and enhance the capacity of STUs to provide coordinated operation. All the aforementioned factors offers value-added reductions in CO2 emissions.

[31] ESMAP. 2011. Guidance Note Best Operational and Maintenance Practices for City Bus Fleets to Maximize Fuel Economy. http://www.esmap.org/node/1351

Direct-effect Analysis

17. The direct-effect analysis is concerned with the GHG impacts of the GEF-funded investments made in the four pilot cities — Bhopal, Chandigarh, Jaipur and Mira Bhayandar. This analysis is presented in the next three sections:

- The "bottoms-up" methodology and key assumptions are described in the next section.
- A city-by-city summary of the estimated GHG impacts are presented.
- Sensitivity tests of the values for three key parameters are presented to demonstrate the level of uncertainty of the estimates of GHG reductions.

Methodology and Assumptions

18. The "bottoms-up" approach estimates the GHG reductions that will be produced by the GEF-funded investments made in the four pilot cities over the project period of ten years. The following key assumptions are made about the baseline, "business-as-usual" scenario:

- The programmed JNURM –funded bus expansion will occur as planned for the three-year period 2014 to 2016.
- The daily kilometers operated per bus will increase at an annual rate of 1.0 percent to accommodate the annual increases in population.
- The bus fuel consumption rate (kilometers per liter) will be remain constant at the current rate for each city and will not improve over the analysis period.
- The CO_2 emissions factor per liter of fuel will be remain constant at 2.94348 kg CO_2 /liter over the analysis period.

19. Estimates are made of the GHG reductions that will occur as the result of the following four GEF-funded investments:

- Bus maintenance equipment to support the construction of new maintenance depots and the modernization of existing depots
- Implementation of the ESMAP protocols for targeting and improving driver and bus fuel efficiency
- MIS systems that integrate applications to manage the transport operations and automate back office functions.
- Conduct of a comprehensive service planning to improve the efficiency of existing services and to identify new service opportunities.

Depot Improvement Assumptions

20. The improved and sometimes new depot facilities will support the conduct of proper vehicle maintenance including comprehensive vehicle inspections and efficient vehicle repairs. International practices show the improvement of depot facilities would result in fuel saving ranging from 1% to 24% [32]. The midpoint value of 12% is used to estimate GHG reductions.

[32] According to the TEEMP Model.

It is further assumed that the construction of new maintenance depots and the modernization of existing depots will not be completed until 2015.

ESMAP Fuel Efficiency Assumptions

21. The ESMAP protocols involve targeting and improving the fuel efficiency of the lowest-performing drivers and buses. Fuel efficiency savings ranging from 10% to 23% occurred when this approach was tested at two Hyderabad depots as part of an ESMAP demonstration. A conservative value of 6% is used to estimate GHG reductions.

22. It is further assumed that the full implementation of the ESMAP program will not be completed until 2016 and that partial savings will be realized in 2014 (60%) and 2015 (90%).

MIS/ERP and Service Plan Assumptions

23. The service plan improvements and MIS/ ERP applications will enable the transport companies to operate both faster and more reliably. The approach for estimating the GHG impacts of implementing the MIS/ERP systems and the service plan is a three-step process:

- **Estimate the increased kilometers of service.** The assumption regarding efficiency is the MIS/ERP applications will enable transport companies to operate 2% more service kilometers every year with the same number of drivers and buses. A one-time increase of 6% service kilometers in 2017 is assumed for the service plan.

- **Estimate the increased vehicle GHG emissions from the increased kilometers of service.** The current fuel consumption by city and the constant CO_2 emissions factor per liter of fuel (2.94348 kg CO_2 /liter) are used to make these estimates.

- **Estimate the GHG reduction impact of shifting riders from other modes to the new kilometers of service.** The estimated GHG reduction impact is estimated using the following procedure.
  i. Use the results of the World Bank stated preference survey conducted in each city as the prior mode data for new passengers (see Exhibit X).
  ii. Identify prior modes where passenger shifts will result in GHG gas reductions. These are motorized modes and exclude walking and bicycling. The proportion of prior bus users is reduced by at least 25% for all four cities.
  iii. Estimate vehicle kilometers traveled on prior modes. Conservative values for trip length and modal occupancy are assumed based on experience with these cities. Theses value are used to convert numbers of passengers shifted into vehicle kilometers traveled by prior modes.
  iv. Estimate CO_2 reductions using values from GEF TEEMP models.

Summary of City GHG Estimates

24. A summary of the estimated GHG impacts is presented in this section.

Bhopal

The Bhopal City Link Limited (BCLL) now operates a fleet totaling at 225 buses. The GEF initiative provides funding for the following activities: depot modernization involving modern equipment and machinery, improvement of bus fuel efficiency, implementation of modern MIS/ERP, and route planning and rationalization. It is expected through the GEF-funded efforts the transport system (together with a 24km-long BRT system) will become more attractive to urban travelers in Bhopal, who now mainly commute through private operations. These operations consist of 450 minibuses, 300 Tata Magic (Tempo) vehicles, and 3,000 auto rickshaws.

