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The World Bank

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Report No: PAD714

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF

US$200 MILLION

TO THE

PEOPLE'S REPUBLIC OF CHINA

FOR A

HEILONGJIANG COLD WEATHER SMART PUBLIC TRANSPORTATION SYSTEM PROJECT

February 27, 2014

China and Mongolia Sustainable Development Unit
Sustainable Development Department
East Asia and Pacific Region

CURRENCY EQUIVALENTS
(Exchange Rate Effective February 1, 2014)

Currency Unit	=	RMB
RMB1.00	=	US$0.16
US$1.00	=	RMB6.10

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

CPS	Country Partnership Strategy
EA	Environment Assessment
EIA	Environmental Impact Assessment
EMP	Environment Management Plan
FM	Financial Management
FSR	Feasibility Study Report
GHG	Greenhouse Gas
HBC	Harbin Bus Company
HMG	Harbin Municipal Government
HPAO	Heilongjiang Provincial Audit Office
HTC	Harbin Tram Company
HPFD	Heilongjiang Provincial Finance Department
ICM	Integrated Corridor Management
ITS	Intelligent Transport System
MBC	Mudanjiang Bus Company
MMG	Mudanjiang Municipal Government
MOT	Ministry of Transport
NDRC	National Development and Reform Commission
PDO	Project Development Objective
PMO	Project Management Office
RP	Resettlement Plan
RPF	Resettlement Policy Framework
SA	Social Assessment
TEEMP	Transport Emissions Evaluation Models for Projects
TransFORM	China Urban Transport Solution Platform

Regional Vice President:	Axel van Trotsenburg, EAPVP
Country Director:	Klaus Rohland, EACCF
Sector Director:	John A. Roome, EASSD
Sector Manager:	Abhas K. Jha, EASIN
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CHINA
Heilongjiang Cold Weather Smart Public Transport System Project

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PAD DATA SHEET

China

Heilongjiang Cold Weather Smart Public Transportation System (P133114)

PROJECT APPRAISAL DOCUMENT

EAST ASIA AND PACIFIC

EASCS

Report No.: PAD714

Basic Information			
Project ID P133114	EA Category B - Partial Assessment	Team Leader Binyam Reja	
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints [ ] Financial Intermediaries [ ] Series of Projects [ ]		
Project Implementation Start Date 28-Mar-2014	Project Implementation End Date 31-December -2019		
Expected Effectiveness Date 30-Sep-2014	Expected Closing Date 30-June-2020		
Joint IFC No			
Sector Manager Abhas K. Jha	Sector Director John A. Roome	Country Director Klaus Rohland	Regional Vice President Axel van Trotsenburg

Borrower: People's Republic of China			
Responsible Agency: Heilongjiang Development and Reform Commission			
Contact:	Mr. Wang Xiquan	Title:	Director
Telephone :	045182629329	Email:	xqwang3@163.com
Responsible Agency: Harbin Project Management Office			
Contact:	Mr. Tan Hongzhi	Title:	Director
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Responsible Agency: Mudanjiang Project Management Office			
Contact:	Mr. Qi Xiangfei	Title:	Deputy Director
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Project Financing Data(in USD Million)

[X]	Loan	[ ]	Grant	[ ]	Guarantee
[ ]	Credit	[ ]	IDA Grant	[ ]	Other

Total Project Cost:	431.00	Total Bank Financing:	200.00
Financing Gap:	0.00		

Financing Source	Amount
Borrower	231.00
International Bank for Reconstruction and Development	200.00
Total	431.00

Expected Disbursements (in USD Million)

Fiscal Year	2015	2016	2017	2018	2019	2020	0000	0000	0000
Annual	5.00	10.00	25.00	50.00	75.00	35.00	0.00	0.00	0.00
Cumulative	5.00	15.00	40.00	90.00	165.00	200.00	0.00	0.00	0.00

Proposed Development Objective(s)

The Project Development Objective (PDO) is to upgrade the quality and efficiency of public transport services in selected public transport corridors of the project cities.

Components

Component Name	Cost (USD Millions)
Component 1. Public Transport Corridor Improvement	165.16
Component 2. Public Transport Infrastructure Improvement	178.79
Component 3. Traffic Management and Safety Improvement	54.53
Component 4. Emergency Response and Road Maintenance	11.92
Component 5. Capacity Building	8.42

Institutional Data

Sector Board

Transport

Sectors / Climate Change

Sector (Maximum 5 and total % must equal 100)

Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Transportation	Urban Transport	100		30

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	City-wide Infrastructure and Service Delivery	70
Financial and private sector development	Infrastructure services for private sector development	30
Total		100

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 Agreement, Schedule, Section 1, D, Paragraph 1 (a)		30-Sep-2016	

Description of Covenant

By no later than September 30, 2016, Harbin Municipality shall have entered into agreements with Harbin Bus Company and Harbin Tram Company, under terms and conditions acceptable to the Bank, inter alia transferring the buses and setting out performance standards for their operation.

Name	Recurrent	Due Date	Frequency
Project Agreement, Schedule, Section 1, D, Paragraph 1 (b)		30-Sep-2016	

Description of Covenant

By no later than September 30, 2016, Mudanjiang Municipality shall have entered into agreement with Mudanjiang Bus Company, under terms and conditions acceptable to the Bank, inter alia, leasing the buses and setting out performance standards for their operation.

Name	Recurrent	Due Date	Frequency
Project Agreement, Schedule, Section 1, D, Paragraph 1 (c)		30-Sep-2016	

Description of Covenant

Harbin and Mudanjiang municipalities shall have undertaken a study, under terms of reference acceptable to the Bank, to review the regulation, financing and subsidization arrangements of its public transport sector, with a view to better integrating the private sector and to establishing integrated service standards, as well as adequate operational responsibilities and public support mechanisms.

Conditions

Name	Type

Description of Condition

Team Composition

Bank Staff

Name	Title	Specialization	Unit
Teresita Ortega	Program Assistant	Program Assistant	EASWE
Songling Yao	Senior Social Development Specialist	Senior Social Development Specialist	EASCS
Junxue Chu	Senior Finance Officer	Senior Finance Officer	CTRLN
Binyam Reja	Lead Transport Specialist	Team Leader	EASCS
Yi Dong	Sr Financial Management Specialist	Sr Financial Management Specialist	EASFM
Haiyan Wang	Senior Finance Officer	Senior Finance Officer	CTRLN
Alejandro Alcala Gerez	Senior Counsel	Senior Counsel	LEGES
Lei Wu	Program Assistant	Program Assistant	EACCF

Xin Ren	Environmental Specialist	Environmental Specialist	EASCS
Jun Jiao	Procurement Specialist	Procurement Specialist	EASR2
Yuhui Jiao	Transport Specialist	Transport Specialist	EASCS
Anita Shrestha	Procurement Assistant	Financial Analysis	EASPR
Zhuo Yu	Finance Officer	Finance Officer	CTRLN

Non Bank Staff

Name	Title	Office Phone	City
Michael Chiu	Sr. Public Transport Consultant		Beijing
Chuntai Zhang	Economist Consultant		Beijing
Li Qu	Transport Consultant		Beijing
Shuai Ren	Urban Transport Consultant		Beijing

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
China	Heilongjiang Sheng	Mudanjiang		X	
China	Heilongjiang Sheng	Harbin		X	

I. STRATEGIC CONTEXT

A. Country Context

1. China's new economic growth strategy, as articulated in the 12th Five Year Plan (2011-15) and various government documents, calls for fostering urbanization and increasing domestic consumption to promote a steady and rapid economic development, while at the same time safeguarding the environment, ensuring social inclusion, and reducing income and regional disparities. This strategy builds on the three-decades of successful economic growth, which was largely fueled by export-led industrialization and investment on infrastructure development. The new growth strategy is also closely aligned with the World Bank Group's development goals that strive to eliminate extreme poverty and promote shared prosperity.

2. During the past economic boom, China experienced rapid motorization where the number of vehicles increased from 5.5 million in 1990 to 120 million in 2010. Accelerated urbanization and continued economic growth (albeit lower than historical trends) will further increase motorization and transport demand in Chinese cities. Yet, while facilitating economic development, motorization is also a major energy consuming activity, leads to local air pollution, greenhouse gas (GHG) emissions, and causes injuries and fatalities during road accidents. Therefore, achieving a more sustainable and inclusive path for urbanization and economic growth will be inextricably linked to how well Chinese cities are able to provide an urban transport system that can simultaneously slow down the growth of negative transport externalities, while at the same time ensuring cities have an effective, efficient, and safe urban transportation system.

3. To date, local governments in China have followed a strategy focused primarily on expanding the supply of transport in their respective jurisdictions – building roads to accommodate a growing vehicle population and investing on buses and mass transit. Yet, this supply-side strategy was not sufficient to respond to the rapidly growing transport demand in an efficient and environmentally sustainable manner. In fact, during the large infrastructure investment period, the key urban transport indicators – congestion, air quality, and safety, have worsened in large cities, as well as in some medium-size cities, resulting in poor quality of life and unfavorable investment climate in the worst affected cities. Recognizing the importance of urban transport for national development, the central government issued a series of policy directives and guidance to encourage cities to adopt a more efficient and sustainable urban transportation system in their cities. In 2005 and 2012, the State Council issued Opinion No. 46 and No. 64 respectively mandating local governments and providing them specific guidance to make public transport development a priority in their urban transport master plans. Similarly, in 2011, the Ministry of Transport (MOT) initiated a pilot program in 30 cities to promote the development of a "public transit metropolises," which has a goal of increasing transit's mode share in the pilot cities to more than 40 percent of the total commuting transport demand.

B. Sectorial and Institutional Context

4. The proposed project supports public transport improvements in two cities in Heilongjiang Province, namely Harbin and Mudanjiang. Heilongjiang, located in northeastern China, has a population of 38 million and GDP per-capita of US$5,600, which is lower than the

national average of US$6,091, and less than half of the more developed eastern provinces. Heilongjiang was the traditional base of the old industrial complex in China, which had been declining since the beginning of reforms. In October 2003, the State Council issued an Opinion on "The Implementation of Strategies for Revitalizing Northeast's Old Industrial Bases," following which it launched the Northeastern Revitalization Strategy to support the reform of state-owned enterprises and transforming and upgrading the old industries. Accordingly, Heilongjiang's economy in recent years has been growing faster than the national average.

5. Harbin is the capital city of Heilongjiang, and the largest city in northeast China. In 2011, Harbin Municipality (covering the urban and rural areas) had a population of 10.6 million, making Harbin the tenth most populous city in China; its GDP was RMB424 billion (US$68 billion). Mudanjiang is a much smaller city than Harbin. It is a prefecture-level city located in the southeast of Heilongjiang. It is a border town located 248 km from Vladivostok, Russia. In 2011, Mudanjiang Municipality (covering the urban and rural areas) had a population of 2.8 million. Its GDP was RMB94 billion (US$15 billion). Both Harbin and Mudanjiang are located above 45 degrees latitude and both cities have dry and extremely cold winter with temperature averaging in January about -18°C (-1°F). As such, Harbin and Mudanjiang, not only have the same urban transport challenges faced by other cities in China as described above, but also have the added challenge of providing public transport services in an extremely cold climate, heavy snow, and icy road conditions during winter.

Public Transport in Harbin and Mudanjiang: Challenges and Reforms Ahead

6. Public transport services in both Harbin and Mudanjiang are characterized by inadequate capacity and aging bus fleet. Buses run at low speed and low punctuality, in part due to poorly-designed road infrastructure and lack of modern traffic management system that provides priority to buses. The application of Intelligent Transport System (ITS) to support public transport operations and traffic management is at an early stage in Harbin and Mudanjiang, and lags behind other major cities in China. The inefficient public transport systems result in passengers waiting a long time for a bus in cold temperature, and when the bus arrives it is often overcrowded especially during peak hours; these in turn discourage potential passengers from taking public transport. Women are especially affected by poor public transport as women tend to value safety, security and comfort more than men, and thereby reducing their mobility or forcing them to take a more expensive travel mode.

7. The supporting infrastructure facilities, such as bus depots, terminal and passenger hubs are inadequate. Due to lack of adequate parking garages, buses are parked outside, and during the cold winter season, the drivers have to spend more than an hour to start and warm up the engine, which wastes fuel, causes high pollution, and results in the loss of the driver's time. Under the severe weather and icy road conditions, accidents occur frequently, which cause fatalities and injuries and property losses. In addition, even minor accidents cause major traffic delays and create congestion during incident investigation and removals, which further reduces the bus speed.

Harbin Public Transport System

8. Public transport in Harbin is provided by 34 public transport companies, including two state-owned and 32 private. The total number of bus routes in Harbin is 165. The bus network density is 2.37 km/ km^2 with daily passenger volume of 3.08 million. The mode share for buses was 30 percent in 2012. The two state-owned bus companies have 85 bus lines with 2682 buses. While the private bus companies have a combined 80 bus lines with 2447 buses. The SOEs and some private companies operate at a loss in part due the low fare and the level of quality and quantity of service required by the Transport Bureau, which regulates bus operators. The public transport infrastructure in Harbin is operated by Harbin Transport Infrastructure Investment and Construction Management Company (TIICMC). It is responsible for the construction, management, and operation of bus terminals, depots, and other public transport related infrastructure. Currently, there are 19 bus depots, 303 bus terminals, and 2034 bus stops in Harbin used by all SOE and private bus operators.

9. As one of the pilot cities with MoT's "Transit Metropolis" initiative, Harbin is developing a public transport system that can increase transit's mode share to 45 percent by 2020. Harbin Municipal Government (HMG) has a major investment program, including developing metro rail, bus priority lanes (including BRT), network-wide bus service improvement, upgrading traffic management systems, and expanding ITS application. Under the proposed project, HMG plans to equip its two SOE bus operators with new cleaner-fuel and accessible buses, thereby upgrading their quality and attractiveness to passengers, at the same time introducing lower-emission and sustainable public transport system in the city. HMG is also engaging the private bus operators with a view to achieve a more coordinated and standard quality bus service provision by the private operators. Under the proposed project, HMG will launch a sector reform program to establish a coordinated route structure, common bus scheduling and dispatching service, linking all private and SOE operators to the same central bus dispatching centers. HMG will also improve the regulatory framework to clarify the roles of the government and the private sector in the provision of bus services, and to ensure the SOEs and private operators have a level playing field, including equal access to public transport infrastructure, ITS applications, centralized dispatching service, and government subsidy program.

Mudanjiang Public Transport System

10. Mudanjiang has only one privately-owned bus company, providing bus services throughout the municipality under a long-term concession agreement with the Mudanjiang Transport Bureau. The mode share for buses in Mudanjiang is about 15 percent. There are 50 bus lines in operation, with 704 buses. There are 21 bus terminals in the city, 17 of which do not have parking space for buses. There are 1194 bus stops in all bus lines. Of these, 350 have bus shelters and only 2 percent of bus stops have bus stop bays. All bus supporting infrastructure are managed by the bus company.

11. Mudanjiang is improving its urban transport infrastructure and service to increase transit's mode share to 35 percent by 2020. Mudanjiang Municipal Government (MMG) has listed urban public transport as one of the four key industries to be developed in the coming three

years. MMG has privatized its bus operation in 2003 to a private company under a 30-year concession. However because of low fares and high quality standards required by the city, the private operator does not cover its capital and operating costs from operating revenues. It receives full capital subsidy to replaces buses, and some operating subsidy, mostly for fuel. Under the proposed project, Mudanjiang will provide the private operator with new buses in order to significantly upgrade service quality, and thus ensure public transport becomes a preferred mode for the public. The buses will be transferred under a performance-based lease agreement that would require the bus company to meet certain performance standards. Mudanjiang will also use the institutional development component under this project to improve the regulatory oversight of the private operator.

12. ***Coordination with other relevant World Bank Projects.*** Harbin is one of the pilot cities in the GEF project of "Large City Congestion and Carbon Reduction Project (P127036)", which was approved by the Board on March 28, 2013. The GEF project complements the proposed project in the following way: it provides funding to develop a comprehensive travel demand management system, including better parking policies and transit-oriented development plan. Both of these are essential to ensuring a higher public transport mode share is sustained. The GEF project also provides funding to develop additional bus corridors and ITS activities.

C. Higher Level Objectives to which the Project Contributes

13. The proposed project is aligned with the 2013-2016 World Bank Group Country Partnership Strategy (CPS) for China discussed by the Board on November 6, 2012. The CPS focuses on three main themes: supporting greener growth, promoting more inclusive development, and advancing mutually beneficial relations with the world. The CPS is aligned with China's 12th Five-Year Plan and is informed by the "China 2030" report prepared jointly by the Bank and the Development Research Center of the State Council (published in 2012). The proposed project supports the CPS themes of greener growth and inclusive development, as well the CPS sectorial objectives to promote low-carbon urban transport and strengthening mechanisms for managing climate change. Through promoting clean-fuel vehicles, integrated corridor management, traffic management and safety improvements, this project supports the achievement of CPS outcomes of reducing energy consumption and helping China to make progress in meeting its commitments under environmental conventions.

14. The project will support the advancement of the Bank's new strategy to boost shared prosperity in China, as the primary users of public transport services in the project cities are the poor. According to user surveys, 76 percent of public transport users in Harbin earn less than RMB14,400 a year, while the average per-capita income in Harbin is RMB22,500. The improvements envisaged under the proposed project will improve the low-income population's access to safe and convenient public transport services, which are important to accessing jobs and social services in the cities.

II. PROJECT DEVELOPMENT OBJECTIVE

A. PDO

15. The Project Development Objective (PDO) is to upgrade the quality and efficiency of public transport services in selected public transport corridors of the project cities.

16. The proposed project will improve the level of service in the targeted corridors and reduce the impact of extreme weather conditions on public transport usage and operations, thereby ensuring greater users' satisfaction and making buses a more attractive alternative to driving a private car. In order to achieve these goals, the project will include: infrastructure improvements on selected busy corridors; an expanded use of ITS applications for public transport operations and traffic management; the procurement of cleaner-fuel and accessible buses; and institutional and financing reforms governing the development and delivery of public transport services in the project cities.

B. Project Beneficiaries

17. The project beneficiaries are public transport service users along the targeted transit corridors, who will experience a more convenient, reliable, and comfortable bus service, especially during extremely cold weather situations. Women would especially benefit from the project as the safety and convenience improvement supported under the project would reduce the most common barriers to using the public transport system by women, namely safety and security. In addition, the project will benefit people with disability as the buses, bus stops, and terminals would be designed to be accessible for people with visual and physical impairments. Although it is not a "poverty targeted" project, the proposed project's beneficiary will be largely the poor, who rely on public transport services for their mobility needs to access jobs and social services in the cities.

C. PDO Level Results Indicators

18. The achievement of the PDO will be monitored through the following indicators designed to measure outcomes for the targeted corridors.

(i) Increased public transport service satisfaction
(ii) Increased share of buses arriving on schedule.
(iii) Increased bus speeds.
(iv) Reduced fatalities and major injuries.
(v) Reduced energy consumption by buses.

III. PROJECT DESCRIPTION

A. Project Components

19. ***Component 1. Public Transport Corridor Improvement (Total Cost: US$165.16 million; IBRD Loan US$48.86 million.)*** This component will finance the improvement of three designated public transport corridors in Harbin and five in Mudanjiang by: (a) improving

pavement conditions and developing new lane configurations within the current pavement width to provide dedicated bus-priority lanes, bike lanes, and pedestrian facilities; (b) installing bus stops and providing heated indoor bus waiting facilities, limited underground conduit / pipeline, sidewalk and roadside parking improvement. The component will also finance one non-motorized corridor system improvement in downtown Mudanjiang.

20. ***Component 2. Public Transport Infrastructure Improvement (Total Costs, US$178.79 million; IBRD Loan: US$89.46 million).*** This component will finance the following activities in Harbin and Mudanjiang: (a) the procurement of cleaner-fuel and accessible buses to increase usage of cleaner-fuel vehicles and introduce accessible buses to be used by people with disability; (b) construction of passenger hubs, terminal, depots/garages, maintenance facility, safety education facility, and bus driver training facility; (c) implementation of ITS applications and other information technology to improve the efficiency and management of bus operations.

21. ***Component 3. Traffic Management and Safety Improvement (Total Costs, US$54.53 million; IBRD Loan: US$37.29 million)***. This component will finance the procurement of equipment and related civil works for traffic management in Harbin and Mudanjiang for: (a) traffic control system, including traffic signals with bus priority function to ensure bus priority and pedestrian crossings safety; (b) traffic monitoring and violation detection system; (c) real time traffic information system and traffic guidance system; and (d) traffic safety education.

