China, People's Republic of: Improving Clean Bus Operations and Management

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Improving Clean Bus Operations and Management</th>
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<tbody>
<tr>
<td>Project Number</td>
<td>48902-012</td>
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<tr>
<td>Country</td>
<td>China, People's Republic of</td>
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<tr>
<td>Project Status</td>
<td>Closed</td>
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<tr>
<td>Project Type / Modality of Assistance</td>
<td>Technical Assistance</td>
</tr>
<tr>
<td>Source of Funding / Amount</td>
<td>TA 8662-PRC: PRC: IMPROVING CLEAN BUS OPERATIONS AND MANAGEMENT</td>
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<tr>
<td>Source of Funding / Amount</td>
<td>Global Environment Facility</td>
</tr>
<tr>
<td>Amount</td>
<td>US$ 2.32 million</td>
</tr>
<tr>
<td>Strategic Agendas</td>
<td>Inclusive economic growth</td>
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<tr>
<td>Drivers of Change</td>
<td>Governance and capacity development</td>
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<td></td>
<td>Knowledge solutions</td>
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<td></td>
<td>Partnerships</td>
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<td></td>
<td>Private sector development</td>
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<tr>
<td>Sector / Subsector</td>
<td>Transport - Road transport (non-urban) - Transport policies and institutional development - Urban public transport</td>
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<td>Gender Equity and Mainstreaming</td>
<td></td>
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<tr>
<td>Description</td>
<td>The TA will reinforce and enhance the impact of the Clean Bus Leasing (CBL) program by adding a focus on efficient selection, operation, and management of clean buses operating in urban areas.</td>
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<td>Project Rationale and Linkage to Country/Regional Strategy</td>
<td></td>
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<tr>
<td>Impact</td>
<td>The impact of the TA will be that the environmental, social, and economic benefits of adopting clean bus technology in the PRC are maximized.</td>
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Project Outcome

Description of Outcome
The outcome of the TA will be improved selection, management, and operation of clean buses in the urban, suburban, and intercity public transport markets.

Implementation Progress

Description of Project Outputs
The TA components provide an integrated approach to supporting improved clean bus selection, operation, management, and continual improvement. The output contributions are as follows:
- Output 1: Guidebook for selecting a clean and accessible bus developed.
- Output 2: Energy-efficient, inclusive, and competitive bus operations promoted.
- Output 3: Systems for energy-efficient bus operations supported.
- Output 4: Clean bus performance monitoring program implemented.
- Output 5: Awareness, training, and knowledge-sharing program developed.
- Output 6: Project management. A small project management team comprising a project coordinator and support staff will be established in the offices of the executing agency, the PRC's Clean Development Mechanism Fund (CDMF).

Status of Implementation Progress (Outputs, Activities, and Issues)
Phases 1 and 2 of TA activities are completed. A draft report on clean bus technology was submitted for review. Automated passenger counters (APCs) were already installed in some buses in Shandong and Fuzhou for monitoring of passenger demand for dynamic dispatching. The TA is extended until 31 December 2018 to complete all activities. A publication will be disseminated in 2018.

Geographical Location

Summary of Environmental and Social Aspects

Environmental Aspects

Involuntary Resettlement

Indigenous Peoples

Stakeholder Communication, Participation, and Consultation

During Project Design
Consultation involved government, bus leasing companies and public transport operators in the PRC. This consultation revealed strong potential demand for leasing of clean buses, and the need for technical assistance to ensure that the potential environmental, social and economic benefits are fully achieved by public transport operators, especially those in smaller cities in less-developed inland or western provinces.

During Project Implementation
Bus companies were consulted and questionnaires were disseminated for data collection. Bus maintenance and dispatching training for bus company personnel were conducted. The final workshop was held on 28-29 May 2018 and disseminated the results of the TA. It was attended by more than 150 participants from various transport agencies, bus companies and the private sector.

Business Opportunities
Consulting Services

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

The TA requires a range of consultancy inputs to implement specific subprojects. ADB is hence seeking a consulting firm to provide consultancy service to deliver the following outputs. One of the consultants shall be designated by the firm as the team leader for the entire duration of the TA.

Output 1: Guidebook for Selecting a Clean and Accessible Bus Developed

Bus technology and operations adviser (international, 3-person-months) and research and data analyst, bus technology and operations specialist, and web designer (international, 8-person-months). The consultants will perform the following:

(i) Analyze and review the most recent national and international information (published and unpublished) on the in-service fuel and emissions performance of different types of clean bus technology and energy sources under a range of operating conditions.

(ii) Analyze the information to extract key findings on factors that affect in-service performance under different operating conditions, including the impact of maintenance and driving habits.

(iii) Distil these findings into practical rules and recommendations that are appropriate for use by bus operators as a practical decision support system in selecting the best type of clean bus technology for their local conditions.