Chandigarh

Chandigarh Transport Undertaking (CTU) is planning to introduce 400 more buses, in addition to the 100 introduced under the Phase 1 of the GoI Scheme, with better technology and modern infrastructure. The proposed ESCBS pilot component in Chandigarh would provide incremental funding and technical expertise to help modernize their depots and implement technologies that will help the transit system be more competitive with private modes. These technologies – service plan improvements and MIS applications – will enable the transit to operate both faster and more reliably. Improved speed and reliability will help the public transport system attract certain time-and-cost sensitive riders who might otherwise have taken two-wheelers or intermediate public transport. The ESCBS funds will also support depot modernization and fuel efficiency improvement. Currently there are four bus depots serving beyond capacity, and there is one more being planned. A retrofit work to all the existing depots would bring incremental benefits to the entire bus fleet 431 buses, which operate on the road and provide 102,000km of service. Additionally, the CTU management is implementing the ESMAP approach for monitoring and improving fuel efficiency.

Jaipur

Jaipur already has a track record of relatively environmentally friendly transport investments by Indian standards. Post introduction of the JCTSL's city bus system, the modal share of public transport has increased from 19% in 2006 to 22% in 2010 and received an award for it during the Urban Mobility India Conference held in 2010 by the Ministry of Urban Development, Govt. of India. The city is also operating a pilot corridor of BRT system for over a length of 7.1 km, with its very first metro line under development. For Jaipur, the incremental global environmental benefit provided by the ESCBS mainly lies in funding provided for development and modernization of depots, energy savings from improvement in Bus Fuel Efficiency and the implementation of MIS/ERP and service plan improvements.

Currently the 400 buses operated by the Jaipur City Transport Services Limited (JCTSL) has already overcrowded the existing Sanganer and Vidhyadhar Nagar depots. Since 286 buses will be delivered during the 2014-2016 time span, JCTSL seeks to construct two new depots and renovate the two existing ones. JCTSL plans to install solar panels in bus depot and bus shelters for energy saving. This innovative move will certainly generate extra carbon emission reduction for the entire bus network. Current data show that those panels are expected to generate about 35

to 40 kW of power assuming the original power sources from coal, it will reduce carbon emission by about 800 tons over a ten-year period[33].

Mira Bhayandar

Currently the Mira Bhayandar Municipal Corporation through the Mira Bhayandar Municipal Transport Undertaking (MBMTU) operates 63 buses in the city. MBMC is also planning to expand the fleet size, with an additional fleet of 100 buses. At present, there are no terminals or depots in Mira-Bhayandar for parking and carrying out maintenance of the buses. The proposed ESCBS pilot component in Mira Bhayandar would provide incremental funding and technical expertise to help equip the very first bus depot, and modernize the city's bus operations with ITS technologies and modern fare collection system. Therefore it is reasonable to assume that the new depot supported by ESCBS and co-finance would generate a step-change improvement to the maintenance and operation of buses and contribute to fuel savings from the bus fleet.

25. The ESCBS would also provide incremental finance to enable MBMC to purchase Intelligent Transport Systems applications for its bus system MBMC has requested ESCBS funding support from GEF in the following ITS areas:

- ITS Equipment (AVLS) —Automatic vehicle detection and functional control center.
- Passenger Information Systems (PIS) — Route maps, real time information, and user-friendly website.
- Electronic Ticketing — Electronic ticketing machine (ETM) and smart cards.

26. The aforementioned ITS applications have a number of wide ranging benefits for bus fleet operations, and a number of these have potential knock-on effects for GHG emissions reduction in particular. These effects include:

- AVLS will enable regular and reliable collection of data on vehicular movements as well as more effective operational planning in the future. The former will facilitate more accurate, real-time tracking of CO_2 emissions from the bus fleet, while the latter means reduction in congestion effects on the network (I in ASIF identity[34]);
- PIS and ETM will improve speed and reliability of service for users, which will increase ridership among time– sensitive travelers (e.g. those with access to two-wheelers). Resulting changes will reduce overall vehicle activity (A in ASIF identity), and reduce network congestion, which will, in turn, also reduce the energy intensity per vehicle kilometer (I in ASIF identity).

[33] Lifecycle greenhouse gas emissions by electricity source can be found in: Moomaw, W., P. Burgherr, G. Heath, M. Lenzen, J. Nyboer, A. Verbruggen, 2011: Annex II: Methodology. In IPCC: Special Report on Renewable Energy Sources and Climate Change Mitigation (ref. page 10). Assuming a 6-hour daily working duration for the panels.