22. ***Component 4. Emergency Response and Road Maintenance (Total Costs, US$11.92 million; IBRD Loan: US$4.41 million).*** This component will support Harbin in the development of an effective emergency response and road maintenance system. The project will finance procurement goods for (a) road, bridge and tunnel inspection equipment; (b) underground utility detector; (c) road maintenance equipment; and (d) emergency response equipment.

23. ***Component 5. Capacity Building (Total Costs, US$8.42 million; IBRD Loan: US$8.42 million).*** This component will support improvements to the institutional and financing framework within which public transport services are developed and operated in both Harbin and Mudanjiang. The project will finance urban transport related studies, including evaluating and optimizing bus service in cold weather regions, providing transport planning and management strategies, and developing a new ownership and regulatory structure for public transport operations in the project cities. The proposed studies and planning will strengthen the institutional capacity of the local municipalities to develop solutions unique to the challenge of public transport in extremely cold weather condition. The project will also build capacity for local municipal government to implement the respective project components so as to achieve the proposed PDO. The project will also finance consulting services and incremental operation cost for project management, as well as support domestic and international training/study tours.

B. Project Financing

24. **Lending Instrument.** The proposed lending instrument for this project is an Investment Project Financing (IPF). The Borrower has selected a US Dollar denominated, commitment-linked variable spread loan based on six-month LIBOR plus an additional variable spread. It has

also selected all available conversion options, annuity repayment profile, and a repayment period of 25 years, including a 5-year grace period.

25. The total cost of the proposed project is US$431 million, including US$224 million for Harbin and US$207 million for Mudanjiang. The proposed IBRD loan will finance US$200 million of the project costs, with each city receiving US$100 million. Harbin and Mudanjiang will provide counterpart funding of US$124 million and US$107 respectively from their consolidated revenue budget. According to the fiscal analysis carried out as part of project appraisal (Section VI), both projects have adequate fiscal space to support the counterpart funding requirement, as well as assume the loan.

26. **Table 1** provides component-wise cost and financing arrangement for the whole project. Annex 2 provides City-wise cost tables and detailed project description.

Table 1 Project Cost and Financing Plan

	Total Cost		Financing Plan		
Project Cost by Component	**Cost (RMB million)**	**Cost (US$ million)**	**IBRD (US$ million)**	**Counterpart (US$ million)**	**% IBRD Financing**
Component 1. Public Transport Corridor Improvement	1,007.50	165.16	48.86	116.30	29.59%
Component 2. Public Transport Infrastructure Improvement	1,090.63	178.79	89.46	89.33	50.03%
Component 3. Traffic Management and Safety Improvement	332.64	54.53	37.29	17.24	68.39%
Component 4. Emergency Response and Road Maintenance	72.71	11.92	4.41	7.51	37.02%
Component 5. Capacity Building	51.35	8.42	8.42	0.00	100.00%
Total Project Costs	**2,554.83**	**418.82**	**188.45**	**230.38**	**44.99%**
Land Acquisition and Resettlement	3.82	0.63	0.00	0.63	
Interest during implementation	67.46	11.06	11.06	0.00	
Front-end Fee	3.05	0.50	0.50	0.00	
Total Financing Required	**2,629.15**	**431.01**	**200.00**	**231.01**	**46.40%**

Source: Feasibility Study Reports

C. Lessons Learned and Reflected in the Project Design

27. The China transport program currently includes 11 urban transport projects under implementation and eight under preparation. The lessons learned from the Bank's urban transport projects are systematically captured, presented and disseminated through the China Urban Transport Solution Platform (TransFORM), a collaborative knowledge platform between the Bank and China established in November 2012 as a first pilot to promote the Science of Delivery in China. The TransFORM brings together government agencies, research institutions, academia, civil societies, and private sector entities to exchange ideas and share knowledge. Under TransFROM, several knowledge events and seminars are sponsored throughout the year to discuss the implementation experience of Bank-supported projects, as well as international

experience and latest innovations and reforms in the sector from around the world. The findings of these knowledge events (hence lessons from Bank projects and activities) are amplified and disseminated throughout China by utilizing the wider network established under TransFROM, social media events, and periodic publications. TransFROM is in turn used to inform the design of Bank-financed projects and the development of policy reforms at the national level, and implementation of innovative pilots at the local level. The authorities in Harbin and Mudanjiang have participated in key events organized under TransFORM and have used the experience of other Bank projects and international lessons to inform the design of this project. The key lessons included in this project are provided below. In turn, the knowledge generated under the proposed project will be disseminated to others cities in China through TransFORM.

28. ***Integrated Corridor-level Project Intervention is more effective than City-Wide Intervention***. The Integrated Corridor Management (ICM) concept concentrates Bank-financed projects on selected corridors to maximize the benefits from integrating the key elements of urban transport intervention in a synergic way. To date, this concept has been implemented in Liaoning, Wuhan, and Xiangyang with frequent knowledge sharing activities on the topic among the cities. In addition to the ICM, the proposed project introduces "Complete Street" concept to allow full accessibility to all groups of people along the corridors including pedestrians, bikes, buses and private cars, in an organized, efficient and safe manner. The key to successful implementation of ICM includes: (i) strengthening the coordination between different agencies responsible for the different ICM interventions; (ii) synchronized procurement schedules for civil works, equipment and consulting services; and (iii) consultation and continuous communication with the affected public in the targeted corridors. These factors for successful ICM implementation are integrated in the design of the proposed project.

29. ***An effective ITS application requires sustained capacity development and adequate budget for operation and maintenance.*** ITS implementation experience in some cities in China and other countries shows that local governments procure large ITS applications without deploying adequate budget and trained staff to maintain and operate the system, which limits the usefulness of the ITS applications in improving public transport and traffic management operations. Under the proposed project, the ITS procurement will be clubbed together with consultant services in which the goods supplier will provide training and operational support for the initial operations phase (two to three years). This will ensure the manpower that would eventually operate the system would be fully trained, and the initial operations will demonstrate the usefulness of the system to local authorizes, and thus commit them to provide annual budget for the long-term.

30. ***Public transport reforms take time and require strong and sustained commitment from local governments.*** The project provides strong emphasis on reforming the institutional and financing framework underpinning public transport provision in Harbin and Mudanjiang. The two municipalities have shown strong interest to reform and improve the provision of public transport services in their cities, including clarifying the roles of government and private operators and establishing service quality standard and performance monitoring. In order to expedite the reforms, the project will support HMG and MMG to engage consultants and/or research institutes to help implement the public transport reform programs.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

31. For the proposed project, Heilongjiang Province has established a Project Management Offices (PMO) to coordinate project preparation and implementation by the two project cities. Similarly, both project cities have established Project Leading Groups (PLG) and Project Management Offices (PMO). Detailed implementation arrangements are described in Annex 3.

32. ***Provincial Level Coordination.*** Heilongjiang Province, through the Provincial PMO, will be responsible for providing overall leadership and policy guidance, and for overseeing project coordination and implementation by the two project cities. The Provincial PMO is headed by the Director for the Department of Foreign Capital and Overseas Investment in the provincial Development and Reform Commission (DRC). The members of the Provincial PMO include senior officers from the provincial DRC and Finance Bureau.

33. ***City Level Coordination.*** Both Harbin and Mudanjiang have established a PLG for coordination and cooperation among various municipal government departments involved in the delivery of the proposed project. The Harbin PLG is headed by the Executive Vice Mayor, and is co-chaired by two Deputy Mayors responsible for planning and construction, and traffic management. The Mudanjiang PLG is jointly headed by the Party Secretary and Mayor, and co-chaired by the Deputy Mayor responsible for construction and investment.

34. Under the overall direction of the PLGs, each city has also established city-level PMOs for day-to-day project preparation and implementation. The city PMOs will be responsible for procurement, financial management, supervising contractors and consultants, ensuring compliance with environment and social safeguard policies, and monitoring and reporting of implementation progress. The Harbin PMO is established in the Harbin Transportation Bureau and is headed by Bureau's Director General. The Mudanjiang PMO is established in the Mudanjiang DRC, and is headed by its Director. The Vice Directors for Mudanjiang DRC and Finance Bureau are also appointed to serve as vice directors for the Mudanjiang PMO. Under the city PMOs, Project Implementing Units (PIU) have been established to assist the PMOs to implement various project components related to the responsibility of their departments, including Construction Bureau for road construction, Traffic Police for traffic management, Transport Bureau and Bus Companies for public transport component.

35. The municipal traffic police of both Harbin and Mudanjiang were assessed in their capacity as implementing agencies for component C. Both Agencies' function is primarily devoted to traffic control, regulation and traffic enforcement activities. These agencies are separate from regular police agencies in China and do not deal with law enforcement activities of any kind beyond their traffic regulatory mandate. The traffic police in the Project Municipalities is an independent traffic management technical unit, with proper staff and resources to effectively carry out their task under the project.

B. Results Monitoring and Evaluation

36. The Results Framework provided in Annex 1 will be the main tool for monitoring and evaluation of the outcome and intermediate indicators for the project, which have been established to evaluate the achievement of the PDO and components respectively. The PMOs will coordinate the relevant agencies in collecting the require data for the indicators. The PMOs will report the results as part of the Project Progress Report.

37. In addition to the monitoring and evaluation included in the Results Framework, the proposed project will pilot an accounting of the GHG emissions and pollutant associated with the project in Harbin. The "Transport Emissions Evaluation Models for Projects" (TEEMP)[1], developed by Clean Air Asia, is used to estimate the associated GHG emission and pollutant reductions from the project versus the "business as usual" (or without project) scenario. The TEEMP calculates the impact of Harbin's public transport corridors on PM, NOx and CO2 emissions by quantifying the construction, operation and traffic impacts of projected bus priority corridor users. The TEEMP estimate shows that over the 20-year evaluation period, the project will result in the following benefits: 58.33 tons of PM savings; 1,163.46 tons of NOx savings; and 547,639.27 tons of CO2 emissions. The TEEMP will be used by Harbin PMO to conduct further calculations during project implementation and at completion to confirm the ex-ante predictions.

C. Sustainability

38. The sustainability of a public transport project relies on continued maintenance and provision of a high-quality service and operation that ensures public transport services do not deteriorate and remain an attractive alternative to driving a private car. This will require the cities to provide human and financial support to ensure the provision of adequate and effective bus services in their respective cities. The government support would be especially important as the bus companies do not have adequate revenue to cover operating and future capital investment. The Fiscal analysis carried out as part of project preparation (Annex 6) confirms that both cities have the fiscal space to allocate adequate budget to maintain the service quality and standard developed under the proposed project. In addition, the project cities are encouraged by the central government to ensure public transport receives priority investment under their urban transport plan. Harbin is a pilot city under MoT's "transit metropolis" program, which will ensure Harbin to continue investing on public transport services to meet MoT's goals for increasing transit's mode share. The sustainability of the project is therefore assured by the two city governments' commitment to continue supporting public transport services.

V. KEY RISKS AND MITIGATION MEASURES

A. Risk Ratings Summary Table

Risk Category	Rating
Stakeholder Risk	**L**

[1] The TEEMP tools were initially developed for evaluating the emissions impacts of ADB's transport project and have been modified and extended for GEF projects. In the current form, it can be easily applied for evaluating the ex-ante impacts of various transport measures at project level. Currently TEEMP has been used in more than 20 cities to evaluate the impact of various types of projects including BRT.

Implementing Agency Risk	
- Capacity	**S**
- Governance	**M**
Project Risk	
- Design	**S**
- Social and Environmental	**M**
- Program and Donor	**L**
- Delivery Monitoring and Sustainability	**M**
Overall Implementation Risk	**M**

B. Overall Risk Rating Explanation

39. Based on the ORAF, the overall implementation risk of the project has been rated Moderate. The main risks in the project include PMOs capacity and project design complexity.

40. Although the cities' leadership and PMOs have shown strong commitments to the project, the PMOs may not have the capacity to elicit effective implementation and cooperation among the various PIUs and local government agencies whose timely support and active engagement in the project is crucial for the successful implementation of the project. The provincial level PMO and city level PLGs will play an active role during project implementation, including (i) having regular meetings to review implementation progress, and (ii) providing the PMOs high-level government support to get cooperation from various government agencies. In addition, the Bank team will provide training on Bank procurement, financial management and safeguards policies to all concerned PMOs and agencies during project implementation.

41. Urban transport projects, by their nature, involve multiple project interventions, including road improvement, terminals, depots, ITS, bus procurement, and capacity building. These disparate interventions are, however, needed to ensure the achievement of the project's objective and to facilitate the provision of an efficient and safe public transport services. Yet, the multitude interventions also increase the complexity of the project and require an effective project management to ensure the different project components are implemented fully and in a timely manner. To mitigate the project complexity risk, the PMOs have established strong teams and have engaged experienced consultants and design institutes to assist them in preparing and implementing the project. Better leadership from PLGs would also ensure and relevant agencies work closely with each other to implement the different components.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

42. ***Economic Evaluation***. The economic evaluation of the proposed project was carried out for the two cities separately. The project costs included the capital and operation and maintenance (O&M) costs. The economic benefits (travel time savings, reduction in vehicle operating costs) were calculated by comparing the "with-project" and "without-project" scenarios. The economic internal rate of return (EIRR) for Harbin and Mudanjiang are estimated to be 19.44 and 23.88 percent respectively, and the net present values (NPV) of are estimated to be RMB492.22 million and RMB500.7 million respectively (**Table 2**). Sensitivity analyses have been conducted, assuming higher costs and lower benefits. Under the worst case scenario (costs

increased by 20 percent and benefits decreased by 20 percent), the EIRR was 11.05 percent for Harbin and 12.01 percent for Mudanjiang. The sensitivity analyses show that the EIRRs are more sensitive to changes in project benefits, which suggests that the project needs to ensure the services are of high quality in order to ensure more passengers are attracted to use the services (See details in Annex 6).

Table 2 Summary of Economic Evaluations

	EIRR (in %)	ENPV (RMB million, 12%)
Base case		
Harbin Project	19.44	492.22
Mudanjiang Project	23.88	500.70

Note: EIRR = economic internal rate of return, ENPV = economic net present value
Source: The Feasibility Study Report for Harbin (October 2013)
The Feasibility Study Report for Mudanjiang (October 2013)

43. ***Fiscal Impact Analysis***. The Harbin Municipal Government (HMG) and Mudanjiang Municipal Government (MMG) will be responsible for using the loan, providing counterpart funds to the project implementation, and paying back the loan for the proposed project. Upon completion, the project facilities will be used as public infrastructure and services, and will not have direct revenue except for the relatively small fare box revenues generated from bus operations. Therefore, the fiscal impact analysis focuses on the counterpart fund availability and fiscal sustainability of the city governments.

44. The investments and the counterpart fund requirements under the project are relatively small, compared to the local governments' fiscal capacity and budget allocation for urban infrastructure development. For Harbin, The counterpart fund requirements would take up about 6.6 percent of the total fiscal budget for urban infrastructure and transportation development in the period of 2014–2018. Similarly, for Mudanjiang, the counterpart fund requirement would make up 7.5 percent of the fiscal budget for urban infrastructure and transportation development. The projects in both municipalities would be an important urban infrastructure development project and would require substantial fiscal support, but the analysis shows that the governments have adequate budge to provide the fiscal support needed to implement the project. The details of the fiscal analysis are provided in Annex 6.

45. ***Financial Analysis.*** A financial analysis was carried out for the three bus companies under the proposed project, namely the privately-owned Mudanjiang Bus Company (MBC), and the two state-owned Harbin Bus Company (HBC) and Harbin Tram Company (HTM). An excel-based financial model was developed for each bus company to: (a) determine the current financial situation of each bus company; (b) predict the financial situation of the bus companies for the "without project" versus "with project" scenarios (i.e., without investment and with investment under this project for procuring new buses, ITS, and associated infrastructure); and (c) assess the magnitude of government subsidies under the two scenarios (Annex 6 provides details).

46. The analysis shows that the all three companies do not generate adequate revenues to cover operating expenditure or/and capital replacement. This is because the bus fares are set well

below cost recovery levels, which is a common practice in Chinese cities as central and local governments consider public transport a social good and maintain almost a uniform RMB1 (USD0.16) tariff throughout the country. As a result, both Harbin and Mudanjiang provide subsidies to their bus companies, with Harbin's subsidy being significantly larger (in part due to the large company sizes and large labor and pension obligations). However, the analysis also shows that continued provision of operating subsidies (without capital investment) is a sub-optimal strategy as the subsidy goes to support a deteriorating service quality since buses and associated infrastructure are not being replaced to maintain good quality service standard. This in turn results in a lower ridership level and increasing operating subsidy at first, and when buses are fully depreciated, without new capital investments, the services could be halted. On the other hand, the analysis shows that providing capital subsidy will improve service quality and lead to a higher traffic volume and a decreasing operating subsidy. Therefore, the governments' proposal to use the proposed loan to make capital investment in the bus companies is justified not only from an economic stand point of increasing ridership, but also from financial where the initial capital subsidy would later result in the reduction of operating subsidy (Annex 6).

47. *Operating Arrangement for Buses.* The government financing for the buses and other public transport infrastructure will be accompanied by improvements in the governance and regulatory arrangement for public transport operations in both Mudanjiang and Harbin. In Mudanjiang, the Transport Bureau, who will be the owner of the buses, will enter into a lease agreement with the bus company before handing over the buses for operations. The agreement will spell out the responsibilities of the bus company during operations. At the same time, as part of the Capacity Building component of the project, the Transport Bureau will review the current concession agreement with a view to introduce better performance criteria and improve the regulatory capacity of the Transport Bureau.

48. For Harbin, the buses will be owned by the state-owned bus companies. The Transport Bureau will enter into a performance agreement on the operational responsibility of the bus companies. The buses will be mostly used on the three corridors to be improved under the project. As part of the Capacity Building component, Harbin will also review the overall industry structure of the public transport operation, and develop a well-coordinated and regulated private and public sector operation of buses in the city.

B. Technical

49. The project's technical design reflects the Bank's overall urban transport strategy in China, which seeks to promote public transport and make it an attractive alternative to driving private cars by significantly improving its level of service. The technical project design calls for improving major transport corridors in an integrated fashion, including junction improvement, channelization, intelligent control system, priority facility for buses, traffic management scheme, safety measures for pedestrian and improvement of bus stop. All these are added to the project design to improve the level of service of bus operations and to ensure buses have higher speed, reliability, comfort, and safety. The use of virtual bus lane arrangement to maintain the bus priority along the dual two lane section of public transport corridors will help the proposed scheme to be implemented smoothly especially at narrow road segment in city center. The integrated road improvement approach has been applied in several World Bank funded urban

transport projects in China, and has shown to be effective insofar as maximizing the effect of project interventions in a corridor. In order to mitigate the extreme cold weather situation in Harbin and Mudanjiang, the project introduces some innovative pavement design and appropriate road sign/markings for bus lanes to improve traffic safety. It also provides for covered bus parking, warm passenger waiting rooms and boarding and alighting facilities. With the improvements targeting extremely cold weather conditions, the project will improve the gas millage of vehicle, lessen air pollution, improve pedestrian crossing safety, provide more comfortable waiting area for passengers and attract more people using public transport system from driving private cars.

50. The advanced public transport system supported under the proposed project will greatly improve the transit system in terms of level of service and management efficiency. In particular, the on-board GPS will be the key component in Automatic Vehicle Location (AVL) system that supports the dispatching and scheduling management in the command center by transmitting the real-time location information. At the same time, it will help the passenger information system to share the real-time location and arrival time prediction of the upcoming vehicles at certain bus stops. On-board devices also include the equipment, which communicates with the signal control system to trigger the bus priority signals when the vehicle approaches the equipped intersections. The automatic fare collection system and automatic passenger counters in bus terminals will be able to collect the ridership information for further understanding and analysis for transit travel demand. This will provide key data for operators to better understand the origin-destination volume and optimize the bus network accordingly. At the same time, the hardware and software to be installed in the command center will receive and process all the information collected by the devices deployed on-board, along the corridors and at the stations, which enables real-time fleet management, on-board condition monitor, adaptive/priority signal control, and passenger information publishing. With the advanced public transport system, the public transport system will be transformed into a data-based operation that can improve level of service.