(iv) Develop, test, and refine a clean bus guidebook that can be implemented in printed and online format.

(v) Prepare the guidebook in Mandarin in printed and online form for broad dissemination to the bus industry of the People’s Republic of China (PRC).

(vi) Manage the knowledge-sharing and training activities under output 5.

The international bus technology and operations adviser will preferably have a master’s degree in mechanical engineering or a related field, a minimum of 15 years practical experience in the bus industry; previous experience in the PRC; Mandarin language skills; broad practical experience with a range of clean bus technologies; and established contacts with bus operators in several countries, such as in Europe and/or South America.

The national bus technology and operations adviser will preferably have a master’s degree in mechanical engineering or a related field, a minimum of 10 years practical experience in the PRC bus industry, broad practical experience with a range of clean bus technologies, and established contacts with major bus operators in several provinces of the PRC.

The national research and data analyst will preferably have a master’s degree in mechanical engineering or other relevant field and a minimum of 8 years of relevant post-university experience; must be able to demonstrate strong research skills, and the ability to consolidate, analyze, interpret, and document research results.

The national web designer should have a degree in information technology or a related field, and more than 5 years of experience in designing and establishing interactive web sites. All national consultants should preferably have good spoken and written English language skills.

Output 2: Knowledge Materials for Energy-Efficient, Inclusive, and Competitive Bus Operations Developed

Bus management and operations specialist, transit planner (international, 9-person-months) and bus management specialist, transit planner and systems analyst (international, 12-person-months).

The consultants will perform the following:

(i) Analyze and review recent national and international guidance materials on energy-efficient, inclusive, and competitive bus operations.

(ii) Identify up to 15 bus companies that are (a) participating in the clean bus leasing (CBL) program, and (b) willing to participate as development and demonstration sites for the materials to be developed under this output.

(iii) Prepare a design concept for an integrated package of guidebooks, manuals, checklists, and training materials.

(iv) Prepare trial versions of the guidance and training materials, and test and refine the materials in collaboration with the demonstration sites to maximize their effectiveness, especially for technical resources and previous limitations.

(v) Prepare high-quality final versions of the materials in Mandarin, in printed and online form for broad dissemination to the PRC bus industry.

(vi) Participate in knowledge-sharing and training activities under output 5.

The international specialists will preferably have a master’s degree in engineering, transport planning, or a related field; a minimum of 20 years practical experience in bus system planning, management, and/or operations; previous experience in the PRC; and Mandarin language skills. The national bus management, bus operations, and transit planning specialists will preferably have a master’s degree in engineering, transport planning, or a related field; a minimum of 10 years practical experience in the PRC bus system planning, management, and/or operations; and established contacts with major bus operators in several provinces of the PRC.

The international specialist will preferably have a master’s degree in social science or other relevant field; a minimum of 8 years of relevant experience in assessing social implications of transport projects in several provinces in the PRC, and prior experience with bus transit projects. The national social specialist will preferably have a master’s degree in social science or other relevant field; have a degree in professional writing, journalism, or other related field; and preferably more than 5 years of experience in designing and editing professional training materials in Mandarin.

All national consultants should preferably have good spoken and written English language skills.

Output 3: Systems for Energy-Efficient Bus Operations Supported

Bus operations specialist (international, 1-person-month), financial specialist (grant management) (international, 1-person-month), and bus operations specialist, financial specialist, and systems analyst and software developer (national, 18-person-months).

The consultants will perform the following:

(i) Participate in knowledge-sharing and training activities under output 5.

(ii) Review the specifications and capabilities of the bus management ITSs being used or implemented by these bus companies, and generic bus management systems currently available in the PRC.

(iii) Review the guidebooks, manuals, checklists, and training materials prepared under output 2, and in collaboration with the output 2 consultants and participating bus companies, identify opportunities for integrating these tools into an energy-efficiency module that links with the bus management ITSs.

(iv) Prepare the functional specifications for this energy-efficiency information technology module and its integration with bus management ITSs-the functional specification should provide sufficient detail to guide information technology developers engaged by bus companies to implement the module and provide consistent support across bus companies.

(v) Design proposed supporting systems for the small grants scheme. The fund is to provide grants of around $50,000 per bus company to support the incremental cost of implementing the energy-efficiency module into their own ITS (the design should be developed in close collaboration with the executing agency, and cover eligibility criteria, performance targets, legal agreements, and financial management and reporting requirements).

(vi) Participate in the selection of small grants applicants, and selection process for the small grants scheme, including selection in the bidding and selection processes, monitoring and implementation and monitor implementation and monitoring progress.