[34] The ASIF framework, developed by Lee Schipper, Roger, etc, delineates on of the methodologies to quantify carbon emission from transportation activities, where ASIF stands for travel activities, mode share, fuel intensity, and emission factor respectively.

Combined efficiency gains (CO_2 reductions) in all four cities is presented in the table below:

S No	Name of City	Baseline CO_2 emissions	Estimated CO_2 reductions
1	Bhopal	142,689,637	27,432,093
2	Chandigarh	380,263,599	87,770,534
3	Jaipur	480,015,617	94,395,827
4	Mira Bhayandar	91,461,918	19,510,697

27. Based on the expected efficiency gains, combined with the financials provided through the GEF grant, the direct fuel savings, and direct GHG reductions to be achieved from Component 2B are provided in the table below:

Total number of buses (owned by STUs) in pilot cities by 2016 with JnNURM Finance	1,794
Baseline level of CO_2 emissions in tons	1,094,430
Range of energy efficiency improvements of project activities	2-18%
Expected savings from fuel (10 years)in USD	74,971,780
Expected savings from fuel (10 years)in liters of fuel	77,836,150
Expected savings from fuel (10 years) in tons of CO_2	229,109
Total package cost in USD	113,000,000
GEF finance in USD	9,200,000
GEF finance for component 2B in USD	6,000,000
Counterpart finance in USD	103,800,000

Sensitivity Test

28. The GHG reduction estimates are based on a series of assumptions for fuel saving effects and transit service growth from previous literature and historical data from other countries. These estimates should be interpreted as "hypothesis" rather than facts.

29. Sensitivity tests are conducted against a range of values of three key parameters in the analyses to demonstrate the uncertainty of those estimates of GHG reductions. This highlights the necessity to measure actual outcomes during the implementation to provide more robust working assumptions for the Indian context.

Expected savings from fuel (10 years) in tons of CO2		**Annual baseline km growth rate (In response to City Growth)**			
		1%	**2%**	**3%**	**4%**
Fuel Savings from Depot Modernization	8%	184,249	191,596	199,111	206,784
	10%	206,679	215,394	224,361	233,575
	12%	229,109	239,192	249,610	260,366
	14%	251,539	262,989	274,860	287,158
Expected savings from fuel (10 years) in tons of		**Annual baseline km growth rate (In response to City Growth)**			
		1%	**2%**	**3%**	**4%**

CO2					
Fuel Savings from FEI	2%	184,676	192,036	199,563	207,249
	4%	206,893	215,614	224,587	233,808
	6%	229,109	239,192	249,610	260,366
	8%	251,326	262,770	274,634	286,925

Indirect-effect Analysis

30. It is expected that this project will catalyze replication of sustainable transport projects in multiple cities or regions, and remove barriers and bring sustainable transport technologies to a wider market, and thus it can—indirectly—accrue large GHG reduction impacts. This analysis assesses those indirect impacts in two ways: the "top-down" approach and the "bottom-up" approach.

31. The top-down methodology uses the entire bus fleet of the entire nation as a starting point, applying given assumptions for costs and benefits of the technology. Clearly, this results in the most optimistic assessment – full market penetration—and thus it is the upper-most limit for the range of potential GEF project impacts.

32. The Bottom-up methodology makes a conservative assumption that the project is likely to be replicated in only 10 other cities. This assumption yields a lower limit of the range of the potential indirect impact.

33. Results of the direct-effect and indirect-effect analyses are summarized in the table below:

Lifetime direct GHG emissions avoided in tons of CO_2	229,109
Lifetime direct post-project GHG emissions avoided in tons of CO_2	444,741
Lifetime indirect GHG emissions avoided (bottom-up) in tons of CO_2	2,291,092
Lifetime indirect GHG emissions avoided (top-down) in tons of CO_2	7,458,180

Results Frameworks for Projects

34. The Project Development Objectives (PDO) of the Project, and the baseline and estimated target values for outcome and intermediate indicators are provided in Annex 1.

Role of Co-financing

35. For most of the city demonstration projects, achievement the Global Environmental Objective via Strategic Program 5 will be co-financed through funding from the JnNURM, and its related and required proportional contributions from the state and local governments. Because JnNURM requires consistency with the NUTP, and many of the provisions of the NUTP are inherently conducive to achieving reductions in transport CO2 emissions compared to current trajectories, and because a key contribution of the prospect of a GEF project for the project cities

has been to channel and focus the kinds of projects for which the cities request funding from the JnNURM in the first place, the JnNURM funding and related state and local contributions associated with the ESCBS are entirely considered to be co-financing. In addition, there is some additional funding by ESMAP under Component 1 and 2A and by other city authorities under Component 2B that is considered as co-financing.

36. GEF funds will pay for about eight percent of the ESCBS project; the remainder will be leveraged from these co-financing sources. The overall allocation of the co-finance compared with GEF funds is specified in Table 1 of the PAD.