51. A stakeholder and public transport user satisfaction survey was conducted by the social development consultant preparing the social assessment and safeguard documents for the project. The key users' recommendation are included in the project design, including the recommendations for (i) bus priority system and bus dispatch system to improve bus operation speed and reduce bus passenger waiting time; (ii) new buses to include passenger-friendly designs such as designated seats for elderly, children and pregnant women; and (iii) bus stop and terminal design to have anti-skid surface and shelter to protect the passenger under cold weather conditions.

C. Financial Management

52. The Heilongjiang Provincial Project Management Office, established under Provincial Development and Reform Committee, is responsible for the overall coordination during the preparation and implementation stages. The project city PMOs, established under the municipal development and reform committee in Mudanjiang and the municipal transport bureau in Harbin, and related PIUs, will be responsible for managing the preparation and implementation of the project and project day to day FM operations. The Bank loan proceeds, including overseeing the Designated Account, will be managed by Heilongjiang Provincial Finance Department (HPFD).

A financial management capacity assessment has been conducted by the Bank and actions to strengthen the project's financial management capacity have been agreed with the relevant implementing units. The FM assessment has concluded that with the implementation of the propose actions, the financial management arrangements will satisfy the Bank's requirements under OP/BP 10.00. Annex 3 of the PAD provides additional information on financial management.

D. Procurement

53. The city-level PMOs will be responsible for procurement and contract management under their respective project components with support from related PIUs including the Construction Bureaus of each city for road construction, Traffic Police for traffic management, and Bus Companies for public transport component. Experienced full time procurement staff had been assigned in the both PMOs. A capacity assessment of the city PMOs was conducted by reviewing the project organization structure and functions, past experience of related PMOs, staff skills, quality and adequacy of supporting and control systems, and the legal and regulatory aspects. The key risks identified from the procurement capacity and risk assessment of the implementing agencies under the project are possible delays and non-compliance due to unfamiliarity with the Bank's procurement policies and procedures. In order to mitigate the identified risks, the PMOs of the two cities have taken the following actions to improve management capacity during project preparation: (i) A Procurement Agent with qualified staff appointed by the provincial government to support the PMOs; (ii) Each city has prepared a procurement manual to guide procurement under the project, and (iii) key staff of the PMOs and PIUs were trained in procurement in World-Bank financed projects during project preparation and will be trained periodically during project implementation.

54. The PMOs have prepared a procurement plan based on the FSR, cost estimates, market conditions, and in compliance with Bank procurement procedures. The Plan was reviewed by the Bank and published externally. The procurement plan will be updated annually, or as needed during implementation. Annex 3 provides further information on procurement capacity assessment and arrangement under the proposed project.

E. Social (including Safeguards)

55. ***Social Assessment.*** A social assessment (SA) study was conducted separately in Harbin and Mudanjiang. The SA concluded that the project will improve the public transportation system in both cities. In addition, the SA recommends user-friendly and gender-informed project design to maximize the social benefits. The SA suggestions have been reflected into the project feasibility study and will be incorporated into detailed engineering design. At the same time, the SA also identifies likely adverse impacts from resettlement, which would be managed and mitigated through the Resettlement Policy Framework (RPF) and Resettlement Plan (RP) that were prepared through wide consultation process.

56. ***Resettlement.*** The project triggers OP4.12 (Involuntary Resettlement). For Harbin, the Public Transport Corridor component (Component 1) is not expected to require land acquisitions as the improvements are within the right of way. However, during detailed design work, there

may be a need to acquire small piece of land to make changes to alignment as needed. Because of this uncertainty, an RPF has been prepared, reviewed and agreed with the Bank. The Public Transport Infrastructure component (Component 2) will need land for the construction of three bus terminals, depot, and management centers. All the identified land is state-owned and have already been designated for the project. The RPF carried out due diligence review for the public infrastructure land and concluded that the three sites will utilize 5.2 ha state-owned land that have been allocated to the project and do not involve resettlement.

57. For Mudanjiang sub-project, the Public Transport Infrastructure (Component 2) requires land acquisition for the five terminals/depots/management centers. Among the five sites, three of them will need to acquire land from three villages, while the other two sites already have the land. Therefore, a RP was prepared for the three sites and a due diligence review was done for the two sites as annex to the RP. About 3 ha collective land at three villages separately for the three terminals/depots/management centers will be acquired and will be covered in the RP, while 4.7 ha state-owned land at two terminals/depots/management centers were acquired prior to 2007 and reviewed in the due diligence review. The review on already-owned land identified that the villagers were fully consulted, paid, provided with adequate livelihoods, and generally satisfied with the land compensation and livelihood restoration. Meanwhile, the RP covers the resettlement measures for the 102 persons in 26 households. The affected people are expected to lose only less than 10 percent of their income. The compensation to the affected people relies on cash compensation, plus some social security program and training. An external monitor will review progress during implementation, as well as carry out an impact study after resettlement and rehabilitation to determine whether the affected persons have been fully compensated and their livelihood restored.

58. The RPF/RPs also provided details on resettlement policy procedures and requirements, which will have to be followed during project implementation, including compensation rates, mitigation measures to restore livelihoods, and institutional and monitoring arrangements. The SA and RPF/RP were disclosed in Mudanjiang on Oct 10, 2013, and in Harbin on Oct 16, 2013 through government websites, as well as through making announcements on local newspapers. The safeguard documents are also available in the PMO offices. The Chinese and English versions of the RPF/RP/SA documents were disclosed on the World Bank's InfoShop on October 28, 2013. After incorporating comments from Bank safeguard review, the revised RPF/RP were re-disclosed on InfoShop on December 8, 2013.

59. ***Gender Issues.*** The SA and the RPF/RP cover gender-disaggregated analysis including women's unique demand to explore measures to ensure women benefit from the new transport facilities. Women participated in the consultation meetings and the social assessment process. The women-related demand and proposed measures have been included in the FSR, which include the need to (i) monitor service quality at bus stops and inside buses; (ii) provide street lighting along project roads; and, (iii) provide cross bridges with cover.

F. Environment (including Safeguards)

60. As an urban transport project without building new roads or widening road but rehabilitating existing roads and building/rehabilitating transit hubs, bus depots and terminals,

the adverse environmental impacts during construction are moderate and mostly temporary in nature. The environmental impacts during operation mainly include air pollution, noise, road safety and sewage from bus hubs and depots, but these would be offset by the environmental improvement of reduced air pollution that would result from improved bus speed and lower congestion than would otherwise be the case if improvements are not done under the project. Therefore, the proposed project was assigned category B by the Bank following OP/BP 4.01. Overall, net positive impact on the environment is expected.

61. ***OP4.01 Environmental Assessment.*** In line with the Bank's safeguard policies and relevant domestic regulations, Environmental Assessment (EA) was prepared by Heilongjiang Provincial Environmental Institute for two project cities respectively. Each EA includes environmental baseline, project description, impact assessment, alternative analysis and public consultation. The EAs were conducted in parallel with the feasibility studies to integrate environmental and social consideration into technical designs to maximize the benefits. An Environment Management Plan (EMP) has also been prepared for both cities respectively and adopted by two municipal governments. A description of the EAs and the EMPs is included in Annex 3.

62. The draft EA/EMP for Harbin was disclosed on the website of the Harbin Transportation Bureau on July 2, 2013, with a notice published on a local newspaper, Harbin Daily on July 15, 2013. The revised Harbin EA/EMP was re-disclosed on November 8, 2013. The hard copy of is available at the city PMO office and EA institute for public reading. For Mudanjiang, the draft EA/EMP was disclosed on the government website July 11, 2013. with a notice published in local newspaper on July 20, 2013. The revised Mudanjiang EA/EMP was re-disclosed on government website November 23, 2013. The hardcopy is also available at the city PMO office and the EA institute for public reading. The Chinese and English versions of the Harbin and Mudanjiang EA/EMP documents were disclosed on the World Bank's InfoShop on October 28, 2013. After incorporating comments from Bank safeguard review, the revised documents were re-disclosed on InfoShop on December 9, 2013.

63. ***OP 4.11 Physical Cultural Resources.*** This OP is triggered because of three historical buildings identified at the roadside of Youyi project corridor in downtown Harbin. The road rehabilitation activities (e.g. vibration and noise from equipment) may potentially affect these buildings and the visitors. The EA team has reviewed the sites, assessed the nature and extent of potential impacts on it, consulted with and obtained consent from the responsible authority (e.g. Bureau for Cultural Relics) and developed necessary protective measures in the EMP (e.g. no civil work allowed within the protection zone around the historical buildings). For the overall project, standard chance-find procedure was included in the EMP for both cities.

Annex 1: Results Framework and Monitoring

CHINA: Heilongjiang Cold Weather Smart Public Transportation System Project

Project Development Objective (PDO): The PDO is to upgrade quality and efficiency of public transport services in selected public transport corridors in the project cities..

PDO Level Results Indicators	Core	City	Unit of Measure	Baseline	Cumulative Target Values*					Frequency	Data Source/ Methodology	Responsibility for Data Collection
					2015	2016	2017	2018	2019			
Indicator One: Increase in public transport service satisfaction along the targeted corridors.	☐	Harbin	Customer Satisfaction (%)	35			50		70	Mid-term and end of project	Public transport users satisfaction survey rating	PMO and bus company
		Mudanjiang	Customer Satisfaction (%)	75			80		85			
Indicator Two: Increased share of buses arriving on schedule.		Harbin	Bus On time arrival for each corridor (%)	56			70		75	Annually	Bus company statistics	PMO and bus company
		Mudanjiang	Bus On time arrival for each corridor (%)	87			90		92			
Indicator Three: Increase in bus speed	☐	Harbin	Km/h (average for corridors)	29			30		33	Annually	On-site observation	PMO and bus company
		Mudanjiang	Km/h (average for corridors)	19			22		24			
Indicator Four: Reduced fatalities and major injuries along the targeted corridors	☐	Harbin	Number of fatalities and major injuries	57					21	Annually	Traffic police statistics	PMO and traffic police
		Mudanjiang	Number of fatalities and major injuries	32					20			
Indicator Five: Reduced energy consumption by buses along the targeted corridors	☐	Harbin	L Diesel/VKT	0					0.3	Annually	Bus company statistics and calculation	PMO and bus company
		Mudanjiang	L Diesel/VKT	0					0.2			
INTERMEDIATE RESULTS												
Intermediate Result (Component One): Public Transport Corridor Improvement												
Intermediate Result indicator 1A: Total length of public transport corridors developed.	☐	Harbin	km	0			14		21.8	Annually	project progress report	PMO
		Mudanjiang	km	0			15		25.3			
Intermediate Result indicator	☐	Harbin	million/year	0			20.6		34.4	Annually	project progress	PMO

1B: Increased annual bus ridership volume along the targeted corridors.		Mudanjiang	million/year	0			2.6		4.4		report	
Intermediate Result (Component Two): <u>Public Transport Infrastructure Improvement</u>												
Intermediate Result indicator 2A: Number of passenger hubs and depots constructed.	☐	Harbin		0			2		5	Annually	project progress report	PMO
		Mudanjiang		0			2		3			
Intermediate Result indicator 2B: Number of cleaner-fuel vehicles procured.	☐	Harbin		0			200			Annually	project progress report	PMO
		Mudanjiang		0			120					
Intermediate Result indicator 2C: % completion of the agreed completed measures in the Performance and Lease Agreements	☐	Harbin		0			50%		80%	Annually	project progress report	PMO
		Mudanjiang		0			50%		80%			
Intermediate Result (Component Three): <u>Traffic Management and Safety Improvement</u>												
Intermediate Result indicator 3: Number of intersections upgraded with traffic signals with bus priority function and pedestrian crossings installed.	☐	Harbin		0			20		45	Annually	project progress report	PMO
		Mudanjiang		0			50		110			
Intermediate Result (Component Four): Emergency Response and Road Maintenance												
Intermediate Result indicator 4: Number of emergency rescue equipment and specialized road maintenance equipment procured.	☐	Harbin		0			104			Annually	project progress report	PMO
		Mudanjiang		-					-			
Intermediate Result (Component Five): <u>Capacity Building</u>												
Intermediate Result indicator 5: At least one urban transport related policy/plan/strategy issued by each city	☐	Harbin		0			Draft Completed		1	Annually	project progress report	PMO
		Mudanjiang		0			Draft Completed		1			

* The target values for the proposed indicators will be calculated to compare the "with the project" scenario to the "without the project" scenario, rather than the before and after project situation. That means the key indicators proposed for this project will compare the trend that is likely to happen with the project interventions to the trend that would have happened if the project did not take place.

Annex 2: Detailed Project Description

CHINA: Heilongjiang Cold Weather Smart Public Transportation System Project

1. ***Project Concept Design***. The Heilongjiang Cold Weather Smart Public Transport System project includes two project cities: Harbin and Mudanjiang located in Heilongjiang Province. It is a comprehensive urban transport project that addresses public transport problems in extremely cold weather condition. The temperature during winter brings serious challenges for passengers and bus service providers. Waiting for more than five minutes at outdoor buses is unbearable for most passengers and it is difficult to start the bus after overnight outdoor parking. Therefore, bus terminal, bus underground parking garage, heated enclosed waiting area at bus stops and specialized equipment for low temperature operation environment are the unique characteristics of the proposed project. The integrated corridor development consists of a series of activities for improving road/bridge pavement condition, promoting user friendly traffic engineering design, upgrading traffic control systems, as well as safety enhancement for pedestrian and bus passenger walking and crossing streets.

2. Intelligent Transport System and Bus Dispatching System will assist the traffic police to monitor and manage the traffic conditions along the major transport corridors. Specifically, the operation of junction will be improved by coordinated and traffic demand responsive manner. The Traffic Control Center is located in Traffic Police Building and leased optical fiber is used to transmit all the real time images for analysis and evaluation. Advanced bus dispatching and scheduling system with passenger information system will improve the on-time ratio of bus operation and provide the real-time bus operation status to passengers.

3. The project includes the procurement of 200 cleaner-fuel and accessible buses for Harbin and 120 for Mudanjiang with lower steps for elderly and children to climb onto the bus, designated seats for pregnant women and air-conditioned compartment. The cleaner-fuel bus fleet will help project cities to mitigate the climate change effect from vehicle emission.

4. In addition, the proposed pedestrian network improvement schemes in Mudanjiang will be expanded and walking environment will be improved, various approaches were identified in accordance with the different area of the city center. The old and damaged walkway will be resurfaced to encourage walkability within the city center.

Project Components

5. The project consists of five components: (i) Public Transport Corridor Improvement; (ii) Public Transport Infrastructure Improvement; (iii) Traffic Management and Safety Improvement; (iv) Road Maintenance and Emergency Response Equipment (Harbin only); (v) Capacity Building.

6. **Component 1**: **Public Transport Corridor Improvement (PTC).** This component supports the improvement of Integrated Public Transport Corridor, which consists of a combination of urban transport improvements, including but not limited to the followings: road improvement, public transport facilities along the road (bus stop, waiting area, bay), traffic

engineering for safety and operation, pedestrian safety improvement (crossing at intersection and mid-block, sidewalk, lighting, and signals), and cyclist safety improvement. The project will support Harbin and Mudanjiang to improve high priority public transport corridors in the following way.

7. *Harbin Sub-component*: The Harbin sub-component will include improvement of three corridors for a total length of 21.6 km. Exclusive bus lane with colored asphalt will be installed on the road segments where permitted. Pedestrian crossing facilities, lighting, striping, signing, intersection channelization, bus stop bay, heated indoor bus waiting facilities, limited underground conduit / pipeline and sidewalk will also be improved along proposed corridors.

(a) Hongqi Avenue. 9.3km between Jinxiang Avenue and Dongzhi Road;
(b) Youyi Road. 8.3 km between Gonglu Bridge and Tonggang Avenue;
(c) Xinyang Road. 4 km between Xiangzheng Avenue and Jincheng Avenue;

8. *Mudanjiang Sub-component*: The Mudanjiang sub-component will include improvement of five transport corridors for a total length of 31.4 km, as well as one Non-Motorized Transport (NMT) road system for a total length of 11 km. The sub-component will support rehabilitation of road pavement and base if needed, striping, signing, lighting, midblock pedestrian crossing walk, intersection channelization, peak hour bus-only lanes, bus stop, heated enclosed bus waiting facility, traffic signal, sidewalk, roadside parking space, bicycle parking facilities, access management measures, and underground utilities along proposed corridors.

(a) Xisantiao Road. 6.6 km between Diming avenue and Xinglong road;
(b) Dongsitiao Road. 7.8 km between Diming avenue and Bamian Avenue;
(c) Guanghua Avenue. 6 km from Xisantiao Avenue to Hulu Avenue);
(d) Pingan Avenue. 5.9 km from Xishiyitiao road to Zaozhi road;
(e) Xinan Avenue. 5.1 km between Xishiyitiao road and dongbatiao road;
(f) Taiping Road NMT Corridor. 11km in total. 2.4 km of Taiping Road from Guanghua Avenue to Binjiang Park, plus 8.6 km of pedestrian improvements along the nearby streets.

9. **Component 2**: **Public Transport Infrastructure Improvement (PTI)**: Public Transport Infrastructure Improvement component improve the level of service (LOS) and efficiency of public transport system through the provision of new infrastructure, modern information/communication technology and vehicles that support the public transit operation. This component includes the construction of bus terminals, heated bus stop waiting areas, bus parking facilities (garage and parking lot), advanced public transport system (APTS), and procurement of clean-fuel and accessible buses in the two project cities.

10. *Harbin Sub-component*: The Harbin sub-component includes (a) the construction of one Public Transport interchange (Xiangbin road interchange); (b) two bus terminals (Qulidiyidadao Terminal and Hexiedajie Terminal); (c) the procurement of 200 clean-fuel buses; and (d) the implementation of advanced public transport system, including the procurement of (i) on-board equipment and testing service; (ii) public transport command center; (iii) intelligent transport system for corridors and stations; and (iv) supporting software and network.

11. *Mudanjiang Sub-component*: The Mudanjiang sub-component includes (a) the construction of one public transport interchange (Jiangnan interchange), (b) the construction of three bus terminals (Bada, Hualin, and Fujiang terminals); (c) the construction of one maintenance facility (Daqingludong maintenance facility); (d) the construction, renovation, and equipment of one traffic safety education center (e) bus driver training center; and (f) the procurement of 120 clean-fuel buses.

12. **Component 3**: **Traffic Management and Safety Improvement (TM):** To improve the efficiency and safety of transport system, three "E"s shall be addressed: Engineering, Enforcement and Education. The traffic management and safety improvement component in this project emphasize on Enforcement, which includes traffic signal control upgraded to Area Traffic Control (ATC), violation detection system implementation, traffic management coordination/communication system implementation, and traffic safety measures deployment.

13. *Harbin Sub-component* includes (a) the upgrading of traffic signal control to allow bus priority; (b) installation of traffic monitoring and violation detection system; (c) traffic guidance system; (d) traffic safety measurements (signing, striping, median, and guardrail); (e) procurement of specialized equipment for safety education and vehicles for traffic equipment maintenance; and (f) equipment to support field work and accident investigation.

14. *Mudanjiang Sub-component* includes (a) the installation of area traffic control system with bus priority function; (b) the deployment of traffic monitoring, violation detection, and traffic guidance system with data collection function; (c) the procurement of traffic command equipment; (d) the procurement of public transport operation management system; and (d) the implementation of traffic data collection and simulation system.

15. **Component 4**: **Emergency Response and Road Maintenance (RM)**: This component is only for the City of Harbin. The equipment includes: (a) road, bridge and tunnel inspection equipment; (b) underground utility detector; (c) road maintenance equipment; and (d) emergency response equipment.

16. **Component 5: Capacity Building (CB)**: This component supports the long-term transportation planning activities and sufficient technical capacity development for project management. Domestic and international study tours will also be included in this component. The capacity building activities for the two project cities are:

(a) Technical Trainings and Knowledge Exchange. This will include workshops, trainings, and study tours. In terms of study tours, the participants shall include two groups: senior officials and technical staffs. The program for senior officials will emphasize on institutional and policy reform, and the program for technical staff will focus on procedural and technical issues, such as transport planning, public transport service planning, parking policy, Access management, traffic circulation plan, transport demand management, ITS, etc. The training will enhance the capacity for project implementation complying with FM, procurement and safeguard requirement.
(b) Project Management/Technical Consultancy and Project Operation. During project implementation, there are highly specialized areas that may require

experienced experts to carry out. Therefore, this component will fund consultant service to support PMOs with project management/technical consultancy. The consulting service includes, not limited to, detail design review, technical specification preparation, TOR preparation, project implementation status monitoring and evaluation, progress report preparation, translation and extensive training to PMO staff regarding procurement, financial management, safeguard requirement, construction supervision, and contract management. Besides the consulting service, this component also support the project operation by funding project related incremental operation cost to PMOs and PIUs.

