



FAX

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To: Meng Qui Section Chief Transport Services Department, Ministry of Transport (MOT) Fax: +86-10-65292722	Date: 25 April 2018
Originator: Susan Lim <i>[Signature]</i> Senior Transport Specialist, EATC E-mail: slim@adb.org Fax: +63 2 636 2426	Approved by: Robert Guild Chief Sector Officer, SDSC concurrently Director, EATC <i>[Signature]</i>

TA8662-PRC: Improving Clean Bus Operations and Management
 —Aide memoire

Dear Ms. Meng:

1. The summary of the meeting held on 16 April 2018 is as follows:
 - All surveys will be completed by the end of April 2018;
 - The purchase and installation of 100 automatic passenger counters for two bus companies will be completed by the end of April 2018;
 - The final workshop will be held at the China International Exhibition Center on 28-29 May 2018;
 - The workshop agenda will be finalized and sent to MOT by the end of April 2018; MOT will then send the invitation letters to bus companies and other stakeholders. A total of 120 participants are expected to attend; and
 - The publication content was discussed, and approvals will follow ADB procedure. The Chinese version will be published by publishing company of MOT's choice.

2. The aide memoire is attached for your information.

Attachment: a/s

cc: Mr. Li Lianghua, Transport Services Department, Ministry of Transport
 Mr. Xi Lu, Transport Services Department, Ministry of Transport
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TA8662-PRC: IMPROVING CLEAN BUS OPERATIONS AND MANAGEMENT
Review Mission

AIDE MEMOIRE

(16 – 17 April 2018)

I. Introduction

1. An Asian Development Bank (ADB) mission visited the Ministry of Transport (MOT) on 16 April 2018 and visited Jinan Public Transportation Group (Holdings) Co. Ltd in Jinan on 17 April 2018 to hold discussions on the capacity development technical assistance (TA), Improving Clean Bus Operations and Management. The main objectives of the TA review mission were to (i) inform MOT of the progress of the TA, (ii) discuss issues and finalize the plan on the final workshop, final report, and publication, and (iii) review activities conducted and equipment installed with one bus company.
2. Discussions were held between the mission and officials from MOT, the executing agency (EA), and Jinan Public Transportation Group (Holdings) Co. Ltd. A list of persons met is attached in Appendix 1.
3. This Aide Memoire reflects discussions held and the understandings reached between the Mission and MOT. It is subject to the approval of higher authorities in MOT and ADB.

II. Technical Assistance Project

A. Background

4. This Aide Memoire reflects discussions held and the understandings reached between the Mission and MOT. It is subject to the approval of higher authorities in MOT and ADB.

B. Impact and Outcome

5. This TA aims to maximize the environmental, social, and economic benefits of adopting clean bus technology in the PRC. The TA's outcome is improved selection, management, and operation of clean buses in the urban, suburban, and intercity public transport markets.

C. Original Outputs

6. **Output 1: Guidebook for selecting a clean and accessible bus developed.** A guidebook will be developed for selecting the right type of clean bus in terms of energy source (e.g., compressed natural gas, hybrid, electric), bus size (e.g., articulated, standard, smaller), and inclusive access design characteristics (e.g., low floor, wheelchair accessible, high-visibility handrails) for the required operating conditions (e.g., bus rapid transit (BRT), feeder and general services, different urban forms, congestion, terrain, climate). In this context, "right" means achieving the joint goals of minimizing the energy intensity of bus operations, while maximizing inclusive access to public transport and the number of passengers using public transport. The guidebook will be based on detailed analysis of recent national and international research on the in-service performance of different types of clean bus technology, and on existing guidance materials.
7. **Output 2: Knowledge materials for energy-efficient, inclusive, and competitive bus operations developed.** The component directly complements and extends Output 1. It moves the focus from selecting the right clean bus to operating that bus (and fleet of buses) in the most effective way to achieve the dual goals of maximizing the energy efficiency of bus operations, while maximizing the

number of passengers using public transport. A series of practical guidebooks, manuals, checklists, and training materials will be developed for implementing actions aimed at: (i) reducing energy consumption emissions through improved bus driving, maintenance, and fleet management; (ii) ensuring that public transport is a competitive alternative to private vehicles by better matching bus services and access to the needs of the travel market; and (iii) promoting safe, secure, and inclusive access to public transport through inclusive access design features and training for drivers and conductors on the special needs of women and vulnerable groups, such as the disabled and elderly. These management tools will draw on international experience, available research findings, and the outcomes of GEF research and projects; and will be specifically tailored to bus operating conditions experienced in the PRC (allowing for regional differences) and to the needs of public transport operators in the PRC.

