Evaluation Approach


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A. Introduction

1. In 2006, Asian Development Bank (ADB) approved the $50 million investment program to finance two tranches for the construction of Erlongshan and Dagushan hydropower plants in Gansu Province (Gansu). This approach paper presents the country, sector context, and specific issues that will be addressed in evaluating the People’s Republic of China’s (PRC) Gansu Heihe Rural Hydropower Development Investment Program—Erlongshan Hydropower Project (Loan 2296), the first tranche ($22 million) of the investment program located in remote rural areas of Zhangye City (Zangye) of Gansu, a poor western province. This ADB project was approved in December 2006 and closed in April 2010. The project completion report was prepared in 2011 and PCR validation report was prepared in 2013. The project performance evaluation report (PPER) jointly with the People’s Republic of China Ministry of Finance’s evaluation undertaking for this project, has been scheduled 5 years after project completion, an interval which will allow adequate time to assess progress made on issues of project sustainability. In addition, given the efficient implementation of this project within the forecast time period, the PPER should also enable key lessons to be identified for successful implementation of a large infrastructure project, with a significant civil works component, in a regionally impoverished area of the country and which may have broader application for ADB financed infrastructure investments in other member countries across Asia.

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Background

1. Country and Strategic Context

2. The report and recommendation of the President (RRP) stated that the rapid pace of economic growth in the People’s Republic of China (PRC) created a strong demand for electricity. Between 50-55% of the PRC’s population lives in rural areas that have experienced rapid development in parallel with national economic growth. During the early growth period many areas of the PRC experienced serious power shortages. The electricity sector also became a major air polluter as production was overwhelmingly based on coal. With coal fired power plants producing about 81 percent (%) in 2005, the burning of coal has caused serious environmental problems and has resulted in 50% of the country’s sulfur dioxide emissions, 80% of nitrogen oxide emissions, and 26% of carbon dioxide emissions. Coal consumption was the major cause of poor air quality—national class II air quality standards.

3. Gansu is located on the western edge of central China and has a population of slightly less than 26 million. It is one of the poorest provinces in the PRC and one of its areas, known as the Hexi corridor, experienced severe electricity shortages due to inadequate local generation capacity and large distances from power plants. Gansu also suffered heavy air pollution due to the high dependence on coal fired power generation sources. At the time of project approval, Lanzhou, the capital of Gansu Province, had the worst air pollution index of 47 key national environment cities. Thirteen of Gansu’s 14 cities did not meet air quality standards. Air pollution problems are exacerbated further by severe desertification in this region. It presented a particular challenge of providing needed electricity services to poor townships while, at the same time, not adding further to mounting pollution problems affecting the health of the local population.

4. The choice of a clean energy source, i.e., hydropower, which can be developed in this region of Gansu, offers the prospect of providing a sustainable path for the further development of the region as well as in other regions of PRC where renewable energy sources are found. The provision of ADB financing for this project is consistent with its own country strategy in the PRC, which emphasizes the development of key infrastructure in an environmentally sustainable way as well as the economic and social development of regionally impoverished areas of the country. Finally, the Erlongshan Hydropower Project when designed was consistent with the Gansu Provincial Government’s 11th Five-Year Plan (2006–2010) which, among other things, prioritized clean and renewable energy development.

2. Description of the Project

5. The first tranche of a two tranche multifinance facility investment program, the project aimed to provide an environmentally friendly power supply to support economic growth in the rural areas of Gansu Province. This was to be achieved by providing hydropower generation closer to the rural areas of Zhangye City and the Hexi Corridor. On 18 December 2006, ADB approved a $22.0 million loan for the project from its ordinary capital resources. The parallel investment in rural grid rehabilitation and improvement was being carried out by the Zhangye City Government. At appraisal, total project costs were estimated to be $49.09 million, and included the following components:

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(i) **Construction of the Erlongshan hydropower plant.** This component included all the necessary civil works and equipment to complete the hydropower facility and connect it to the Heihe grid substation. It comprised civil works, power plant equipment, hydromechanical equipment and metal structures, environmental management, and 38.6 kilometers (km) of 110 kV power transmission lines. The EHP’s installed capacity was expected to be 50.5 MW.

(ii) **Rural electrification component.** A parallel rural grid improvement project to renovate, modernize, and strengthen the 10 kV and 35 kV electricity distribution network was financed by the Zangye City Government to provide an improved and more reliable electricity distribution to rural consumers in five counties in Zangye City; and

(iii) **Capacity development of the implementing agency.** This component aimed to boost the Heihe Hydropower Development Company and its joint-stock company the Erlongshan Hydropower Company – set up to undertake the Erlongshan hydropower plant project development – capacity in seeking carbon revenues under the clean development mechanism (CDM), and integrating environmental and social issues into the project cycle.

3. **Main Findings of the Project Completion Report**

6. The overall assessment of the project in the project completion report (PCR) and project validation report (PVR) was **highly successful**. The implementation was completed on schedule and very close to the original cost estimate. The benefits from the completion of this hydro plant have had an immediate impact of the neighboring area in terms of the economic, social, and environmental impact.

7. The PVR ratings for relevance, effectiveness, efficiency, and sustainability were **highly relevant, highly effective, highly efficient, and likely**, respectively, while the performance of the borrower, executing agency, and ADB were also rated **highly satisfactory**.