(c) Public traffic safety education program. The public education program is only planned in the Harbin project. This will include public awareness campaigns regarding the integrated public transport corridors approach, and public consultation activities.

(d) Urban Transport related Thematic Studies. This will carry out the strategic studies in support of achieving the PDO and the cities' development goals.

(i) For Harbin, the study topics include: (i) Public Transport Level of Service (LOS) and Social-Economic analysis Evaluation methodology in cold weather regions; (ii) City wide transport system plan (TSP) for cold weather cities; (iii) Public Transit management organizational analysis; (iv) Policy reform study for public transport operation subsidies and government's investment on public infrastructure; (v) Strategic study for state-owned bus cooperation management; (vi) Study on applications and promotions of public transit IC card; and (vii) Public transport sector resource utilization study.

(ii) For Mudanjiang, the topics include: (i) transport demand management policy; (ii) bus routes optimization study; (iii) parking system planning; (iv) bus terminal planning and construction standard; (v) key issues of public-private partnership for sustainable public transport; (vi) Non-motorized transport (NMT) system planning in city center; (vii) intelligent transport systems planning; and (viii) public transport corridor road space utilization.

Table A2-1 Project Cost and Financing Plan for Harbin Project

Component	Total Cost (RMB millions)	Total Cost (US$ millions)	IBRD (US$ millions)	Counterpart (US$ millions)
Component 1. Public Transport Corridor Improvement				
Hongqi Avenue Corridor	156.60	25.67	6.47	19.20
Youyi Road Corridor	90.39	14.82	4.34	10.48
Xinyang Road Corridor	65.75	10.78	2.85	7.93
Subtotal for Component 1	**312.74**	**51.27**	**13.66**	**37.61**
Component 2. Public Transport Infrastructure Improvement				
Xiangbin Road Interchange	279.00	45.74	12.81	32.93
Qunlidiyidadao Terminal	104.96	17.21	4.82	12.39
Hexiedajie Terminal	6.93	1.14	0.32	0.82
Clean-fuel Bus Procurement	105.00	17.21	17.21	0.00
Advanced Public Transport System: On-board Equipment	115.18	18.88	6.88	12.00
Public Transport Command Center Equipment	109.07	17.88	17.88	0.00
Public Transport Command Center Consulting Services	5.28	0.86	0.86	0.00
Advanced Public Transport System: Equipment for Corridors and Stations	56.42	9.25	3.26	5.99
Subtotal for Component 2	**781.84**	**128.17**	**64.05**	**64.13**
Component 3. Traffic Management and Safety Improvement				
Priority Corridor Traffic Management	65.56	10.75	3.39	7.35
Traffic Emergency Response System	50.91	8.35	3.04	5.30
Traffic Safety Education	11.52	1.89	0.69	1.20
Traffic Management Network Equipment	8.02	1.32	0.00	1.32
Subtotal for Component 3	**136.01**	**22.30**	**7.13**	**15.17**
Component 4. Emergency Response and Road Maintenance				
Road and Bridge Survey Equipment	23.78	3.90	1.44	2.46
Road Maintenance Equipment	20.62	3.38	1.25	2.13
Road Emergence Response Equipment	28.31	4.64	1.72	2.92
Subtotal for Component 4	**72.71**	**11.92**	**4.41**	**7.51**
Component 5. Capacity Building				

Technical Assistance	12.00	1.97	1.97	0.00
Trainings and Study Tours	3.00	0.49	0.49	0.00
Project Management Operating	3.00	0.49	0.49	0.00
Project Implementation Management Consulting	9.00	1.47	1.31	0.00
Public Consultation and Education	2.00	0.33	0.33	0.00
Subtotal for Component 5	**29.00**	**4.75**	**4.75**	**0.00**
Total project costs	**1,332.30**	**218.41**	**94.00**	**124.41**
Interest during Implementation	35.10	5.75	5.75	0.00
Front-end Fee	1.53	0.25	0.25	0.00
Total Financing Required	**1,368.92**	**224.41**	**100.00**	**124.41**

Note:
1. Front-end fee is estimated at 0.25% of the total loan.
2. Exchange rate of US$1.00 = RMB6.10 is applied.

Source: The Feasibility Study Reports of Harbin part of the Project

Table A2-2 Project Cost and Financing Plan for Mudanjiang Project

Component	**Total Cost (RMB millions)**	**Total Cost (US$ millions)**	**IBRD (US$ millions)**	**Counterpart (US$ millions)**
Component 1. Public Transport Corridor Improvement				
Taiping Road NMT System	156.53	25.66	7.95	17.71
Xin'an Avenue Corridor	191.98	31.47	9.82	21.66
Ping'an Avenue Corridor	161.16	26.42	8.19	18.23
Guanghua Avenue Corridor	19.99	3.28	0.99	2.29
Xisantiao Road Corridor	111.35	18.25	5.58	12.67
Dongsitiao Road Corridor	53.74	8.81	2.68	6.13
Subtotal for Component 1	**694.76**	**113.89**	**35.20**	**78.69**
Component 2. Public Transport Infrastructure Improvement				
Jiangnan Interchange	133.98	21.96	7.06	14.90
Bada Terminal	18.58	3.05	1.51	1.53
Hualin Terminal	27.91	4.57	1.98	2.60
Fujiang Teminal	10.85	1.78	0.62	1.15
Daqingludong maintenance facility	24.57	4.03	1.33	2.69
Traffic Safety Education Center	15.57	2.55	1.53	1.02
Bus Driver Training Center	17.33	2.84	1.53	1.31

Clean-fuel Bus Procurement	60.00	9.84	9.84	0.00
Subtotal for Component 2	**308.79**	**50.62**	**25.41**	**25.21**
Component 3. Traffic Management and Safety Improvement				
Urban Transport Comprehensive Planning and Management Platform	175.23	28.73	26.89	1.84
Advanced Public Transport System	21.40	3.51	3.28	0.22
Subtotal for Component 3	**196.63**	**32.23**	**30.17**	**2.07**
Component 4. Emergency Response and Road Maintenance				
Subtotal for Component 4	**0**	**0**	**0**	**0**
Component 5. Capacity Building				
Technical Assistance	12.20	2.00	2.00	0.00
Trainings and Study Tours	3.05	0.50	0.50	0.00
Project Management Operating	2.10	0.34	0.34	0.00
Project Implementation Management Consulting	5.00	0.82	0.82	0.00
Subtotal for Component 5	**22.35**	**3.66**	**3.66**	**0.00**
Land Acquisition and Resettlement	3.82	0.63	0.00	0.63
Total project costs	**1,226.34**	**201.03**	**97.28**	**106.59**
Interest during Implementation	32.36	5.31	5.31	0.00
Front-end Fee	1.53	0.25	0.25	0.00
Total Financing Required	**1,260.23**	**206.59**	**100.00**	**106.59**

Note:
1. Front-end fee is estimated at 0.25% of the total loan.
2. Exchange rate of US$1.00 = RMB6.10 is applied.

Source: The Feasibility Study Reports of Mudanjiang part of the Project

Annex 3: Implementation Arrangements

CHINA: Heilongjiang Cold Weather Smart Public Transportation System Project

Project Institutional and Implementation Arrangements

Provincial Level Implementation Arrangement

1. The implementation arrangement follows a decentralized governance structure with the municipal governments leading the implementation of the project, and the provincial government providing guidance and coordination support. The provincial government has established a Provincial Project Management Office (PMO), which will provide leadership, policy guidance, and coordination among agencies and the two project cities. The provincial PMO is headed by the Director for the Department of Foreign Capital and Overseas Investment in Heilongjiang Development and Reform Commission (DRC), and the members of the provincial PMO include senior officers from the DRC and International Financial Department of Heilongjiang Finance Bureau (HFB).

City Level Implementation Arrangement

2. Both Harbin Municipal Government (HMG) and Mudanjiang Municipal Government (MMG) have established a Project Leading Groups (PLG) and Project Management Office (PMO) in their respective cities. The PLGs will be responsible for leadership, coordination and supervision on the preparation and implementation of the city's project. The city-level PMOs will be responsible for day-to-day project management, procurement, contract management, resettlement, social and environmental safeguards, loan disbursement request, fiduciary compliance, and evaluation, results monitoring, and reporting. The PMOs will be supported by Project Implementation Units (PIUs) to be established in the beneficiary agencies. The details of the PLGs and PMOs/PIUs are described below.

Harbin Project

3. **Harbin Project Leading Group (PLG)**. The Harbin PLG will be responsible for coordination and cooperation on the various municipal government entities involved in the delivery of the proposed project. It is headed by the executive vice mayor, co-chaired by two deputy mayors in charge of planning/construction and public security/traffic management respectively. The key members of the PLG in Harbin include senior officers from the DRC, Municipal Bureaus of Finance, Transport, Traffic Management, Urban Management, Planning, Land and Resources, Environment Protection, Housing and Urban-Rural Construction, Education, and from Water Supply and Drainage Company, and Urban Construction and Investment Company. The PLG will have periodic meetings (at least quarterly) to oversee project implementation, resolve issues that arise during implementation, and support the PMO in coordinating the various PIUs under it. The project implementation issues and solutions suggested by the PLG will be recorded in the Project Monitoring Report and submitted to the Bank.

4. **Harbin Project Management Office (PMO)**. Under the overall direction of the Harbin PLG, the Harbin PMO is established within the Municipal Transport Bureau and chaired by the Director General of Municipal Transportation Bureau. The Harbin PMO is responsible for the day-to-day implementation of the Harbin project, including procurement, financial management, supervising contractors and consultants, and monitoring and reporting of implementation progress of the entire project. Under the overall supervision and direction of the Harbin PMO, PIUs will be established in project beneficiary Bureaus to assist the PMO in implementing their respective components (See Figure below).

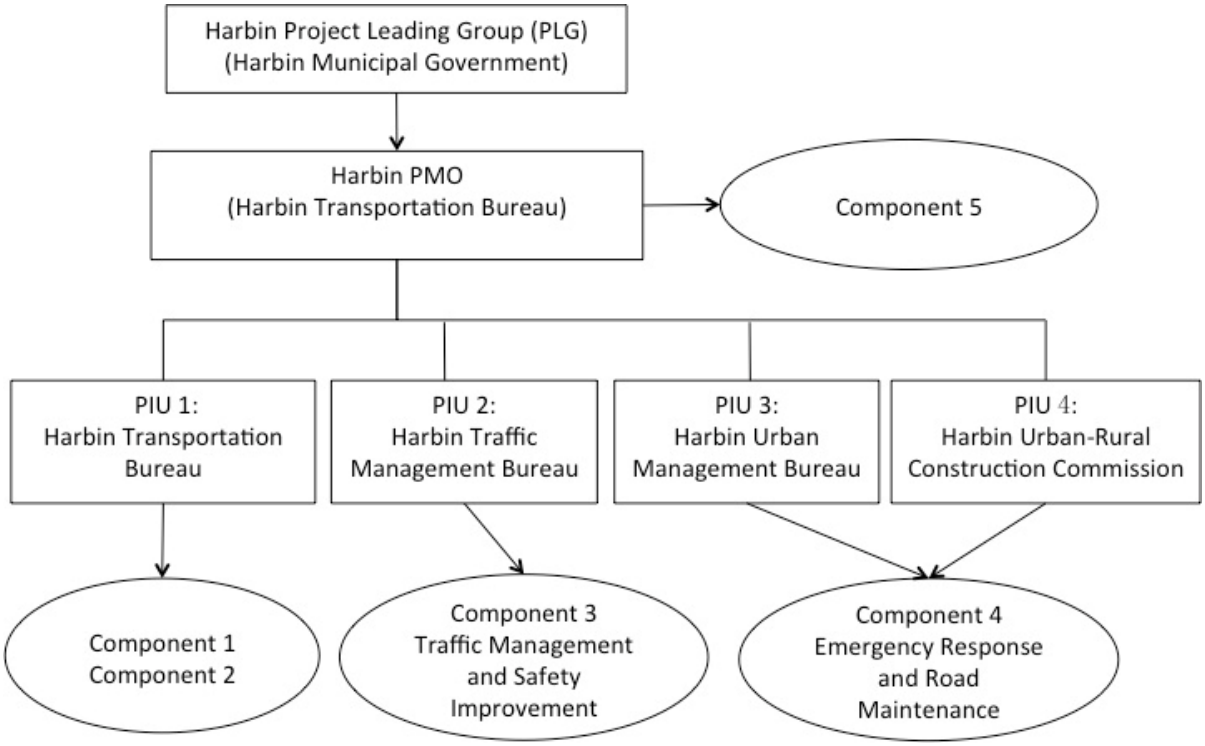


Figure A3-1. Harbin Institutional Arrangement

5. **Implementation arrangements for the Capacity Building component**. Harbin PMO will play a critical role in terms of execution of studies, training efforts and study tours. However, this component will benefit mostly technical government agencies. To ensure that the Technical Assistance (TA) products remain relevant to government priorities and inform government decision making, the lead agency eventually responsible for acting on the results of each TA study will lead the preparation of the study. The following table presents the different agencies involved in each TA study.

TA Study	Lead/Beneficiary Bureau
Public transport Level of Service (LOS) and Social-Economic analysis Evaluation methodology in cold weather regions;	Transport
City wide transport system plan (TSP) for cold weather cities;	Traffic Management
Public Transit management organizational analysis	Transport

Policy reform study for public transport operation subsidies and government's investment on public infrastructure;	Transport
Strategic study for state-owned bus cooperation management;	Transport
Study on applications and promotions of public transit IC card;	Transport
Public transport sector resource utilization study;	Transport

Mudanjiang Project

6. **Mudanjiang Project Leading Group**. MMG has established Project Leading Group (PLG) and Project Management Office (PMO) to be responsible for implementation of the project. The Mudanjiang PLG, responsible for coordination and cooperation among agencies, is co-led by the Mayor and the Party Secretary of Mudanjiang, and consist of deputy mayors and senior officers from the Municipal DRC, Municipal Bureaus of Finance, Construction, Transport, Traffic Police, Environment Protection, Land and Resources, and Planning..

7. Mudanjiang Project Management Office. The Mudanjiang PMO is headed by the director of Mudanjiang Development and Reform Commission (DRC). The vice director of Mudanjiang DRC and the director of Finance Bureau serve as the vice directors of Mudanjiang PMO. The Mudanjiang PMO is responsible for the day-to-day implementation of the Mudanjiang project, including procurement, financial management, supervising contractors and consultants, and monitoring and reporting of implementation progress. The members of the Mudanjiang PMO include representatives from relevant agencies listed below. Under Mudanjiang PMO there will be several PIUs supporting day-to-day implementation of particular components (See Figure below).

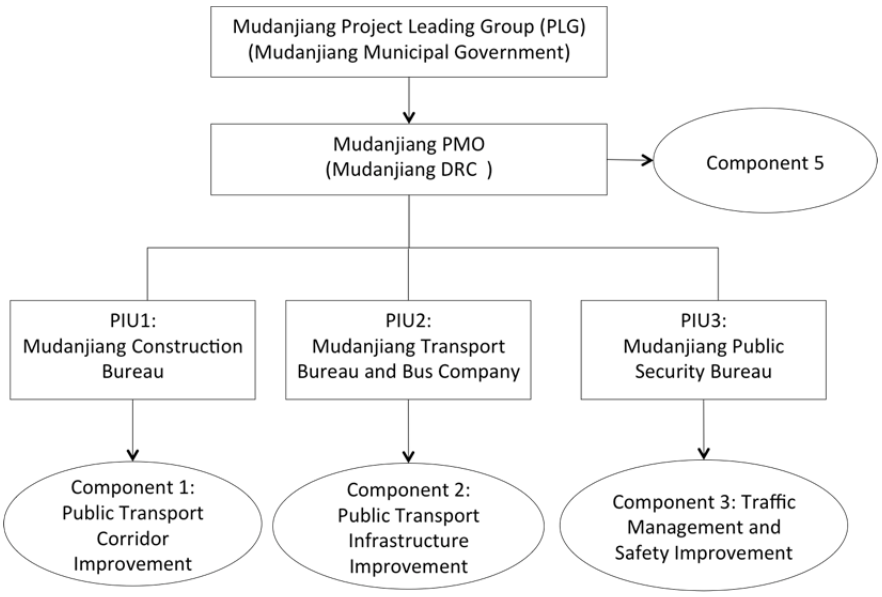


Figure A3-2. Mudanjiang Institutional Arrangement

8. **Implementation arrangements for the Capacity Building component**. To ensure that the Technical Assistance (TA) products remain relevant to government priorities and inform government decision making, the lead agency responsible for acting on the results of each TA study has been identified and will lead the study efforts. The following table presents the different agencies involved in each TA study.

TA Study	Lead/Beneficiary
Mudanjiang Transport Demand Management Policy Study	Traffic Police
Mudanjiang Bus Network Optimization Study	Bus Company
Mudanjiang Parking System Planning	Planning Bureau, Traffic Police, Construction Bureau
Standard of Bus Terminal Planning and Construction in Mudanjiang	Bus Company
Key issues of Public-Private Partnership for Sustainable Public Transport in Mudanjiang	Transport Bureau/Bus Company
Non-motorized transport (NMT) System Planning in City Center	Construction Bureau
Intelligent Transport Systems Planning in Mudanjiang	Traffic Police
Study on Public Transport Corridor Road Space Utilization in Mudanjiang	Construction Bureau

9. Performance Monitoring and Evaluation of Bus Companies. Under the proposed project, government financing for the buses and other public transport infrastructure will be accompanied by improvements in the governance and regulatory arrangement for public transport operations in both Mudanjiang and Harbin. In Mudanjiang, the Transport Bureau, who will be the owner of the buses, will enter into a lease agreement with the bus company before handing over the buses for operations. For Harbin, the state-owned bus companies will own the buses. The Transport Bureau will enter into a performance agreement on the operational responsibility of the bus companies. The lease and performance agreements will spell out the responsibilities and the measures of performance that the bus company needs to achieve during operation. The measures will be measured annually.

Financial Management, Disbursements and Procurement

Financial Management

10. The FM capacity assessment identified the following principal risks: (i) city PMOs and PIUs are new to Bank-financed project; and (ii) the provincial PMO's function is quite limited, so the two cities would be implementing project FM activities with limited coordination and oversight.

11. Agreed to mitigation measures, to address the above risks, include: (i) FM/disbursement training (formal and ad hoc) to be provided to the project financial staff by HPFD and the Bank; (ii) close monitoring and guidance from HPFD; (iii) HPFD will consolidate the financial

reporting prepared by the two cities for annual audit; and (iv) the Bank team will work with the PPMO and the MPMOs closely to monitor project progress.

12. Overall, the residual financial management risk after mitigating measure for the project is assessed as Moderate.

13. *Budgeting.* The annual project implementation plan including capital budget will be prepared by the city PMOs by consulting related government entities. The budget for counterpart funds committed by municipal governments will be reviewed and approved by its People's Congress and be included in their sector budget. Based on the approved budget and implementation progress, the municipal finance bureau will provide government appropriations to the project. Budget variance analysis will be conducted regularly by the city PMOs providing timely information to related government entities and the Bank on project execution thus enabling timely corrective actions.

14. *Funds flow*. One segregated designated account (DA) in US dollar will be opened at a commercial bank acceptable to the Bank and will be managed by HPFD. The ceiling of the DA will be determined and documented in the Disbursement Letter. HPFD will be directly responsible for the management, maintenance and reconciliation of the DA activities of the project.

15. Contractors and suppliers will be paid by the municipal finance bureaus which will request reimbursement from the DA managed by HPFD based on payment requests submitted by the city PMOs.

16. City PMOs will prepare Statement of Expenditures (SOEs) and Summary Sheets (SSs) and other supporting documents to request reimbursement of expenditures and submit them for approval and verification by the municipal finance bureaus and HPFD. HPFD will transfer the reimbursement to the municipal finance bureaus. HPFD will prepare and send a WA to the WB to replenish the DA as needed.

17. The Bank loan will be signed between the Bank and the People's Republic of China through its Ministry of Finance (MOF), and on-lending arrangements for the Bank loan will be signed between MOF and the Heilongjiang Provincial Government through its HPFD and then between HPFD and the Municipal Governments through the Municipal Finance Bureaus (MFB).