8. **Output 3: Systems for energy-efficient bus operations supported.** The TA will support initiatives to embed the management tools developed in output 2 into bus company information technology systems (ITSs). Effective use of these management tools requires up-to-date and readily accessible data on operations about the day-to-day performance of the bus system in terms of technical performance (e.g., fuel consumption, bus utilization) and competitiveness (e.g., bus passengers, service coverage), as well as tools for data management and analysis. Consultation undertaken for the CBL program found that many public transport operators in the PRC are developing some form of computerized ITS to manage finances and operations or have plans to do so in the very near future. The component will assist with expanding the capability of these bus management ITSs to include data management, analytical, and decision support tools that underpin implementation of energy-efficient, inclusive, and competitive bus operations. The systems will take data coming from on-board, ticketing, depots, and other sources, and convert it into management information (i.e., operations and patronage performance indicators). This will enable bus operations managers to set and monitor appropriate energy-efficiency and patronage targets; set exception triggers; and respond if particular buses, drivers, facilities, or routes are performing below expectations. In particular, this component will (i) develop the functional specification for an ITS module that integrates these tools into bus company ITSs; and (ii) design and implement a program of small grants to bus companies (average around \$50,000 for around 15 bus companies) to support the incremental cost of implementing the module into their own ITS.

9. **Output 4: Clean bus performance monitoring program implemented.** A program for monitoring, analyzing, and reporting on the actual fuel and energy performance of as many as possible of the buses leased under the CBL program will be developed. The results will be of broad interest and substantial value for bus operators in the PRC and elsewhere in Asia and the Pacific, and for researchers evaluating the actual performance of clean buses under different operating conditions. The results will be broadly disseminated through professional and industry media, and the information resources will be fed into the ADB-STI knowledge sharing network and provided to the GEF (output 5). In addition, the results will be used to update the guidebooks (outputs 1 and 2) and refine the information management tools (output 3).

10. **Output 5: Awareness, training, and knowledge-sharing program developed.** To maximize the impact of the CBL program and of the information resources and systems developed by this TA, the component will be a focal point for coordinating and delivering activities to develop awareness and visibility; offer initial training for some systems; and share the knowledge within the PRC public transport subsector and bus industry. It will involve a program of workshops; demonstrations and practical training sessions; a study tour to familiarize key stakeholders with best practice selection and operation of clean buses; and establishment of a knowledge-sharing network that interfaces with the PRC public transport operators and more broadly through the ADB STI, the ASTUD, the GEF and other international networks.

11. **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). The component will support the incremental costs of

management and coordination of project implementation, knowledge sharing, monitoring and evaluation, and preparation of progress and financial reports.

D. Costs and Financing

12. The TA is estimated to cost \$2,315,000, which will be financed on a grant basis by the Global Environment Facility and administered by ADB. The cost estimates and financing plan are provided in Appendix 2. The government will provide counterpart support in the form of counterpart staff, office accommodation, office supplies, secretarial assistance, and other in-kind contributions.

E. Status of Implementation Arrangements

13. The TA completion date was extended from 31 December 2016 to 31 December 2017 due to minor changes in implementation arrangements and was again extended from 31 December 2017 to 30 June 2018 due to refinement of TA outputs. Nine consultants (3 international and 6 national) were recruited individually and are experts in bus fuel and fleet technology, bus operations and maintenance, bus dispatching, bus management and operations, and bus technology.

14. Originally, fifteen bus companies, included in the CBL program, were identified participated in the project. After the inception meeting with MOT on 25 May 2017, two more bus companies were added into the list, Beijing and Shanghai bus companies. The project was implemented in two phases. The first phase covered a survey of five bus companies (Beijing, Fuzhou, Hengyang, Jinan, and Tianjin) which was completed in August 2017 and covered the determination of bus types, fuel types and available bus operations and monitoring systems. Training on maintenance was completed in December 2017 and follow-up was accomplished in April 2018. The second phase is currently ongoing and includes a continuation of the survey of twelve bus companies and knowledge sharing and training on new energy bus maintenance and dispatching systems. This is part of the implementation of the bus monitoring program developed in the first phase.

15. In response to requests from the participating bus companies, ADB procured automated passenger counters (APCs) for 50 buses each of the Jinan Public Transportation Group (Holdings) Co. Ltd, and Fuzhou Public Transportation Co. These APCs track ridership of the buses in real time and by specific location and will support dynamic bus dispatching. This will support integration of data management and decision support tools into some selected bus companies' systems and this is in line with the required outputs of the TA.

III. Issues and Findings

16. The Mission reported the status of TA activities and described the equipment being installed in 50 buses of two bus companies. The Mission explained that there is a large and increasing share of new energy buses in the PRC, but the share of passenger-kilometer is smaller in electric buses due to average smaller vehicles used on less popular routes.

