Financing Opportunity:
Green Public Transportation System Demonstration Project, Qingdao City, People’s Republic of China.

May 2020
**Green Public Transportation System Demonstration Project**

**EC-Link Technical Support Summary**

EC-Link provided significant support to this project, which helped the project development and increased its bankability through a Pre-feasibility study process. The EC-Link project also identified the green financing resources and steered the project preparation to meet specific requirements of Shandong Green Development Fund. The detail Technical Support included: a) developing the project to maximise green impact and to document this impact so as to meet the eligibility criteria of downstream green financing, through rigorously documenting the results of the Pre-Feasibility Study; and b) stakeholder capacity building and trainings on green finance.

**Project Rationale**

Qingdao is the largest city and economic hub of Shandong province.

The Qingdao Green Public Transportation project is systematically designed to meet 1) the increasing public demand for better public transport both in terms of service capacity and quality, 2) better traffic flow by optimizing traffic routes, 3) green and low carbon development, also targets set under the low carbon city program and aligned with the focus area of the energy efficiency project creating the backbone of a Green Corridor.

As designed, the project will significantly reduce carbon dioxide emissions and help to achieve Qingdao’s committed carbon peaking by 2020. The co-benefit will be reduction of other transport-related emission.

**Project Information**

**Project Name, Type and Sector**

Green Public Transportation System Demonstration Project

Public transportation, bus procurement and facilities construction.

**Location**

Qingdao city, Shandong Province, People’s Republic of China

**Description**

There are about 6,000 old diesel buses in the city, operated by three major state-owned bus companies. The project plans to replace the diesel buses and explore ways to apply renewable energy to replace electricity from coal power, and also establishing a green power charging system.

Under the concept of maximising green impact, there are a number of sub-project components designed in the project proposal, which including, 1) purchasing of 953 electric buses, 2) green bus route design optimization, 3) 2 major bus depots, 4) 208 charging piles and 300 intelligent electronic bus stop signs, and 5) low-carbon operation bus dispatch management systems.

The project geographically covers downtown areas, with coordinated investment designed to maximise impact in reducing GHG emissions, increasing resilience and reducing pollution through coordinated investment in energy efficiency, public transport and other climate-related sectors over a large area of the city. Given the standard of 8-year operating life of busses in the city, the project is the first phase of a broader project that is expected to have a construction period of 10 years.
Key climate impacts

The project is estimated to contribute 3.15 million tons of carbon reduction in 10 years:

- Reduce 523,000 tons of CO2 emissions from the electronic buses’ operation
- Reduce 28,000 tons from green depots.
- Reduce 163,000 tons from intelligent dispatching system.
- Reduce 220,000 tons from the smart energy consumption and emission management system
- 554,000 tons from the Carbon Offset Scheme for personal and micro enterprises
- Reduce 1,660,000 tons of CO2 from reducing private driving.

Co-benefit reduction of CO emission is 4292 tons, and HC 419 tons, NOx 4931 tons, PM2.5 170 tons, PM10 190 tons, SO2 61 tons.

Summary of Development Outcomes

- Meet the travel demand of about 170 million trips per year in Qingdao City;
- Improve public traffic flow to alleviate urban road congestion. 9 million urban citizens will be benefited;
- Provide at least 200 employment opportunities for the upstream and downstream industries of public transport in the coming years.
- Improve the level of public transport services to attract more citizens to choose public transport and consequently reduce use of private cars, then reduce CO2 emission and other transport related pollution.
- Establish a green power charging system. Vehicle battery recycling will reduce environmental pollution and potential hazards caused by waste batteries.

Summary of Investment

- The estimated investment of this project is 1.693 billion RMB in total, as 211.44791237 million EUR including:

<table>
<thead>
<tr>
<th>Component</th>
<th>RMB (estimated)</th>
<th>EUR (estimated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green bus depots</td>
<td>560m</td>
<td>69.9412406m</td>
</tr>
<tr>
<td>E-bus procurement</td>
<td>840m</td>
<td>104.91213609m</td>
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<tr>
<td>Charging piles</td>
<td>110m</td>
<td>13.73849401m</td>
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<tr>
<td>Intelligent dispatching system</td>
<td>70m</td>
<td>8.74267801m</td>
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<tr>
<td>Energy consumption management system</td>
<td>7m</td>
<td>874.2678k</td>
</tr>
</tbody>
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Implementing plan and structure

The implementation plan will be 953 e-bus purchase within 2 years i.e. 483 and 470 respectively, and the construction of depots and the installation of relevant facilities over the same 2 years.

Two bus depots will be built for providing functional services and supporting facilities for bus operation, in terms of bus parking, power charging and maintenance etc. These two depots will be built in Sichuan road and Maidao road respectively. Development approvals are in process. The traffic management authority expects to pursue comprehensive development on site, which can increase the commercial revenue of the project. The authority also expects a qualified social partner to further develop over the site under a PPP modality, increasing project viability.

According to the data on July 21, 2020, 1 Euro= 8.0067RMB, the same below.
Procurement method

The proposed implementation arrangements will focus on a new Special Purpose Vehicle (SPV) that will enable the efficient management of the project.

Direct physical investments in bus depot construction, 953 full electric buses and corridor development; and the provision of equipment through service contracts.

The project procurement will also follow the Green Procurement process.

Proposed Initial Financing

The project total investment is 1.693 billion RMB, as 211.44791237 million EUR which project sponsor is expecting to finance 1 billion RMB, as 124.89540010 million EUR through Shandong Green Development Fund.

Among the sub-projects, the project sponsor will implement components including bus network, bus lane planning, tickets system, risk research and Carbon Offset Scheme, by funding support from local government. The project sponsor is expecting components 50% of green bus depots, E-bus procurement and intelligent bus stop sign to be financed by the Shandong Green Development Fund. Project components such as charging piles, battery recycling, intelligent dispatching system and energy consumption management system are expected to be financed by private partner under a SPV.

Proposed Funding

The project sponsor will self-finance 1.25billion RMB, as 156.11925013 million EUR. Qingdao has committed to maintaining the levels of subsidies required to implement the project over the proposed first phase of the facility, ie.1) subsidies for e-bus purchase which central government give these to bus manufacturing company directly, 2) subsidies for all buses operation and commit to continue to provide subsidies for e-bus operation.

The project envisages relative stable revenue streams. Major revenue will come from fares, advertisement income along the busway, power charging and service fees on depots, recycling of the batteries and other potential commercial revenues from the comprehensive development model on the depot sites.

Readiness Issues

No land acquisition and resettlement required

Status of preparation

Studies for the preliminary design of bus network, planning of bus lanes and ticket pricing research, intelligent dispatching system, energy consumption and carbon emission management have been completed or are under implementation.

Risk study, Carbon Offset Scheme will be implemented in the first project year, as well as, the intelligent bus stop signs, vehicle battery recycling.

Pre-feasibility study with technical, governance, economic/financial, environment/social completed.

The authority would like to apply additional Technical Assistance (TA) support from ADB, to do more detail analysis of the major components.
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