18. *Accounting and financial reporting.* In Harbin the city PMO's existing accounting system, which is set up based on the "Enterprise Accounting standards" and "Accounting Regulation for State-Owned Construction Enterprises" issued by MOF, is acceptable and can provide the required accounting information. Therefore, it is agreed that their accounting policies, procedures, and chart of account, which are consistent with Circular 13, will be used. However, in order to facilitate reporting and monitoring, the format and content of financial statements stipulated in Circular 13 will be used for project financial reporting. In Mudanjiang, the circular 13 will be used.

19. The city PMOs and the Project Implementing Units (PIUs) will manage, monitor and maintain the project accounting records for the activities they are executing respectively. Original supporting documents for project activities will be retained by the city PMOs and PIUs. The city PMOs will consolidate project financial statements prepared by PIUs, which will then be submitted separately to the Bank for review and comment on a regular basis. The interim unaudited project financial statements should be prepared and furnished to the Bank by the city PMOs no later than 60 days following each semester (due dates will be August 30 and March 1), in form and substance satisfactory to the Bank. The consolidated interim financial reporting is not required. HPFD will consolidate the financial statements prepared by the city PMOs for the annual audit purpose.

20. *Internal Control*. The related accounting policy, procedures and regulations have been issued by MOF and will be followed by related PMOs and PIUs.

21. Detail internal controls procedures including segregation of duties, review, approval and reporting procedures as well as safeguard assets have been established and documented in project financial management manuals. Each city has prepared its own FM manual.

22. *Audit*. Heilongjiang Provincial Audit Office (HPAO) has been identified as the auditors for the project. HPAO has extensive experience with previous Bank projects and HPAO audits have been deemed acceptable. In addition, according to CNAO's quality assurance procedures, each first year's audit report issued by provincial audit offices should be reviewed by CNAO before the audit report is submitted to the Bank.

23. Annual audit report will be issued by HPAO and will be due to the Bank within 6 months after the end of each calendar year. Following the World Bank's formal receipt of the audited financial statements from the borrower, the World Bank will make them available to the public in accordance with the World Bank Policy on Access to Information.

Disbursements

24. Four disbursement methods: advance, reimbursement, direct payment and special commitment are available for the project. The primary Bank disbursement method will be advances to the DA. Withdrawal Applications (WA's) will be prepared to request Bank disbursements and to document the use of Bank financing. WA's will include supporting documents in the form of SOEs and SSs and source documents identified in the Disbursement Letter issued by the Bank.

25. The Bank loan would be disbursed against eligible expenditures (taxes inclusive) as in the following table:

Category	Amount of the Loan Allocated (expressed in USD)	Percentage of Expenditures to be financed (inclusive of Taxes)
(1) HARBIN:		

(a) Civil works under Parts A.1, B.1 and C.1 of the Project	33,700,000	35%
(b) Goods under Parts B.1(a) and B.1(b) of the Project	35,090,000	100%
(c) Goods (other than those under sub-Category (b) above), under Parts B.1, C.1, D and E.1 of the Project	19,580,000	40%
(d) Consultant's services, Incremental Operating Costs, Training and Workshops under Parts B.1, C.1, D and E.1 of the Project	5,620,000	100%
(2) MUDANJIANG:		
(a) Civil works under Parts A.2, B.2 and C.2 of the Project	46,710,000	35%
(b) Goods, consultants' services, Incremental Operating Costs, Training and Workshops under Parts A.2, B.2, C.2 and E.2 of the Project	47,740,000	100%
(3) Interest on the Loan accrued on or before the last Payment Date immediately preceding the Closing Date	11,060,000	Amount payable pursuant to Section 2.04 of this Agreement in accordance with Section 2.07 (c) of the General Conditions
(4) Front-end Fee	500,000	Amount payable pursuant to Section 2.03 of this Agreement in accordance with Section 2.07 (b) of the General Conditions
(5) Interest Rate Cap or Interest Rate Collar premium	0	Amount due pursuant to Section 2.07(c) of this Agreement
TOTAL AMOUNT	200,000,000	

Note:

(1) Incremental Operating Cost of project management includes the following items for the two PMOs: salary of temporary employees in PMO, office rental, office supplies, organization of meetings, travel, communication and translation occurred for the implementation of the project.

(2) The "Parts" in the above Category for disbursement are related to the project components as defined in the Loan Agreement and project description.

26. Supervision Plan. The supervision strategy for this project is based on its FM risk rating, which will be evaluated on regular basis by the FMS in line with the FMSB's FM Manual and in consultation with relevant task team leader. After effectiveness, FM reviews will focus on the following areas:

- Annual plan is being properly prepared and used as an efficient tool for planning and project monitoring.
- The counterpart funds are being delivered as planned.
- Project's accounting system is generating the required financial reporting.
- Recording of fixed assets procured with project funds.

Procurement

27. **Procurement Risks and Mitigation Measures**. The key risks identified from the procurement capacity and risk assessment of the implementing agencies under the project are possible delays and non-compliance due to unfamiliarity with the Bank's procurement policies and procedures. The overall procurement risk for the Project is assessed as moderate, and the following measures have been discussed and agreed with the two city PMOs to mitigate the remaining procurement risks.

28. *Procurement training.* The PMOs/PIUs staff to attend procurement training organized by the Bank (or a training institution acceptable to the Bank) periodically. The Bank procurement specialist will also provide tailored procurement training to fit the project needs during implementation. Differences between the Bank's procurement policy and procedures and the national/Local practice will be emphasized to ensure that the PMOs/PIUs understand that whenever there are differences between the national laws and regulations and the Bank's Guidelines, the Bank's Guidelines prevail.

29. *Procurement agent with qualified staff.* A Procurement Agent has been hired by the provincial PMO to support two project cities. The PMOs will ensure that the Procurement Agent assigns qualified and experienced staff to manage day- to- day procurement tasks.

30. *Technical support.* The PMOs to hire qualified and experienced consultants or design institutes for preliminary and detailed design at an early stage to ensure that the technical aspects of the project and the contracts are of good quality. The PMOs to ensure that supervision engineers with the requisite qualifications and experience are in place for contract management of civil works/supply and installation contracts.

31. **General**. Procurement for the proposed project will be carried out in accordance with the World Bank's "Guidelines: Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers," dated January 2011; "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers," dated January 2011; and the provisions stipulated in the legal agreements. National competitive bidding (NCB) will be carried out in accordance with the Law on Tendering and Bidding of the People's Republic of China promulgated by Order of the President of the People's Republic of China on August 30, 1999, subject to the modifications

stipulated in the legal agreements in order to ensure broad consistency with Bank Procurement and Consultant Guidelines.

32. ***Procurement of Works and Goods.*** Procurement for works (including plant design, supply & Installation) and goods will be done using the Bank's standard bidding documents (SBD) for all international competitive bidding (ICB). For national competitive bidding, the National Model Bidding Documents (MBD), as agreed with and satisfactory with the Bank, would be used.

33. ***Selection of Consultants.*** The Bank's Standard Request for Proposal shall be used. Short lists of consultants (firms) for services estimated to cost less than US$500,000 equivalent per contract may be composed entirely of national consultants, in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.

34. ***Training, Workshops and Study Tours.*** Detailed programs for training, including study tours and workshops, will be developed by PMOs during project implementation and will be included in the annual work plan for Bank review. Expenditures incurred in accordance with the approved programs would be used as the basis for reimbursement.

35. ***Procurement Plan.*** The revised procurement plans for the Project, prepared by the two city PMOs, will be submitted for Bank review before Loan Negotiations. The plan will be available at the PMOs office, the project database, and on the Bank's external website. The procurement plan will be updated in agreement with the Bank annually or as needed during implementation.

36. ***Procurement Methods and Bank Prior Reviews*** The indicative thresholds for procurement methods and Bank prior review are shown in Table A3-3 below. The procurement plan will set forth those contracts subject to Bank prior review. All other contracts will be subject to procurement post review on a sample basis.

Table A3-3. Thresholds for Procurement Methods and Prior Review

Expenditure Category	Contract Value (US$)	Procurement/Selection Method	Prior Review Threshold
Goods and Non-Consulting Services	≥3,000,000	ICB	All
	<3,000,000	NCB	First 2 NCB goods contracts by each City PMO
	<100,000	Shopping	None
	NA	Direct Contracting	All contracts
Works/ Plant Design, Supply & Installation	≥25,000,000	ICB	All
	<25,000,000	NCB	First 2 NCB works contracts by each City PMO and all contracts ≥US$15,000,000
	<200,000	Shopping	None
	NA	Direct Contracting	All contracts
Consultants	>= 300K	QCBS, QBS	Firms: All contracts >=US$300K

	< 300K	CQS	and first contract for each selection method Firms: All SSS contracts; IC: Only in Exceptional Cases; SSS for individual consultant: >=USD20 K All TORs
	N/A	SSS	
	N/A	IC	
Remarks:	ICB –International Competitive Bidding NCB –National Competitive Bidding DC – Direct Contracting NA – Not Applicable QCBS: Quality- and Cost-Based Selection ; QBS: Quality-Based Selection CQS: Selection Based on the Consultants' Qualifications SSS: Single Source Selection; IC: Individual Consultant selection procedure NA: Not Applicable		

37. ***Frequency of Procurement Supervision.*** In addition to the prior-review supervision carried out from Bank office, the Bank supervision missions will carry out procurement supervision or post-review of procurement activities at least once every 12 months. The post review sampling ratio would be 1 out of 10 contracts for each city PMO.

38. ***Advance Contracting and Retroactive Financing***. Retroactive financing of up to $40 million would be available for eligible expenditures incurred on and after March 1, 2014. Retroactive financing will be processed according to the requirements specified in the loan agreement and project agreement.

Environmental and Social (including safeguards)

39. The project is expected to have net positive environmental benefits by promoting public transport that is more adapted to the challenges in cold weather. There will be temporary moderate environmental impacts during the construction phase, such as dust, noise, waste disposal, workers' health and safety, social and traffic disturbance. More long term impacts occur during operation, such as air pollution and noise from traffic, risks related to operation, and road safety particularly in cold and snowing season. Measures to address these negative impacts are specified in the EMPs developed for the project.

40. The project triggers two environmental Operation Policies: ***OP4.01 Environmental Assessment and OP 4.11 Physical Cultural Resources.*** In line with the Bank's safeguard policies and relevant domestic regulations, Environmental Assessment (EA) was prepared by Heilongjiang Provincial Environmental Institute for two project cities respectively. Each EA includes environmental baseline, project description, impact assessment, alternative analysis and public consultation. The EAs were conducted in parallel with the feasibility studies to integrate environmental and social consideration into technical designs to maximize the benefits. An Environment Management Plan (EMP) has also been prepared for both cities respectively and adopted by two municipal governments.

41. Past project experience shows that engineering code for construction which includes environmental requirements is well established at provincial and city level across China. The

biggest problem lies in their enforcement. Thus the **focus of the EMP is on strengthening implementation** of domestic regulations and engineering codes, with additional measures included when necessary based on experience from similar projects, the WB/IFC's General Guidelines on Environmental, Health and Safety, and recommendations from the EA and public consultation of the project.

42. **The EMP specifies supervising mechanism and institutional arrangement** in order to foster its implementation. Supervision engineers will be primarily responsible for daily supervision of EMP measures during construction. The PMOs, assisted by their environmental experts, will carry out random inspection. During operation, responsibility to implement the EMP will largely be shifted to relevant operators and government agencies. The EMP will be referred in bidding documents and contracts with contractors and supervisors to ensure its implementation.

43. ***OP 4.11 Physical Cultural Resources*** is triggered because of three historical buildings identified at the roadside of Youyi project corridor in downtown Harbin. The road rehabilitation activities (e.g. vibration and noise from equipment) may potentially affect these buildings and the visitors. The EA team has reviewed the sites, assessed the nature and extent of potential impacts on it, consulted with and obtained consent from the responsible authority (e.g. Bureau for Cultural Relics) and developed necessary protective measures in the EMP (e.g. no civil work allowed within the protection zone around the historical buildings). For the overall project, standard chance-find procedure was included in the EMP for both cities.

44. **Capacity building of the clients** in Harbin and Mudanjiang has been an integral part of the project preparation process. To ensure EMP implementation, a budgeted training plan is also included in the EMP which forms part of the overall training plan of the project. The EMP is the result of close collaboration between the PMOs and the EA consultants. This ensures the EMP's ownership by the project entities which in turn helps guarantee its effective implementation.

45. **Alternative analysis** of different design options was undertaken as part of the EA process, including a without project scenario, to avoid or minimize negative impacts from the outset. Different lane configurations of major corridors, access to bus stops via overpass/underpass versus ground level crossing at cross-road, different layout of ground floor of bus terminals and hubs, different floor materials for bus terminals and hubs, overpass/underpass and inside buses were compared. Alternatives that can better shelter passengers from the cold, wind and snow and can provide better safety (e.g. non-slippery floor material) and amenity thus more user friendly, especially in cold weather, were recommended. Different heat sources and technologies for heating terminals that are not able connected to district heating network are also analyzed. These recommendations from the EA have been incorporated in the feasibility studies (FS) or annexed to the FSs so as to be taken into account during preliminary and detailed design.

46. **Information disclosures** were undertaken during the EA preparation and investigation. The draft EA/EMP for Harbin was disclosed on the website of the Harbin Transportation Bureau on July 2, 2013, with a notice published on a local newspaper, Harbin Daily on July 15, 2013. The revised Harbin EA/EMP was re-disclosed on November 8, 2013. The hard copy of is available at the city PMO office and EA institute for public reading. For Mudanjiang, the draft

EA/EMP was disclosed on the government website July 11, 2013. with a notice published in local newspaper on July 20, 2013. The revised Mudanjiang EA/EMP was re-disclosed on government website November 23, 2013. The hardcopy is also available at the city PMO office and the EA institute for public reading. The Chinese and English versions of the Harbin and Mudanjiang EA/EMP documents were disclosed on the World Bank's InfoShop on October 28, 2013. After incorporating comments from Bank safeguard review, the revised documents were re-disclosed on InfoShop on December 9, 2013.

47. The consultations took various forms, mainly through questionnaires and meetings with the public and experts after sufficient EA disclosure. About 944 people in Harbin and more than 1200 people in Mudanjiang with a wide range of background were surveyed and a number of organizations were consulted. Major concerns include social disturbance, dust and noise during construction, and emissions and noise during operation. The EA and EMP provided feedback and counter measures to address these concerns.

Social Safeguards

64. ***Social Assessment.*** A social assessment (SA) study was conducted separately in Harbin and Mudanjiang. With in-depth analysis on and extensive consultation with various stakeholders, including transport service users, affected citizens by land use and construction, officials and academics, the SA concluded that the project will improve the public transportation system in both cities and provide direct benefit to the citizens in their daily life. In addition, the SA also recommended several measures to maximize the social benefits of the project by pursuing a user-friendly design. The SA suggestions have been reflected into the project feasibility study and will be incorporated into detailed engineering design. At the same time, the SA also identified some likely adverse impacts on resettlement, which would be managed and mitigated through the social safeguard instruments, including the Resettlement Policy Framework (RPF) and Resettlement Plan (RP) already prepared for the project.

65. ***Resettlement.*** The project triggers OP4.12 (Involuntary Resettlement). For Harbin, the Public Transport Corridors is not expected to require land acquisitions as the improvements are within the right of way. However, during detailed design work, there may be a need to acquire small piece of land to make changes to alignment as needed. Because of this uncertainty, an RPF has been prepared, reviewed and agreed with the Bank. The Public Transport Infrastructure component will need land for the construction of three bus terminals, depot, and management centers. All the identified land is state-owned and have already been designated for the project. The RPF carried out due diligence review for the public infrastructure land and concluded that the three sites will utilize 5.2 ha state-owned land that have been allocated to the project and do not involve resettlement.

66. For Mudanjiang sub-project, the Public Transport Infrastructure (Component 2) requires land acquisition for the five terminals/depots/management centers. Among the five sites, three will need to acquire land from three villages, while the other two sites already have the land. Therefore, a RP was prepared for the three sites and a due diligence review was done for the two sites as annex to the RP. About 3 ha collective land at three villages separately for the three terminals/depots/management centers will be acquired and will be covered in the RP, while 4.7

ha state-owned land at two terminals/depots/management centers were acquired prior to 2007 and reviewed in the due diligence review. The review on already-owned land identified that the villagers were fully consulted, paid, provided with adequate livelihoods, and generally satisfied with the land compensation and livelihood restoration. Meanwhile, the RP covers the resettlement measures for the 102 persons in 26 households, mainly relying on cash compensation plus social security program and training, given only less than 10 percent of the income of the affected people is to be lost.

67. The RPF/RPs also provided details on resettlement policy procedures and requirements, which will have to be followed during project implementation, including compensation rates, mitigation measures to restore livelihoods, and institutional and monitoring arrangements.

68. ***Indigenous People.*** The project activities are located within developed urban areas of Harbin and Mudanjiang, with no ethnic community affected by the project. Therefore, the project does not trigger OP 4.10 (Indigenous People).

69. ***Gender Issues.*** The SA and the RPF/RP cover gender-disaggregated analysis including women's unique demand to explore measures to ensure women benefit from the new transport facilities. Women participated in the consultation meetings and the social assessment process. The women-related demand and proposed measures have been included in the FSR, which include the need to (i) monitor service quality at bus stops and inside buses; (ii) provide street lighting along project roads; and, (iii) provide cross bridges with cover.

70. ***Consultations and Participation.*** The SA and the RPF/RP were carried out through extensive consultation and participation in the preparation process. Users' and other stakeholders' concerns and needs were integrated into the project design and the resettlement planning. In Mudanjiang city 32 specific recommendations were generated in SA participation process, and of which 23 have been included in the FSR to be included in the project design for implementation; while in Harbin 46 specific recommendations were generated and 39 are included in the FSR.

71. ***Grievance Redress.*** A grievance redress mechanism is included in the RP, which provides a process and a grievance record table, in which grievances can be filed both orally and in writing. The grievance process starts with affected people filing complaint at village and neighborhood committee level. If resolution is not obtained, the complaint can be elevated to county/district, municipality level. Affected people can also file their complaints in court if not satisfied with the resolution by the project authority at the different levels. All grievances and their resolution will be recorded. The grievance filing mechanism has been disclosed to the local population and will be further disseminated through the Resettlement Information Booklet, which is attached to the RPF/RP.

72. ***Implementation Arrangement***. A resettlement management arrangement with proper staff and resources in each city has been agreed up on and detailed in the RP. Dedicated safeguard staff will be responsible for carrying out resettlement activities in each project cities. An experienced external resettlement monitor will be engaged according to the RP to ensure

regular monitoring and reporting. Training plan is included in the RPF/RP, and will be provided to the PMO staff, related agencies, and affected people before and during resettlement activities.

73. ***Monitoring & Evaluation.*** Internal and external resettlement monitoring arrangement is included in the RPF/RP, which covers the monitoring indicators, frequency, agency qualification and their roles. The PMOs will provide resettlement progress monitoring report to the Bank semiannually.

74. ***Information Disclosure.*** Information about the project was distributed to local communities during the SA and RPF/RP preparation. The SA and RPF/RP were disclosed in Mudanjiang on Oct 10, 2013, and in Harbin on Oct 16, 2013 through government websites, as well as through making announcements on local newspapers. The hard copies of the safeguard documents are also available in the PMO offices. The Chinese and English versions of the RPF/RP/SA were disclosed on the World Bank's InfoShop on October 28, 2013. After incorporating comments from Bank safeguard review, the revised RPF/RP were re-disclosed on InfoShop on December 8, 2013.

Project Monitoring and Evaluation

48. Both project cities have collected baseline data for project monitoring during the FSR preparation. Since some of the indicators are comparing "with and without" project scenarios, the project will introduce appropriate data collection and modeling methods to monitor the PDO-level outcome indicators. The PMOs will be responsible to collect the data with collaboration with the relevant local agencies.

49. ***Increased rating of comfort in the customer satisfaction surveys for bus system along the target corridors.*** The customer satisfaction surveys for bus system of the two project cities were conducted by feasibility study consultants during project preparation. The survey questionnaire and methodology were reviewed by the Bank team, which investigated safety, crowdedness, convenience, fare level, speed, etc. The survey result indicated that an average percentage of satisfactory response of 35% and 74.9% prior to project implementation in Harbin and Mudanjiang, respectively. A customer satisfactory survey will be conducted at the mid-tem and the end of project implementation, using the same questionnaire and methodology as before project implementation. The survey results will be compared with the target value set during project preparation, which are set at 70% and 85% for Harbin and Mudanjiang, respectively.