8. The project (and associated technical assistance) was judged highly relevant to the government’s development strategy and to ADB’s strategy and sector policy in the PRC. It was also highly effective in achieving the project’s purpose and objectives, and efficient in implementation. The resettlement was also judged successful. The environmental impact was rated positive, and all needed mitigation measures were taken. Finally, the social impact, i.e., poverty reduction and community development, was positive.

9. In terms of lessons, the PCR highlighted the importance of strict adherence to bidding processes and the engagement of an experienced procurement agent as a key factor in facilitating efficient process, of timely availability of all funding as key to smooth project implementation and early project commissioning, of successful registration as a CDM project – serving as a successful demonstration project for other clean energy developers in the region, and of keeping social development as a goal paid off in a good relationship with the local community. The PVR concurred with the PCR’s lessons and added another – before the project, few people left their communities in search of jobs, and now young people including 30% females do. Given this, it appears that development projects can influence local people in work principles and have a significant benefit on local communities at little cost.
B. Issues and Lessons to be Addressed in the Project Performance Evaluation Report

10. The proposed PPER will attempt to identify issues and lessons in two broad areas: (i) prospects for sustainability of the main project objectives after nearly 5 years since project completion; (ii) identification of those factors that have led to a successful implementation of this project, with relevance to future Asian Development Bank-financed operations in the PRC and elsewhere in the Asia region.


11. The main objective was the production of a reliable, clean, and affordable hydropower supplied to rural consumers in Zhangye City of Gansu Province. In addition, the electricity distribution lines aimed at bringing low cost electricity to five counties in order to improve the economic and social conditions of these communities. Finally, the capacity development component had an important institutional building objective.

12. The different issues affecting longer term sustainability will be examined: (i) Technical: has there been regular inspection of the turbines, in particular the blades, as well as related issues of excessive silt build up, soil erosion etc., the impact of other hydro investments along this river on the operation of EHP; (ii) Economic: has the project continued to generate sufficient GWh at least cost to remain economically viable; (iii) Financial: adequacy of the tariff revenues to support the sustainability and financial viability of the Erlongshan Hydropower Company, and its continued supply of electricity to poor townships; (iv) Social: impact of electricity availability on agriculture, education, and health of these communities; and (v) Environmental: impact of the project on air pollution, including air pollution standards in Zhangye City since project completion.

2. Implementation Lessons for the ADB

13. Based on the PCR and other ADB reports, project implementation has been very successful. This complex hydro project was implemented in less than 4 years and within the estimated budget. What have been the key factors that ensured success? Strong government ownership sustained through project completion; a technically competent executing agency that was fully staffed at project start up; successful CDM registration; delegated authority to the ADB resident mission in Beijing are some of the reasons that will be explored. Feedback from the different government provincial bureaus in Zhangye City will provide an important input in this evaluation.

C. Project Performance Evaluation Report Approach and Schedule

14. The evaluation will include the following activities: (i) kick-off meeting and planning discussions with PRC’s Ministry of Finance designated joint evaluation counterpart; (ii) desk review of all relevant project documents; (iii) gathering and review of secondary data including relevant reports on Erlongshan Hydropower Plant operations; (iv) desk review completion exchange with Ministry of Finance designated joint evaluation counterpart (in Manila) (v) discussions with project staff from ADB East Asia Regional Department; (vi) joint evaluation infield mission discussions with officials for relevant provincial government offices – including meetings with Heihe Hydropower Development Company and the Erlongshan Hydropower
Company; (vii) recalculated economic and financial rates of return for the project; (viii) draft and finalized PPER; and (ix) lessons learned debriefing (in Manila).

15. The evaluation team shall be composed of the following staff and consultants: (i) K. Hewitt, Evaluation Specialist (Team Leader); O. Nuestro, Senior Evaluation Officer; (iii) E. Li-Macenido, Associate Evaluation Analyst; (iv) an international consultant with expertise in the power sector; and (v) national consultant with work experience in the power sector. The time commitment for the joint evaluation and PPER activities will be about 4 months intermittently for the team leader and the senior evaluation officer, and about 30 working days each for the international consultant and the national consultant.

16. The proposed schedule for the joint evaluation and PPER is as follows:

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<tr>
<th>Activities</th>
<th>Target Dates</th>
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<tr>
<td>Approval of evaluation approach paper</td>
<td>III April 2015</td>
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<tr>
<td>Joint evaluation kick-off and discussions with MOF</td>
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<td>(Telephone conference)</td>
<td>III April 2015</td>
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<tr>
<td>Desk review completion exchange with MOF</td>
<td>III May 2015</td>
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<td>(Telephone conference)</td>
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<td>Joint evaluation in-field mission discussions</td>
<td>IV May 2015</td>
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<td>Draft PPER for peer review and lessons learned</td>
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<tr>
<td>debriefing with MOF (Manila)</td>
<td>II July 2015</td>
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<tr>
<td>Final draft for Director General for approval</td>
<td>IV July 2015</td>
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D. Knowledge Dissemination Plan

17. The PPER will be made available to the public after approval by the Director-General, IED. The report will be uploaded on ADB’s external and internal websites and will provide inputs to ADB’s evaluation information system.