(vii) Manage financial aspects of the small grants scheme, including accounting and disbursement of grants following the guidelines of the Asian Development Bank (ADB) on financial management, and prepare financial reports as required by ADB and the Global Environment Facility (GEF).

The international bus operations specialist will preferably have a master’s degree in engineering or a related field; a minimum of 15 years practical experience in the bus industry; previous experience in the PRC; Mandarin language skills; broad international experience of bus management ITSs; and established contacts with bus operators in several countries, e.g., in Europe and/or South America. The international financial specialist (grant management) must be a graduate of accounting, finance, or a related field; hold an internationally recognized accounting certification; have previous experience in the PRC; and have a minimum of 12 years of experience, including designing small grants schemes and operating procedures. The national bus operations specialist will preferably have a master’s degree in engineering or a related field, a minimum of 10 years practical experience in the PRC bus industry; broad practical experience with ITSs currently used by bus companies in the PRC, and established contacts with major bus operators in several provinces. The national financial analyst and software developer should have a degree in information technology or other related field, and more than 8 years of experience in the design and specification of ITSs for business management. The national financial specialist must be a graduate of accounting, finance, or a related field, hold an internationally recognized accounting certification, and have a minimum of 8 years of experience. All national consultants should preferably have good spoken and written English language skills.

Output 4: Clean Bus Performance Monitoring Program Implemented

Bus operations and management specialist (international, 1-person-month), and bus operations specialist, data analyst, and editor (national, 11-person-months).

The consultants will perform the following:

(i) Develop an understanding of operating procedures and bus management ITSs of bus companies participating in the CBL program.

(ii) Develop a fuel and energy consumption data collection system, consistent with the systems and capabilities of bus companies participating in the CBL program (the system should be integrated with the operating management tools being developed and deployed under output 4, or be based on a simple data recording format that records bus technology and performance data already collected by bus companies).

(iii) Manage the data collection and analysis for recording and analyzing bus performance data.

(iv) Develop and establish databases, and make them broadly available in standard formats to the sustainable transport and scientific community.

(v) Analyze the in-service performance data to extract key performance indicators, trends, and relationships.

(vi) Prepare interim and final reports summarizing the findings and make these reports broadly available to the PRC bus industry and through knowledge-sharing networks, such as the ADB-Sustainable Transport Initiative knowledge-sharing network, the GEF, and Clean Air Asia.

The international bus operations and management specialist will preferably have a master’s degree in mechanical engineering or a related field, a minimum of 15 years practical experience in the bus industry, previous experience in the PRC, Mandarin language skills, and broad practical experience with a range of clean bus technologies and factors affecting clean bus performance. The national bus operations specialist will preferably have a master’s degree in mechanical engineering or a related field, a minimum of 15 years practical experience in the bus industry, previous experience in the PRC, Mandarin language skills, and broad practical experience with a range of clean bus technologies and factors affecting clean bus performance. The national bus operations specialist will preferably have a master’s degree in mechanical engineering or a related field, a minimum of 15 years practical experience in the bus industry, previous experience in the PRC, Mandarin language skills, and broad practical experience with a range of clean bus technologies and factors affecting clean bus performance. The national bus operations specialist will preferably have a master’s degree in mechanical engineering or a related field, a minimum of 15 years practical experience in the bus industry, previous experience in the PRC, Mandarin language skills, and broad practical experience with a range of clean bus technologies and factors affecting clean bus performance.
Executing Agencies

China Clean Development Mechanism Fund  
Room 1206, Zhong Shang Plaza, No. 5 Sanlihe East Street  
Xicheng District Beijing, China 100045  
Ministry of Transportation (formerly Min of Comm)  
10 Fuxing Road  
Beijing 100845  
People's Republic of China

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**Timetable**

<table>
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<tr>
<th>Event</th>
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<tr>
<td>Concept Clearance</td>
<td>18 Sep 2013</td>
</tr>
<tr>
<td>Fact Finding</td>
<td>19 Mar 2013 to 05 Apr 2013</td>
</tr>
<tr>
<td>Approval</td>
<td>09 Jun 2014</td>
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<tr>
<td>Last Review Mission</td>
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<tr>
<td>PDS Creation Date</td>
<td>16 Apr 2014</td>
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<td>Last PDS Update</td>
<td>26 Oct 2018</td>
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**TA 8662-PRC**

**Milestones**

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<tr>
<th>Approval</th>
<th>Signing Date</th>
<th>Effectivity Date</th>
<th>Closing</th>
<th>Original</th>
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**Financing Plan/TA Utilization**

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<th>ADB: Gov</th>
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<th>Counterpart: Project Sponsor</th>
<th>Others</th>
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Project Page  
https://www.adb.org/projects/48902-012/main

Request for Information  
http://www.adb.org/forms/request-information-form?subject=48902-012

Date Generated  
12 November 2019

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