50. ***Increased share of buses arriving on schedule.*** This indicator will evaluate the share of buses arriving on schedule which are operating along the targeted corridors. A preliminary data collection by the feasibility study consultants were conducted regarding the delay of buses operating along the targeted corridors. The data indicates that the average share of buses arriving on schedule on targeted corridors in Harbin is 56.2%, and Mudanjiang is 87%.

51. The share of buses arriving on schedule (delay of buses) for the "without" project scenario in the following years will be modeled and projected to obtain the appropriate baseline taking into account the rapid growth of transport demand. And the indicators will be monitored

for the "with" project scenario to be compared with the target value which are 75% and 92% for Harbin and Mudanjiang, respectively.

52. ***Increased bus speed on target public transport corridors.*** This indicator will investigate the increase of the average bus speed on target corridors during rush hours. The base line data was collected by the feasibility study consultant, which shows the average bus speed along the target corridors are 28 km/h and 19.4 km/h in Harbin and Mudanjiang, respectively.

53. The average bus speed on target public transport corridors for the "without" project scenario in the following years will be modeled and projected to obtain the appropriate base line taking into account of the rapid growth of transport demand. And the indicators will be monitored for the "with" project scenario to be compared with the target value which are 33.6 km/h and 24 km/h for Harbin and Mudanjiang, respectively.

54. ***Reduces fatalities and major injuries on target public transport corridors.*** The baseline data for the fatalities and major injures on target public transport corridors in Harbin and Mudanjiang had been collected by the feasibility study consultants via the traffic police department. In 2012, the total fatalities and major injuries along the target corridors was 57 in Harbin, and 32 in Mudanjiang. By end of the project implementation, the statistic of total fatalities and major injuries along the target corridors in Harbin and Mudanjiang will be collected. The results will be compared with the target value which are 8 and 5 for Harbin and Mudanjiang, respectively.

55. ***Reduced of energy used by buses.*** The basic data for energy reduction used by buses were estimated by the feasibility study consultants for the two project cities taking into account of the new cleaner-fuel vehicles and increased bus speed. This indicator will be evaluated with the unit of (L Diesel/ VKT). The projected total energy consumption reduction for the target corridors is 0.4 L Diesel/VKT in year 2018 for Harbin, and 0.2 L Diesel/VKT in year 2018 for Mudanjiang. The methodology for calculation is shown below. The energy reduction used by buses comes from two improvements: i) increased speed on the bus corridors; ii) deployment of new cleaner-fuel vehicles.

$$B_4 = B_{41} + B_{42}$$

B_4 : Total energy reduction on the proposed corridor (L Diesel/ VKT)

B_{41}: Energy reduction from increased speed on the bus corridors (L Diesel/ VKT)

$$B_{41} = \frac{\sum_{i=1}^{N}\left(A_i \times \frac{V_i^{'} - V_i}{V_i} \times \theta\right)}{\sum_{i=1}^{N} A_i}$$

B_{42}: Energy reduction from new cleaner-fuel vehicles (L Diesel/ VKT)

$$B_{42} = \theta - \delta$$

A_i: VKT (Vehicle Kilometer Traveled) on corridor i with the project

$V_i^{'}$: vehicle speed on corridor i with the project

V_i: vehicle speed on corridor i without the project

θ: gas consumption coefficient for old vehicles (0.47 L Diesel/ km)
N: number of proposed bus corridors
δ: gas consumption coefficient for new clean-fuel vehicles (0.37 L Diesel/ km)[2]

56. Greenhouse Gas (GHG) Emission Accounting. The project will pilot the accounting of GHG and local pollutant emissions under the project. The modeling and results will be shown during further preparation.

[2] The energy consumption by standard CNG bus is 0.42 m^3 CNG/km. The energy produced by 1 m^3 CNG approximately equals to that of 0.873 L diesel, General Principals for Calculation of the Comprehensive Energy Consumption, China National Standard, GB/T 2589-2008,

Annex 4

Operational Risk Assessment Framework (ORAF)

China: Heilongjiang Cold Weather Smart Public Transportation System (P133114)

Project Stakeholder Risks						
Stakeholder Risk	**Rating**	**Low**				
Risk Description: The key stakeholders include public transport users, local residents, including private car drivers, various government agencies at the provincial and project cities levels, and private and public sector bus operators and regulators. (a) The achievement of the PDO may be adversely affected if the different directors of the government agencies within the Project Leading Group are not fully committed to the project design and development objectives, and/or change their priority during project implementation. (b) The quality of the project implementation might be adversely affected by the capacity of the city PMOs or by their desire to quickly complete the project, thus compromising on quality. (c) Project implementation may be delayed if local residents, especially those that live next to project corridors, do not cooperate due to inadequate consideration of their interests and business concerns.	**Risk Management:** So far, these risks appear to be minimal for the project. Generally, public transport improvements are welcome by users, operators, and businesses. Both cities have developed plans and the activities under the proposed project are included in their respective city-level strategies. The extensive consultation carried out during project preparation confirms that the project is supported by local residents and all concerned stakeholder. Continued capacity building, proper consultation, and knowledge sharing with all concerned authorities and other stakeholders on the benefits of developing a sustainable public transport system for the cities.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Both	In Progress	Both	☑		

(d) Project cities may encounter different development opportunities and strategies due to change of leadership. Risk of potential resettlement due to possible future urban development movements affecting the project corridors or terminals in project cities still exists.						

Implementing Agency (IA) Risks (including Fiduciary Risks)						
Capacity	**Rating**	**Substantial**				
Risk Description: The major implementing agency risks relate to: (a) The proposed project involves two cities and multiple agencies, which requires the coordination and cooperation from the provincial level for guidance. The lack of coordinating capacity and commitment from provincial PMO may lead to delays during the implementation. (b) The implementation of the project might be delayed because the PMO has limited experience with Bank funded projects. The Harbin PMO will be in the municipal Transport Bureau (HTB). Although the staffs of the HTB have experience working in transport related projects, issues may still exist on cooperation between this agency and other local agencies, especially Municipal DRC and Municipal Finance Bureau. In Mudanjiang, the proposed project is the Bank's first infrastructure lending engagement and the PMO is not familiar with the Bank's procurement procedures and environmental and social safeguards policies. The two PMOs may have different capacity in project management and may not be able to provide required materials with high quality according to similar schedules. These risks are currently under mitigation. Both PMOs have put in place a detailed staffing and implementation. The PMOs are guided by	**Risk Management:** (a) Substantial training and assistance will be provided to the PMO by the Bank's technical, procurement, financial management, and safeguard specialists. Staffs from PMOs will attend peer-to-peer learning workshops frequently conducted by the Bank and visit other Bank project cities for onsite training. (b) The implementing agencies shall designate staffs to attend component-related technical trainings and to facilitate future implementation and maintenance work. (c) The Bank team will monitor the implementation of project components on regular basis as well as the EMP, RPF and the agreed procurement and financial management policies and procedures. (d) The Bank team will work closely with the PMOs, the Transport Bureaus and other related agencies on carrying out performance and lease agreements, and will also provide assistance on regularly collecting performance measure data.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Both	In Progress	Both	☐		

committed city leadership that has provided adequate support for the project. (c) The Transport Bureaus, which will supervise and monitor the performance of bus companies, may lack the capacity to conduct regular evaluations and ensure right incentives and penalties are in place.						
Governance	**Rating**	**Moderate**				
Risk Description: The implementing agencies are fully involved in the project preparation, the PDO is aligned with the agencies overall agenda and mission, and the various agency stakeholders are already working closely with the city PMOs. The city PMOs are working with the municipal Project Leading Groups (PLGs) as well as with the provincial PMO. These established ties will ideally strengthen leadership and facilitate effective decision making. However, a number of governance risks do exist. They include: (a) Project Implementation Units (PIUs) may lack ownership if the responsibilities are not clearly identified. If too much power rests within the PMOs or PLGs, it may lead to discontent amongst the implementing units. (b) If the system of PLGs, provincial and city PMOs, PIUs, and multiple committees is too cumbersome, slow decision making or miscommunications may lead to project delays, disputes amongst the multi-sectorial government stakeholders, or poor management of implementation.	**Risk Management:** (a) The Bank team shall monitor and work closely with provincial PMO and two city-level PMOs and their PLGs to ensure that the implementing agencies possess an adequate level of ownership and accountability risks are mitigate appropriately in a timely fashion. (b) The provincial PMO, city PMOs, PIUs, and various project stakeholders shall work closely to ensure effective communication and monitoring of project progress against a series of milestones during implementation. If the current operational framework appears to be inadequate or ineffective in addressing all sector development issues in a fair and balanced manner, the task team will convey these concerns to the PLGs and discuss alternative setups.				
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Both	In Progress	Both	☐		
	Risk Management:					

	Practices that may lead to the perception of potential fraud and corruption shall be monitored closely. Substantial training on procurement and financial management will be provided to the PMOs and PIUs. Contract bidding shall be publicly disclosed and monitored to ensure that there are no instances of collusion, bribes, or favorable treatment. Compliance to the Bank's fiduciary requirements will be routinely supervised during implementation.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Both	Not Yet Due	Implementation	☐		

Project Risks						
Design	**Rating**	**Substantial**				
Risk Description: (a) Although the general concepts of the integrated public transport corridor implementation as well as intelligent transport system development are widely understood by the Bank and to some degree practiced in other parts of China, the client may fail to implement the components to a high standard. (b) The two project cities experience extreme cold weather in the winter. The public transport arrangements and demanded infrastructures in such weather have higher requirement for maintenance than other project cities. (c) According to Bank's previous experience with the urban transport projects in China, the cities are more enthusiastic in implementing the major physical investments than those "soft" elements such as network optimization, traffic enforcement, and capacity building. The impact of the project, however, is largely dependent on the "soft" elements. (d) The proposed project contains development of traffic management system based on advanced technology, such	**Risk Management:** (a) The PMO and PIU will engage experts in the fields of urban transport, particularly those who had work experience in cold weather public transport, to contribute to capacity building, advise on technical options during the implementation of the project, and help to ensure that the project is implemented in an environmentally, fiscally, and socially sustainable manner. (b) The Bank team shall work closely with the client to ensure that adequate emphasis is placed on all project components rather than simply road network improvement and construction, which are typically given greater priority over some of the "soft" project subcomponents and technical assistance. (c) The client shall procure technical training services related to advanced technology infrastructures in the proposed project. The implementing agencies for the components shall designate staffs to attend training and be in charge of operation and maintenance after construction/procurement.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Both	In Progress	Preparation	☐		

as ITS information platform. Difficulties may occur during the development of a comprehensive ITS platform and the procurement of equipment. In addition, it may also occur that few staffs in the implementing agencies know how to use and maintain the advanced technology equipment, which will affect achievement of PDOs.						
Social and Environmental	**Rating**	**Moderate**				
Risk Description: The project's component on improvement of major transportation corridors will be undertaken within the existing right-of-way. The component on public transport infrastructure involves construction and rehabilitation of bus depots and terminals etc. Other components involve mainly procurement and installation of equipment and non-physical consultancy work. Overall environmental impacts and risks will be moderate, mostly temporary and limited. The potential social risk stems from land related issues. Local governments lack adequate social safeguard experiences with Bank financed projects, which possibly results in preparation delay and inadequate implementation of resettlement instrument. In addition, risk of potential resettlement due to possible future urban development movements affecting the project corridors or terminals in project cities still exists.	**Risk Management:** Implementation of EMPs and RPFs/RPs will be closely supervised by the city PMOs and experienced external monitoring consultants during project implementation. The task team will carry out regular field supervision and make sure that sufficient training on safeguards issues are conducted, and that adequate resources will be allocated for implementation of the EMP/RPF/RP and monitoring.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Client	In Progress	Both	☑		
Program and Donor	**Rating**	**Low**				
Risk Description: Harbin is a pilot city under the GEF Large Cities Congestion and Carbon Reduction Project. Both projects complement each other.	**Risk Management:** Close coordination and the same team working on both projects.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Both	In Progress	Both	☑		
Delivery Monitoring and Sustainability	**Rating**	**Moderate**				

Risk Description:	Risk Management:					
(a) The two PMOs may have different capacity in project management and may not be able to submit required deliverables according to similar schedule. If one of the project cities is behind of implementation schedule, the overall project may fail to meet implementation milestones. (b) There is risk that the quality of "soft" elements of the project may be low. Although the investment of these activities may be small compared to the infrastructure investment, they are vital to the achievement of the PDO.	(a) The task team will periodically monitor the implementation of the project components in two cities to ensure the quality of delivery through supervision missions, semi-annual progress reports and result indicators. In addition, the provincial PMO shall actively communicate with city PMOs and the Bank in a timely manner. (b) In order to sustain project impact, capacity building on public transport management and operation will help develop capacity of bus companies, traffic police, as well as PMO staffs to facilitate long-term sustainability.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Bank	Not Yet Due	Implementation	☑		
				☐		

Overall Risk		
Overall Implementation Risk:	**Rating**	**Moderate**
Risk Description:		
The main risks in the project include PMOs capacity and project design complexity. These are mitigated through better agency coordination, capacity building, and early start in project implementation.		

Annex 5: Implementation Support Plan

CHINA: Heilongjiang Cold Weather Smart Public Transportation System Project

Strategy and Approach for Implementation Support

1. The strategy for implementation support plan has been developed based on the nature of the project and the risk assessment through the ORAF process. It aims at making implementation support to the client more flexible and efficient, and focuses on the implementation of risk mitigation measures. The following risk categories have been rated as "Moderate" or "Substantial": (i) sector and multi-sector; (ii) implementing agency capacity; (iii) implementing agency governance; (iv) project design; (v) social and environmental; and (vi) delivery monitoring and sustainability;

2. **Sector and Multi-sector.** Both Harbin and Mudanjiang have established Project Leading Groups (PLGs) headed by high-level government officials - executive vice mayor in Harbin, Mayor and General Secretary in Mudanjiang. The task team will work with the PLGs and the committees to ensure that their oversight of the coordination is effective and commitment to the PDO. The task team will also work closely with the PMOs and transport bureaus to carry out performance and lease agreements, supervise bus companies, monitor the completion of performance measures, and ensure the inclusion of sector reform program to integrate the private sector with the overall public sector operations,

3. **Implementing Agency Capacity**. The task team will monitor the implementation of project components on regular basis as well as the EMP, RPF and the agreed procurement and financial management policies and procedures. Substantial training and assistance will be provided to the city PMOs by the Bank's technical, procurement, financial management, and safeguard specialists. Staffs from PMOs are recommended to attend peer-to-peer learning workshops and visit other Bank project cities for onsite training. Capacity building activities to the related municipal agencies, especially focusing on planning and operation of traffic management, will also be conducted.

4. **Implementing Agency Governance**. The task team shall monitor and work closely with provincial PMO and two city-level PMOs and their PLGs to ensure that the implementing agencies possess an adequate level of ownership and accountability risks are mitigate appropriately in a timely fashion. The provincial PMO, city PMOs, PIUs, and various project stakeholders shall work closely to ensure effective communication and monitoring of project progress against a series of milestones during implementation. If the current operational framework appears to be inadequate or ineffective in addressing all sector development issues in a fair and balanced manner, the task team will convey these concerns to the PLGs and discuss alternative setups.

5. **Project Design**. The task team will work closely with PMO and PIU to engage experts in the fields of urban transport, particularly those who had work experience in cold weather public transport, to contribute to capacity building, advise on technical options during the implementation of the project, and help to ensure that the project is implemented in an environmentally, fiscally, and socially sustainable manner. The task team advises city PMOs to

procure technical training services related to advanced technology infrastructures in the proposed project, and designate staffs in PIUs to be in charge of operation and maintenance after implementation.

6. **Social and Environmental**. Implementation of EMPs and RPFs will be closely supervised by the city PMOs and experienced external monitoring consultants during project implementation. The task team will carry out regular field supervision and make sure that sufficient training on safeguards issues are conducted, and that adequate resources will be allocated for implementation of the EMP/RPF and monitoring.

7. **Delivery Monitoring and Sustainability**. The task team will periodically monitor the implementation of the project components in two cities to ensure the quality of delivery through supervision missions, semi-annual progress reports and result indicators. In addition, the provincial PMO shall actively communicate with city PMOs and the Bank in a timely manner. In order to sustain project impact, capacity building on public transport management and operation will help develop capacity of bus companies, traffic police, as well as PMO staffs to facilitate long-term sustainability.

Implementation Support Plan

Primary Focus of Implementation Support

Time	***Focus***	***Skills Needed***	***Resource Estimate***	***Partner Role***
First twelve months	• TOR preparation • Project design • Procurement • Safeguards • Capacity Development	• Technical (public transport, traffic management, financial and policy) • Safeguards • Financial management • Procurement	5-6 staff, two trips per staff	
12-48 months	• Procurement • Project implementation • Monitoring and supervision	• Technical (public transport, traffic management, financial and policy) • Safeguards • Financial management • Procurement	5-6 staff, one trip per staff; some thematic trips as needed.	
Other				

Skills Mix Required

Skills Needed	***Number of Staff Weeks***	***Number of Trips***	***Comments***
Public transport planning and operations	1 staff members: 11 weeks	11	2 trips + 2 weeks per project year + 1 extra week + 1 extra trip in the first year.
Traffic Management	1 staff member: 6 weeks	6	1 trip + 1 week per project year + 1 extra week in the first year
Financial and Policy	1 staff member: 5 weeks	5	1 trip + 1 week per project year for each staff
Safeguards	2 staff member: 10 weeks	10	1 trip + 1 week per project year for each staff
Financial Management	1 staff member: 5 weeks	5	1 trip + 1 week per project year
Procurement	1 staff member: 5 weeks	5	1 trip + 1 week per project year

8. **Location of Staff Expertise.** Team leadership, safeguards, financial management, and procurement contributions will be provided by the Bank's country office-based staff. Technical expertise will be provided by both office-based as well as Headquarters-based staff.

Annex 6: Economic and Financial Analysis

CHINA: Heilongjiang Cold Weather Smart Public Transportation System Project

1. This Annex provides details of the economic evaluation for the project, fiscal and debt capacity assessment of the two local governments, and financial analysis of the bus companies benefiting from the proposed project. Economic and Financial Analysis shows the proposed project will bring significant efficiency gains by ensuring appropriate road designs, reasonable transit operations, and intelligent transport management, thereby allowing the local governments to utilize investment in transport sector, and enhancing the bus operators' public transport service performance.

A. ECONOMIC EVALUATION

Summary

2. The economic evaluations of the proposed project were carried out for the projects in two cities separately. In the economic evaluations, the project costs included the capital cost and the operation and maintenance (O&M) cost of the project; the economic benefits were calculated by comparing the "with-project" and "without-project" cases; the economic internal rate of return (EIRR) of the project were calculated accordingly for assessing the economic viability of the proposed project; and the sensitivities were tested and analyzed for several scenarios. The evaluation results shown that the EIRR was 19.44% for the Harbin project and 23.88% for the Mudanjiang project. Therefore, the project is considered economic viable. The sensitivity analysis found that the EIRRs are higher than the economic opportunity cost of capital for most scenarios tested. Even at the worse case of increasing capital cost by 20%, increasing maintenance cost by 20%, and decreasing benefits by 20%, the EIRRs were still at 11.05% for the Harbin project and 12.01% for the Mudanjiang project. It means that the project has very strong economic viability. From the sensitivity analysis results, it could be seen that the EIRRs were more sensitive to the changes in the project benefits, which suggests that the project needs to ensure the services are of high quality in order to ensure more passengers are attracted to use the services.