17. The Mission described the APCs that are being installed and sought MOT's guidance on whether additional equipment maybe installed in the buses. MOT has no objection on additional equipment to be installed in buses but asked ADB to seek concurrence from the participating bus companies. The Mission also explained that a six-month extension of the TA maybe required if additional equipment will be installed for evaluation purposes. The Mission also informed MOT that the extension of the TA is subject to the approval of the funding agency, GEF. MOT provided no objection to TA extension subject to GEF's approval.

18. The Mission sought clarification and information on the dates and final workshop that is being planned. The planned workshop will be on 28-29 May 2018 in the China International Exhibition Center. It was agreed that ADB will cover accommodation and meals of participants, the conference venue and other

administrative costs related to the workshop. The tentative topics for the workshop were also discussed and the draft final agenda will be sent to ADB and MOT for review. MOT assured that invitation letters to participants to workshop will be sent after receipt of the draft final agenda.

19. The Mission explained the table of contents of the proposed publication and MOT agreed on the proposed topics for the publication. MOT inquired whether they will be able to review the publication that is being proposed. The Mission clarified that the consulting team will submit a draft final report which will be reviewed by MOT. The publication will be a summary of the final report and this will be published in English and Chinese. The publication process will follow ADB procedures and approvals. Upon approval of the English version of the publication, it will be given to the China Publishing House for translation, publishing, and printing. It was agreed that ADB will cover the costs of the publication in English and Chinese.

IV. Next Steps

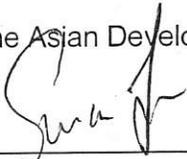
20. The table below summarizes the Mission's discussion on TA completion timeline:

Milestones	Expected Completion Date
Phase 2 survey completion	4 May 2018
Draft Final Report Submission	21 May 2018
Final TA Workshop	28-29 May 2018
Final Report Submission	15 June 2018
Draft publication circulation for peer review	6 July 2018
Publication Approval	31 July 2018
Publication publishing and printing	31 August 2018
English publication launch	14 September 2018
Chinese publication launch	26 October 2018
TA Completion	31 October 2018

21. The Mission sincerely thanks MOT for the fruitful discussion and cooperation extended during the meeting.

Signed on 25 April 2018.

For the Asian Development Bank:



Susan Lim
Senior Transport Specialist/Mission Leader
East Asia Department

Attachments:

- Appendix 1: List of Persons Met
- Appendix 2: Cost estimates and Financing Plan

List of persons met

Liu Dong, Deputy Director, Comprehensive Department, Ministry of Transport

Xi Lu, Project Officer, Transport Services Department, Ministry of Transport

Jiao Wenwen, Project Officer, Comprehensive Planning Department, Ministry of Transport

Shi Jun, Director, Jinan Public Transportation Group (Holdings) Co. Ltd

Shi Shaoteng, Deputy director, Jinan Public Transportation Group (Holdings) Co. Ltd

He Bin, Head, Equipment Department, Jinan Public Transportation Group (Holdings) Co. Ltd

Sun Yong, Head, Operations and Marketing Department, Jinan Public Transportation Group (Holdings) Co. Ltd

Wang Hao, Jinan Public Transportation Group (Holdings) Co. Ltd

Jurg Grutter, Consulting Team Leader

Liyuan Gong, Consulting Deputy Team Leader

Yang Xinzheng, TA Consultant

Li Liu, TA Consultant

COST ESTIMATES AND FINANCING PLAN

(\$'000)

Item	Amount
Global Environment Facility^a	
1. Consultants	
a. Remuneration and per diem	
i. International consultants	323.0
ii. National consultants	686.4
b. International and local travels	68.0
c. Reports and communications	41.0
2. Equipment ^b	17.0
3. Training, seminars, and conferences	275.0
4. Surveys	10.0
5. Small grants scheme	750.0
6. Miscellaneous administration and support costs ^c	42.0
7. Contingencies	102.6
Total	2,315.0

Note: The technical assistance (TA) is estimated to cost \$3.015 million of which contributions from the Global Environment Facility are presented in the table above. The government will provide counterpart support in the form of counterpart staff, office accommodation, office supplies, secretarial assistance, and other in-kind contributions. The value of government contribution is estimated to account for 23% of the total TA cost.

^a Administered by the Asian Development Bank.

^b Computers and other office equipment to be procured will follow the Asian Development Bank's Procurement Guidelines (2013, as amended from time to time). The equipment purchased will be turned over to the executing agency upon TA completion.

^c Expenses as permitted under the Asian Development Bank's *Technical Assistance Disbursement Handbook* (2010, as amended from time to time).

Source: Asian Development Bank estimates.