Economic Evaluation of the Harbin Project

Traffic Analysis and Forecast

3. For carrying out the feasibility study (FS), traffic analysis and forecast was carried out by the FS consultants using the convention "four-step" methodology. The existing traffic in Harbin was collected through traffic surveys in 2009 and 2013. The traffic demand for 418 traffic zones was forecasted according to future population growth and employment centers of the traffic zones. The future traffic origin-destination (OD) tables for the key years were derived using Fratar approach. The traffic demand was split by different modes including public transport, private cars, and non-motorized vehicles. Then, the traffic demands for the public transport were assigned to the "with-project" and "without-project" transport networks by key years (2015, 2020, 2025, and 2030). Table A6-1 is the traffic forecast results for the three project corridors, which are by passengers and vehicles per day. (see relative sections of this report for the details of traffic analysis and forecast)

Table A6-1. Summary of Traffic Forecast for Harbin Project
(Annual average daily traffic)

	2015	2020	2023	2025	2030
Passenger ('000 per day)					
Youyi Corridor	148.73	191.22	218.68	239.18	299.18
Hongqi Corridor	55.41	67.29	84.92	96.93	137.77
Xinyang Corridor	46.70	80.87	93.26	102.55	130.04
Vehicles ('000 per day)					
Youyi Corridor	3.31	4.25	4.87	5.32	6.65
Hongqi Corridor	1.23	1.49	1.88	2.16	3.06
Xinyang Corridor	1.04	1.79	2.08	2.28	2.89

Source: The Feasibility Study Report for Harbin Project (October 2013)

Economic Costs

4. According to the revised feasibility studies for the Harbin project,[3] the total investment cost was estimated at RMB1,368.92 million (US$224.41 million equivalent).[4] The operation cost for the public buses along the project corridor was estimated at RMB87.9 per 1,000 vehicle-kilometer. The annual maintenance cost of the project corridor was estimated at RMB200,000 per kilometer. The periodical maintenance was scheduled to be carried out in the 10th operation year (2026) at the cost of RMB2.00 million per kilometer. All of these costs were estimated at the 2013 prices. In the economic evaluation, the financial costs were converted into economic costs by using shadow prices or standard conversion factors, as well as excluding the tax, price contingency, financial charges of the loan, and cost for capacity buildings under the project.

Economic Benefits

5. Economic benefits of the project will be generated due to improved public transport corridors, better public buses purchased under the project, more public transport facilities and stations, and enhanced traffic management. After completion of the project, the public buses on the project corridors could run at a faster speed and use less traveling time. The economic benefits considered in the evaluation included (i) vehicle operation cost (VOC) savings of the buses due to faster speed; (ii) passenger traveling time cost savings due to less time used; (iii) working efficiency increased due to less tiring of the passengers while traveling; (iv) emission reduction due to less congestion and better buses; and (v) other non-quantified benefits, like the benefits to other vehicles in the corridors and economic opportunities induced by the project. It was calculated that in 2017 (the first fully operation year of the project) the VOC saving would be totally RMB4.70 million (at the saving of RMB1.09 per vehicle-km); the passenger traveling time cost saving would be about 2.93 million hours (at the time cost of RMB30.63 per person-hour); and the cost savings due to less emission would be about RMB5.45 million.

[3] CIECC Overseas Consulting Co., Ltd, October 2013. *Revised Feasibility Study Report for Harbin Cold Weather Smart Public Transport Project.*
[4] The exchange rate of USD1.00 = RMB6.10 was applied in the analysis.

Economic Internal Rate of Return (EIRR) and Sensitivity Analysis

6. The EIRR of the proposed project was calculated by comparing the economic costs and benefits in a period of 2014–2038 (25 years, including 5 years construction and 20 years operation). The evaluation result shown that the EIRR was 19.44%. The project is considered economic viable. The sensitivity analysis found that EIRRs for most tested cases were higher than the economic opportunity cost of capital. Even at the worse case of increasing capital cost by 20%, increasing maintenance cost by 20%, and decreasing benefits by 20%, the EIRR was still at 11.05%. It means that the project has very strong economic viability. From the sensitivity analysis results, it could be seen that the EIRR was more sensitive to the changes in the benefits. Therefore, the government should pay more attentions on providing better public transport services which may attract more passengers.

Table A6-2. Economic Evaluation Results and Sensitivity Analysis

EIRR (%)		Benefit				
		-20%	-10%	0	10%	20%
Cost	-20%	14.98	19.00	22.72	26.25	29.65
	-10%	13.76	17.50	20.93	24.17	27.28
	0	12.73	16.23	**19.44**	22.45	25.33
	10%	11.83	15.15	18.17	21.00	23.68
	20%	11.05	14.21	17.08	19.74	22.27

Note: EIRR = economic internal rate of return
Source: The Feasibility Study Report for Harbin Project (October 2013)

Economic Evaluation of the Mudanjiang Project

Traffic Analysis and Forecast

7. For carrying out the feasibility study (FS), traffic analysis and forecast was carried out by the FS consultants. The existing traffic in Mudanjiang was collected through the traffic surveys in the period of December 2012 to January 2013. The traffic demand for 706 traffic zones was forecasted according to future network plan, socioeconomic development, population growth and working posts of the traffic zones. The future traffic origin-destination (OD) tables for the key years were derived. The traffic demands included public transport, private cars, pedestrians, and non-motorized vehicles. Then, the traffic demands were assigned to the "with-project" and "without-project" transport networks by key years (2016, 2025, and 2035). Table A6-3 is the traffic forecast results for the six project corridors. (see relative sections for the details of traffic analysis and forecast).

Table A6-2. Economic Evaluation Results and Sensitivity Analysis

(peak hour traffic)

	2016	2025	2035
Passenger (persons at peak hour, one direction)			
Guanghua Street Corridor	5,136	6,236	7,024
Pingán Street Corridor	5,622	6,021	6,695
Xinán Street Corridor	5,409	5,878	6,460
Xisantiao Road Corridor	2,984	3,597	3,990
Dongsitiao Road Corridor	4,580	4,901	5,408
Taiping Road Corridor	5,252	5,640	6,264
Vehicles (PCU at peak hour, one direction)			
Guanghua Street Corridor	1,721	1,874	2,054
Pingán Street Corridor	847	983	1,073
Xinán Street Corridor	1,254	1,443	1,582
Xisantiao Road Corridor	1,369	1,579	1,709
Dongsitiao Road Corridor	1,013	1,141	1,269
Taiping Road Corridor	772	895	977

PCU = passenger car unit
Source: The Feasibility Study Report for Mudanjiang Project (October 2013)

Economic Costs

8. According to the revised feasibility studies for the Mudanjiang project,[5] the total investment costs were estimated at RMB1,250.23 million (US$206.59 million equivalent). The operation cost for the project corridors was estimated at RMB13 million per year. The annual maintenance cost of the project corridors were estimated at RMB500,000 per kilometer with 6% increase per year. The periodical maintenance was scheduled to be carried out in the 10th operation year at the cost of RMB5.00 million per kilometer. All of these costs were estimated at the 2013 prices. In the economic evaluation, the financial costs were converted into economic costs by using shadow prices or standard conversion factors, as well as excluding the tax, price contingency, financial charges of the loan, and cost for capacity buildings under the project.

Economic Benefits

9. It was assumed that, economic benefits would be generated by the project due to improved public transport corridors; better public buses purchased under the project; more public transport facilities and stations; and enhanced traffic management. After completion of the project, the public buses on the project corridors could run at a faster speed and use less traveling time. The economic benefits considered in the evaluation included (i) vehicle operation cost (VOC) savings of the buses due to faster speed; (ii) passenger traveling time cost savings due to less time used; (iii) reduced accident costs; and (iv) other non-quantified benefits, like the benefits to other vehicles in the corridors and economic opportunities induced by the project. By comparing the "with-project" and "without-project" cases, it was estimated the average VOC

[5] ICT of NDRC associated with Beijing Huaxie Transport Consulting Com., October 2013. *Revised Feasibility Study Report for Mudanjiang Cold Weather Smart Public Transport Project.*

saving would be about RMB2.00 per vehicle-kilometer; The accident rate would be reduced by 0.089 per million VKT and the cost reduction was estimated at RMB150,000 per times. The passenger time cost was estimated by using the average income of the Mudanjiang urban residents in 2012, RMB10.00 per hour.

Economic Internal Rate of Return (EIRR) and Sensitivity Analysis

10. The EIRR of the proposed project was calculated by comparing the economic costs and benefits in a period of 2014–2036 (23 years, including 3 years construction and 20 years operation). The evaluation result shown that the EIRR was 23.88%. Therefore, the project is considered economic viable. The sensitivity analysis found that EIRRs for most tested cases were higher than the economic opportunity cost of capital. Even at a worse case of increasing capital cost by 20%, increasing maintenance cost by 20%, and decreasing benefits by 20%, the EIRR was still at 12.01%. It means that the project has very strong economic viability.

Table A6-4. Economic Evaluation Results and Sensitivity Analysis

Case		EIRR (%)	ENPV (RMB million)
Base Cast		23.88%	500.7
Capital Cost	-10%	27.50%	582.48
	+10%	20.98%	418.92
	+20%	18.60%	337.14
Maintenance Cost	-10%	23.94%	503.64
	+10%	23.82%	497.56
	+20%	23.76%	494.82
Operation Cost	-10%	24.06%	508.80
	+10%	23.70%	492.59
	+20%	23.51%	484.49
Traffic Volume	-20%	16.83%	204.84
	-10%	20.33%	352.77
	+10%	27.49%	648.63
	+20%	31.16%	796.56
Benefit	-20%	20.26%	350.03
	-10%	16.69%	199.37
Cost +10% and Benefit -10%		17.34%	249.44
Cost +20% and Benefit -20%		12.01%	32.3

Note: EIRR = economic internal rate of return, ENPV = economic net present value
Source: The Feasibility Study Report for Mudanjiang (October, 2013)

B. FISCAL ANALYSIS

Summary

11. The investments of the proposed project will be the responsibility of Harbin Municipal Government (HMG) and Mudanjiang Municipal Government (MMG), including using the loan, providing counterpart funds to the project implementation, and paying back the loan. Upon completion, all the project outputs will be used as public infrastructure and services without direct revenues, except for the relatively small fare box revenues generated from public bus operations. Therefore, the fiscal impact analysis focused on the counterpart fund availability and fiscal sustainability of the governments. The analysis covers (i) general socioeconomic development and plans of the municipalities; (ii) municipal government fiscal revenue and expenditure; (iii) urban infrastructure and transport development; (iv) government debt status; and (v) counterpart fund requirement and fiscal sustainability.

Fiscal Analysis of the Harbin Municipal Government

General Economic Development Status and Plan

12. As other cities in the People's Republic of China (PRC), Harbin Municipality has also experienced robust socioeconomic development with an average gross domestic product (GDP) growth of 14.2% per annum in the last 6 years (2007－2012).[6] The GDP per capita reached RMB45,823 (US$7,512 equivalent) in 2012. The total government fiscal revenue kept a faster increasing trend from RMB16,962 million in 2007 to RMB47,030 million in 2012 with average increase of 22.6% per annum, which has well supported and simulated the fast urban infrastructure and transport development in Harbin Municipality. In the mean time, the people's livelihood has been substantially improved. In the 12th Five-Year Socioeconomic Development Plan (2011－2015), it is targeted that the economic development of Harbin Municipality will still keep a high increasing trend in the plan period with the average GDP at least annual growth of 12% and the GDP per capita will reach US$10,000 in 2015.[7] The urbanization ratio will be increased from 61% in 2010 to 65% in 2015. The public transport will take at least 45% among all transportation modes. The average speed of public transport in urban area will reach 20 kilometers per hour. In the mean time, the air emission will be reduced by 14%. For achieving such development target, Harbin municipal government will enhance its investment especially to the public transport. Table A6-5 is the general socioeconomic development status in Harbin Municipality and the main targets of the 12th Five-Year plan.

[6] Whole Harbin Municipality covers 3 county-level cities, 7 counties, and 8 districts in its metropolitan areas.
[7] Harbin Municipal Government, April 19, 2011. *Outline of Harbin Municipality 12th Socioeconomic Development Plan.* (http://www.harbin.gov.cn/zwxxgk/ghjh/fzgh/sewgh.htm)

Table A6-5: General Socioeconomic Development Status of Harbin Municipality

indicator	unit	Actual						12th FYP	
		2007	2008	2009	2010	2011	2012	Annual %	2015 Target
Population	million	9.87	9.89	9.91	9.92	9.93	9.93		10.50
GDP	RMB million	239,140	281,480	317,550	366,490	424,220	455,020		645,000
Annual growth	% per year	16.4%	17.7%	12.8%	15.4%	15.7%	7.0%	12.0%	
GDP per capita	RMB per person	24,229	28,461	32,043	36,945	42,721	45,823		61,000
Total fiscal revenue	RMB million	16,962	24,834	32,060	40,113	52,472	47,030	15.0%	7,152,745
Total fiscal expenditure	RMB million	10,274	16,639	19,840	28,578	41,647	33,380	15.0%	5,076,667
Fixed asset investment	RMB million	103,060	134,130	189,210	265,190	301,200	395,000	30.0%	980,000
Urban disposable income	RMB per person	12,772	14,589	15,887	17,557	20,031	22,499	12.0%	31,000
Rural net income	RMB per person	5,069	5,961	6,776	8,020	9,608	11,443	12.0%	14,000

GDP = gross domestic product, FYP = five-year plan
Source: Project management office for Harbin project

Municipal Fiscal Status

13. Along with the fast economic development, the government fiscal revenue also presented an accelerated increasing trend. The total local fiscal revenue of Harbin Municipality reached RMB30,035 million in 2012,[8] which is about 2.8 times than that in 2007. The total disposable fiscal revenue (local government fiscal revenue plus upper government fiscal subsidy) kept average increase of 22% per annum in 2007–2012.[9] Such fast increasing in the government fiscal capacity has well supported the overall socioeconomic development in Harbin Municipality. According to the statistics, more than 12.4% of the total fiscal expenditures were used for the urban and rural infrastructure development in the last six years. For financing the fast socioeconomic development, the government has also borrowed large amount of commercial bank loans. According to the data provided by Harbin Municipal Financial Bureau, the accumulated government debt of the Harbin Municipality was about RMB60,516 million by the end of 2012, which about 1.88 times of the total disposable fiscal revenue. Such government debt has brought some pressures to the government fiscal budgeting. However, this debt level is still in a manageable range in comparing with the robust economic development and fast increasing in fiscal revenue. For enhancing the government debt management, the municipal and city governments should make efforts to well monitor and manage the government debt.

Urban Infrastructure Development and Financing

14. Beside of the fiscal revenue, the city government has mobilized variety fund sources to support the urban infrastructure development. In the period of 2017–2012, the funds raised for urban infrastructure development totaled RMB105,244 million, among which about 56.1% was from the land sales. Of the total expenditures to the urban infrastructure development, about 90.3% was used for new investment, and only 6.8% was used for maintenance and operation. According

[8] In the PRC, the government fiscal revenue in a certain area/region is split by different level of governments. The fiscal revenue kept by that level of local government is called local fiscal revenue, which can be budgeted by that level of government.

[9] In the PRC, government's local fiscal revenue (local government fiscal revenue plus upper government fiscal subsidy) is generally considered as the comprehensive fiscal capacity for the local government.

the government's 12th Five-Year Plan, the urbanization in Mudanjiang Municipality will be increased from 61% in 2010 to 65% in 2015. For supporting the urbanization and improving people's livelihood, the municipal government is trying to explore more fund sources including borrowing commercial bank loans and promoting foreign investments. However, the investment to urban transport infrastructure and improvement of transportation service mostly rely on government financing, including using the World Bank loan.

Project Counterpart Availability and Financial Sustainability

15. A quick projection of the fiscal status and project fund requirements was made for the project implementation period (2014—2018).[10] In the projection, it was assumed that (i) the fiscal revenue and expenditure would increase at a conservative rate of 12% per year; (ii) the fiscal expenditure to urban infrastructure and transportation would increase by 20% per year; (iii) the total funds for urban infrastructure would increase by 20% per year; and (iv) the total project cost of RMB1,415.27 million, including RMB610.0 million from the Bank loan and RMB805.4 million from the counterpart, were used in the analysis. The analysis results revealed that:

(a) The government fiscal revenue would keep a high level growth during the project implementation period. The overall fiscal capacity could continuously support the fast urban and transport infrastructure development in Harbin Municipality. The counterpart fund requirement for the project (the fund from the government), would be relatively small in comparing with the overall government's fiscal capability (0.54% of the total disposable fiscal revenue)

(b) The counterpart fund requirement of the project would take only 6.55% of the total fiscal expenditure to the urban infrastructure and transportation development in the period of 2014—2018. The highest would be 8,44% in the second year of the project implementation. Such fund requirement should not bring serious pressures to the government fiscal budgeting. However, the government should well budget its fiscal expenditures to ensure sufficient counterpart for the project implementation.

(c) The total project cost would take substantial amount of the total funds for the urban infrastructure development in the period of 2014–2016, about 1.44%. It means that the project would be an important urban infrastructure development project in the Harbin metropolitan area. Therefore, the municipal government should budget special fund in its annual investment plan to finance the project implementation, including establishing other fund sources if necessary.

Table A6-6: Counterpart Fund Requirements for Harbin Project

(RMB million)

Indicator	2014	2015	2016	2017	2018	2014—16
Total fiscal expenditure	41,872	46,896	52,524	58,827	65,886	**141,292**
Total local fiscal revenue	37,676	42,197	47,261	52,932	59,284	**127,134**
Total disposable fiscal revenue	42,566	48,951	56,294	64,738	74,449	**147,811**
Fiscal expenditure to urban infrastructure and transportation development	3,377	4,052	4,863	5,835	7,003	**12,292**
Total funds for urban infrastructure development	23,501	34,100	40,739	48,745	48,745	**98,340**
Total Project Cost*	**447**	**601**	**301**	**33**	**33**	**1,415**

[10] In the feasibility study report, it is planned that the project will be implemented by five years (2014–2018).

% of total funds for urban infrastructure development	1.90%	1.76%	0.74%	0.07%	0.07%	1.44%
Total Counterpart Fund for the Project	**254**	**342**	**171**	**19**	**19**	**805**
% of total fiscal expenditure	0.61%	0.73%	0.33%	0.03%	0.03%	0.57%
% of total local fiscal revenue	0.68%	0.81%	0.36%	0.04%	0.03%	0.63%
% of total disposable fiscal revenue	0.60%	0.70%	0.30%	0.03%	0.03%	0.54%
% of fiscal expenditure to urban infrastructure and transport development	7.53%	8.44%	3.52%	0.32%	0.27%	6.55%

Source: Project management office for Mudanjiang project, the Bank's project team

Fiscal Analysis of the Mudanjiang Project

General Economic Development Status and Plan

16. As similar cities in the PRC, Mudanjiang Municipality has also experienced rapid socioeconomic development in the last 6 years (2007—2012) with an average GDP growth rate of 14.9% per annum.[11] The GDP per capita reached RMB46,417 (US$7,609 equivalent) in 2012. The government fiscal revenue reached RMB13,760 million in 2012 with average increase of 27.6% per annum, which has well supported the fast urban infrastructure and transportation development in the municipality. In the 12th Five-Year (2011—2015), Mudanjiang's economy is expected to maintain high growth rate, growing at 15 percent year during the plan period; the GDP per capita is expected to reach US$8,852 in 2015.[12] Table A6-7 is the general socioeconomic development status of Mudanjiang Municipality and the main targets of the 12th Five-Year plan.

Table A6-7: General Socioeconomic Development Status of Mudanjiang Municipality

indicator	unit	Actual						12th FYP target
		2007	2008	2009	2010	2011	2012	
Population	thousand			2,706	2,746	2,786	2,785	3.1‰ per year
GDP	RMB million	42,000		60,340	78,100	93,480	129,270	157,000
Annual growth	% per year	13.0%		14.0%	18.5%	15.1%	14.1%	15% per year
GDP per capita	RMB per person			22,299	28,441	33,553	46,417	54,000
Total fiscal revenue	RMB million			6,630	8,720	11,700	13,760	20% per year
Total fiscal expenditure	RMB million	4,330		10,320	13,610	16,290	20,250	20% per year
Fixed asset investment	RMB million	15,630		35,120	51,760	56,510	78,260	26% per year
Urban disposable income	RMB per person	9,251	10,742	11,660	12,806	14,515	16,704	25,760
Rural net income	RMB per person	5,569	6,273	7,225	8,415	9,648	11,062	18,830

GDP = gross domestic product, FYP = five-year plan
Source: Project management office for Mudanjiang project

Municipal Fiscal Status

17. Along with the fast economic development, the government fiscal revenue was also significantly increased. The total fiscal revenue of Mudanjiang City reached RMB7,268.01 million

[11] Whole Mudanjiang Municipality includes 4 county-level cities, 2 counties, and 4 districts.
[12] Mudanjiang Municipal Development and Reform Commission, *Outline of Mudanjiang Municipality 12th Socioeconomic Development Plan* (http://www.mudanjiang.gov.cn/)

in 2012,[13] which is about three times than that in 2007. The local fiscal revenue increased even at a faster speed in the same period. The total disposable fiscal revenue kept average increase of 27% per annum in 2007–2012.[14] The government fiscal revenue has well supported government's development programs; more than 38% of the total fiscal expenditures were used for the urban and rural infrastructure development in the last six years. In addition to fiscal revenues, the government also used the loans from commercial banks loans. The level of total government debt of the Mudanjiang City (the accumulated balance in comparing with the total local fiscal revenue) in 2012 was in a remarkable level (higher than 1.2:1), which has brought some pressures to the government fiscal budgeting. However, this debt level is still in a manageable range in comparing with the robust economic development and fast increasing in fiscal revenues.

Urban Infrastructure Development and Financing

18. Beside of the fiscal revenue, the municipal government has mobilized variety fund sources to support the urban infrastructure development. During 2007–2012, the funds raised for urban infrastructure development totaled RMB8,158.0 million, of which about 60% was from the land sales. Of the total expenditures to the urban infrastructure development, about 70% was used for new investment, and 16% was used for maintenance and operation. According to the government's 12th Five-Year Plan, the urbanization in Mudanjiang Municipality will be increased from 57.3% in 2010 to 63.0% in 2015. For supporting the urbanization and improving people's livelihood, the governments need to increase its spending on infrastructure. In the mean time, the municipal government is trying to explore innovative financing including inviting foreign investment for infrastructure development in the municipality.

Project Counterpart Availability and Financial Sustainability

19. A quick projection of the fiscal status and project fund requirements was made for the project implementation period (2014－2016)[15]. In the projection, it was assumed that (i) the fiscal revenue and expenditure would increase at a conservative rate of 15% per year; (ii) the fiscal expenditure to urban infrastructure and transportation would increase by 20% per year; (iii) the total funds for urban infrastructure would increase by 15% per year; and (iv) the total project cost of RMB1,253.7 million, including RMB610.0 million from the Bank loan and RMB643.7 million from the counterpart, were used in the analysis. The analysis results revealed that:

(a) The government fiscal revenue would keep a high level growth during the project implementation period. The overall fiscal capacity at the city level could continuously support the fast urban and transport infrastructure development in the metropolitan area. The counterpart fund requirement for the project (the fund from the government), would be relatively small in comparing with the overall government's fiscal capability. (1.4% of the total disposable fiscal revenue)

(b) The counterpart fund requirement of the project would take only 7.5% of the total fiscal expenditure to the urban infrastructure and transportation development in the

[13] In the PRC, the government fiscal revenue is split by different level of governments. The fiscal data in the analysis are only for Mudanjiang metropolitan government, not for whole Mudanjiang Municipality.

[14] The disposable fiscal revenue is the local government revenue plus the upper government subsidies, which is the real fiscal capability for local government.

[15] In the feasibility study report, it is planned that the project will be implemented by three years (2014–2016).

period of 2014－2016. The highest would be 12.4% in the second year of the project implementation (2015). Such fund requirement is manageable and should not bring serious pressures to the government fiscal budgeting.

(c) The total project cost would be a large part of total funds allocated for urban infrastructure development in the period of 2014–2016, representing about 11.3% total infrastructure development. This means that the project represents a large urban infrastructure development program in Mudanjiang metropolitan area. Therefore, Mudanjiang government needs to ensure sufficient fiscal capacity to implement such a large project, as well as the fund to pre-finance the program.

Table A6-8: Counterpart Fund Requirements for Mudanjiang Project

(RMB million)

Indicator	2014	2015	2016	2014—16
Total fiscal expenditure	11,026	12,680	14,582	**38,287**
Total local fiscal revenue	6,654	7,652	8,800	**23,107**
Total disposable fiscal revenue	12,979	15,575	18,690	**47,243**
Fiscal expenditure to urban infrastructure and transportation development	2,373	2,847	3,417	**8,637**
Total funds for urban infrastructure development	2,780	4,012	4,277	**11,069**
Total Project Cost*	**464**	**690**	**100**	**1,254**
% of total funds for urban infrastructure development	16.7%	17.2%	2.3%	11.3%
Total Counterpart Fund for the Project	**238**	**354**	**51**	**644**
% of total fiscal expenditure	2.2%	2.8%	0.4%	1.7%
% of total local fiscal revenue	3.6%	4.6%	0.6%	2.8%
% of total disposable fiscal revenue	1.8%	2.3%	0.3%	1.4%
% of fiscal expenditure to urban infrastructure and transportation development	10.0%	12.4%	1.5%	7.5%

Source: Project management office for Mudanjiang project, the Bank's project team

C. FINANCIAL ANALYSIS FOR BUS COMPANIES

20. This section describes the financial analysis of the privately-owned Mudanjiang Bus Company (MBC), and the two state-owned bus companies, namely Harbin Bus Company (HBC) and Harbin Tram Company (HTC). The analysis is based on the information provided by Mudanjiang and Harbin cities, and the FSRs for the project. An excel-based financial model for each bus company was developed to analyze the current financial situation and forecast the financial situation for each company once the investments are undertaken, thus comparing the bus companies' financial situation "with-project" and "without-project" scenario. The financial forecast is made for 2014 – 2027. The project investment considered for the analysis includes costs of bus vehicles, operating systems, and public transport infrastructure. The analysis does not include the corridor improvement works and emergency response/road maintenance components because those investments are for all road users and costs will be recovered from other road user charges.

Mudanjiang Bus Company

21. ***Background***. The MBC is a privately-owned company and the sole provider of bus services throughout the municipality under a 30-year concession agreement with the Mudanjiang

Transport Bureau. The mode share for buses in Mudanjiang is about 27 percent. There are 50 bus lines in operation, with 704 buses. There are 21 bus terminals in the city, 17 of which do not have parking space for buses. There are 1194 bus stops in all bus lines. Of these, 350 have bus shelters and only 2 percent of bus stops have bus stop bays.

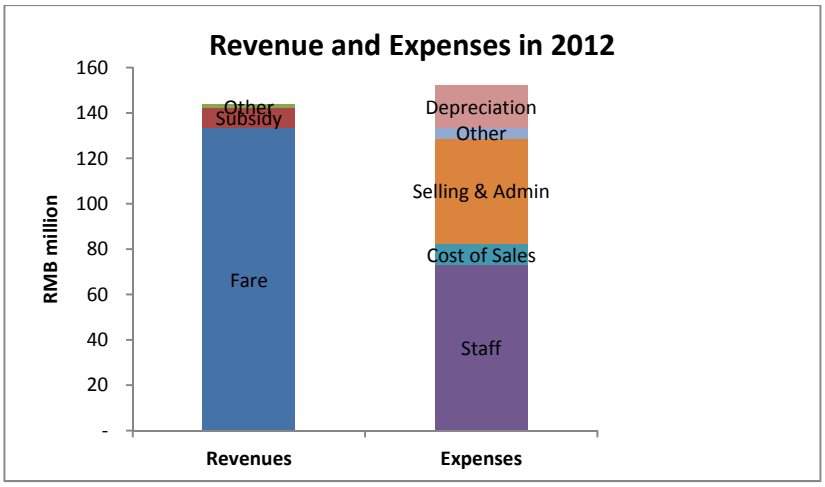
22. ***Passenger Traffic and Revenue***. The volume of passengers attracted to buses has been increasing at a diminishing rate during the last five years. Bus ridership in 2012 was about 133 million, which is 2 percent higher than in 2011 and 19 percent higher than in 2009. As a result, the revenue from bus operation also increased at diminishing rate since 2009. This decline in growth rate reflects the loss of market share to private cars.

23. ***Current Financial Situation.*** MBC is an all equity company and therefore does not have any existing debt obligation. Bus fares are set by Mudanjiang DRC. For the last decade, bus fares have not changed and have fixed at RMB1 (USD0.16) for within-city travel and RMB2-3 (0.32 – 0.48 US Dollar) for city to suburb travel. Service quality and standard are established by the Transport Bureau. The high quality bus service standards and low fares result in MBC incurring operating losses and not having adequate reserves for capital replacement. As a result, the MMG provides an operating subsidy to MBC to compensate for losses and to make capital replacement to provide the government-specified level and quality of services. The amount of the operating subsidy in 2012 was RMB8.68 million.

24. ***Expenses.*** Staff salaries and benefits are the largest component of MBC's expenses, accounting for about 55 percent of total operating expenses. The wage payable each year accounts for RMB11.3 million. Since total number of staff is not expected to change during the project duration staff salaries and benefits are expected remain at the same level. The company's second largest expense is sales and administrative expenses, accounting for about 35 percent of total operating expense.

25. ***Profit.*** Mudanjiang incurred a loss[16] of RMB7.8 million in 2012 and RMB4.9 million in 2011. As a result, most of the key ratios are unfavorable in 2011 and 2012. The company had negative profitability ratios low liquidity ratios, and inadequate cash and liquid assets to cover its short-term obligations. MBC requires government grants to remain a viable operation. The components of the revenues and expenses in 2012 are shown in the graph below.

[16] Although if depreciation is not included, the company makes a profit.



26. ***Future Financial Scenario (Without Project Scenario).*** Under the "Without the project" scenario, there would be no new capital investment from MMG or MBC. According to the traffic forecast carried out, the bus passenger traffic is expected to increase by 1.1 during the forecast period (2014-2027) if no improvement is undertaken ("without project" scenario). On the other hand, under the "with project" scenario, the improvement in bus quality, reliability, and speed will attract additional passengers, and as a result ridership is forecast to grow at 3.7 percent per year once the new services are fully operational in 2017. Due to Mudanjiang's existing unhealthy financial situation, under the "without project" scenario, the government operating subsidy and loss will continue to grow. This means the government would be subsidizing a deteriorating service quality as there is no replacement of buses and associated infrastructure either by MBC or MMG. The government's operating subsidies contribution to turning around public transport ridership would be minimal, and continued operating subsidy without capital replacement would a sub-optimal strategy especially in a time when the government policy is to increase transit mode share. Service levels would be reduced if new buses are not procured when the existing buses are fully depreciated.

27. ***Future Financial Scenario (With Project Scenario).*** With the project scenario, the government will be responsible for all investments under the proposed project related to the bus company, including vehicles, ITS, and public transport infrastructure. MMG will invest about RMB310 million using the IBRD loan and its counterpart fund for improving the quality of bus services. The MMG will own the new vehicles and facilities built under the project, and will provide MBC a use right under a lease agreement. In return, MBC will be required to meet certain quality service standard. In addition, because of the service improvement, the ridership will increase by 3.7 percent after project completion (versus 1.1 percent "without project" scenario with no capital investment), and hence the government's operating subsidy will decline. By 2022, the operating subsidies are forecasted to cease, as the company will generate positive cash flows and net income. The forecast shows that the company will have an operating profit starting in 2021 (4 percent) and will continue growing each year "with project" and by 2027 will have 10 percent operating profit.

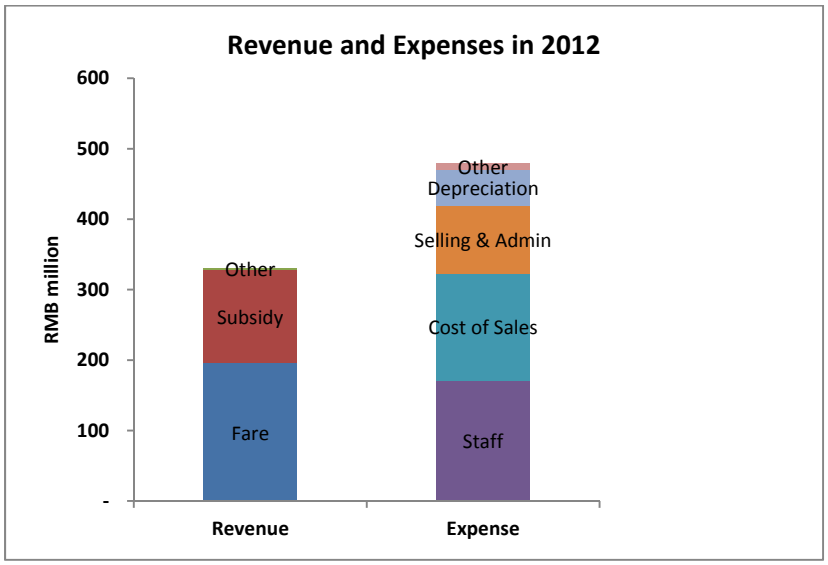
Harbin Bus Company

28. ***Current Financial Situation.*** Harbin Bus Company (HBC) is one of the two bus companies in Harbin. Its passengers have been increasing at diminishing rate since 2009. Bus ridership levels in 2012 were about 196 million, which is 4 percent higher than of 2011 and 16 percent higher than of 2009. This decline reflects the loss of market share to private cars and the deteriorating quality of bus services. Bus fares are set by Harbin DRC fixed at RMB1 (USD0.16) for within-city travel, which has not changed for the last decade. Due to high operating costs and low fare-box revenues, HBC has been experiencing operating losses. Therefore, the HMG provides an operating subsidy to HBC to compensate for losses and to provide quality of services. The amount of the government subsidy in 2012 was RMB132.64 million.

29. ***Expenses.*** HBC's total operating expenses have been higher than total operating revenues since 2009 and in 2012 the company generated only less than half revenues to cover its operating expenses. Staff salaries and benefits are the largest component of HBC's expenses, accounting for about 40 percent of total operating expenses. The wage payable was RMB288 million in 2012[17]. The company's second largest expense is for sales and administration, accounting for about 35 percent of total operating expense.

30. ***Profit.*** HBC has been operating in loss since 2009. The company experienced about 76 million net loss in 2009, RMB56 million in 2010, RMB31 million in 2011 and by 2012 loss rose to 95 million. The company also experienced negative equity since 2009, except in 2011. In order for the company to revive and effectively use of the government subsidies, the quality of services (bus infrastructure, bus vehicles and bus operating systems) and reliability must be improved.

31. The components of the revenues and expenses in 2012 are shown in the graph below.



[17] The wage payable was RMB2 million in 2009, rose to RMB236 million in 2011, and further rose to RMB288 million in 2012 (147 percent higher than 2009). The large increase is due to new pension obligations.

32. ***Future Financial Scenario (Without Project Scenario).*** Under the "without the project" scenario, there would be no new capital investment from HBC or HMG. According to the traffic forecast carried out, the bus passenger traffic is expected to increase by 3 percent during the forecast period (2014-2027) if no improvement is undertaken (versus 8 percent "with project" scenario with capital investment). HBC's existing financial situation is so dire that under the "without project" scenario, its negative cash flows and negative equity will continue to grow substantially each year. In such scenario, the government's operating subsidies contribution to turning around public transport ridership would be minimal, and continued operating subsidy without capital replacement would a sub-optimal.

33. ***Future Financial Scenario (With Project Scenario).*** With the project scenario, the government will be responsible for all investments under the proposed project related to the bus company, including vehicles and associated infrastructure. HMG will invest about RMB391 million using the IBRD loan and its counterpart fund for improving the quality of bus services. HBC will own the new vehicles and facilities built under the project. The Transport Bureau will enter into a performance agreement on the operational responsibility of the bus companies and HBC will be required to meet certain quality service standard. In addition, bus quality, reliability, and speed will attract additional passengers, the ridership will increase by 8 percent once the new services are fully operational in 2017 (versus 3 percent "without project" scenario with no capital investment). Although the "with project" scenario will help improve HBC's financial situation but due to the magnitude of existing losses, the "with project" intervention will not be enough to generate positive cash flows. Therefore, some operating subsidies will be required, especially if the tariff will remain the same.

34. ***Future Financial Scenario (With Project and Additional Subsidy Scenario).*** In order to bring the company into normal financial health, in addition to the proposed project, the government would need to provide about RMB296 million subsidy in 2014 (versus RMB141 million subsidy currently provided) and increase the subsidy by the inflation rate every year until 2027. With this scenario, the company will start generating profit in 2017 (RMB1.35 million) and continue growing to about RMB89 million in 2027.

Harbin Tram Company

35. ***Current Financial Situation***. HTC is the other state-owned bus company in Harbin.

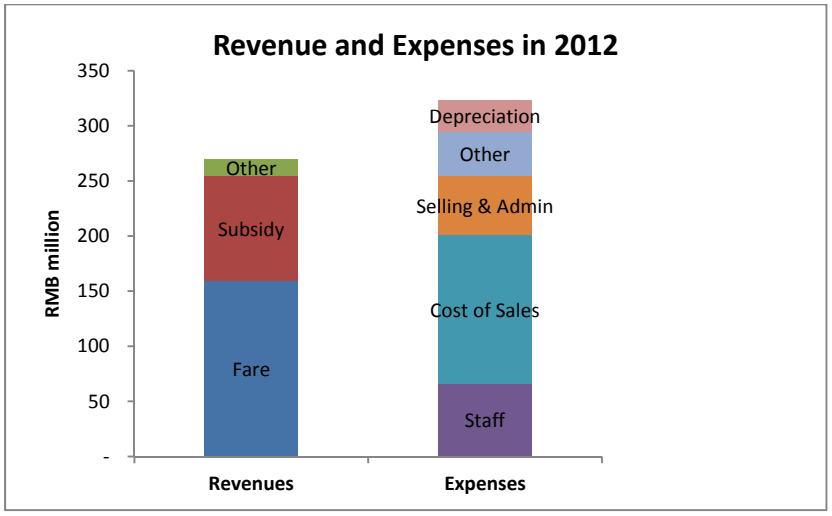
36. Bus ridership levels for HTC in 2012 were about 159 million, which is 25 percent higher than of 2011. Bus fares are set by Harbin DRC and fixed at RMB1 (USD0.16) for within-city travel, which has not changed for the last decade. Similar to HBC, due to high operating costs and low fare, HTC has been experiencing operating losses and inadequate reserve for the capital replacement. Therefore, the HMG provides an operating subsidy to HTC to compensate for losses and to provide quality of services. The amount of the government subsidy in 2012 was RMB95 million.

37. ***Expenses.*** HTC's total operating expenses have been higher than total operating revenues since 2009 and in 2012 the company generated only less than half revenues to cover its operating expenses. Cost of sales is the largest component of HTC's expenses, accounting for about 46 percent of total operating expenses in 2012. Cost of sales was RMB135 million in 2012.

The company's second largest expense is staff salaries and benefits, accounting for about 22 percent of total operating expense in 2012.

38. ***Profit***. The company has been operating in loss since 2009. The company experienced about 33 million net loss in 2009, RMB10.8 million loss in 2010, RMB7.4 million loss in 2011 and by 2012 loss rose to 18 million. The company also experienced negative equity since 2009, except in 2011.

39. The components of the revenues and expenses in 2012 are shown in the graph below.



40. ***Future Financial Scenario (Without Project Scenario).*** Under the "without the project" scenario, there would be no new capital investment from HTC or the government. According to the traffic forecast carried out, the bus passenger traffic is expected to increase by 3 percent during the forecast period (2014-2027) if no improvement is undertaken (versus 8 percent "with project" scenario with capital investment). Due to HTC's existing financial situation, HTC will continue to experience huge losses each year under the "without project" scenario. The government's operating subsidies contribution to turning around public transport ridership would be minimal, and continued operating subsidy without capital replacement would a sub-optimal.

41. ***Future Financial Scenario (With Project Scenario).*** With the project scenario, the government will be responsible for all investments under the proposed project related to procuring new buses and associated infrastructure. HMG will invest about RMB391 million using the IBRD loan and its counterpart fund for improving the quality of bus services. MTC will own the new vehicles and facilities built under the project. The Transport Bureau will enter into a performance agreement on the operational responsibility of the bus companies and MTC will be required to meet certain quality service standard. In addition, bus quality, reliability, and speed will attract additional passengers, the ridership will increase by 8 percent once the new services are fully operational in 2017 (versus 3 percent "without project" scenario with no capital investment). Although the "with project" scenario will help improve HTC's financial situation but the existing losses, the "with project" intervention will not be enough to generate positive cash flows.

42. ***Future Financial Scenario (With Project and Additional Subsidy Scenario).*** In order to bring the company into normal financial health, in addition to the proposed project, the government would need to provide about RMB161 million subsidy in 2014 (versus RMB100 currently provided) and increase it by the inflation rate every year until 2027. With this scenario, the company will start generating profit in 2019 (RMB0.12 million) and continue growing to about RMB27 million by 2027.