



## Completion Report

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Project Number: 43153-012  
Technical Assistance Number: 7294  
March 2019

# People's Republic of China: Municipal Waste to Energy Project

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TA Number, Country, and Name:			Amount Approved: \$653,000	
TA 7294-PRC: Municipal Waste to Energy Project			Revised Amount: Not applicable	
Executing Agency: Asian Development Bank		Source of Funding: Clean Energy Fund <sup>1</sup> under the Clean Energy Financing Partnership Facility	Amount Undisbursed: \$82,510	Amount Utilized: \$570,490
TA Approval Date: 4 June 2009	TA Signing Date: 11 January 2010	Fielding of First Consultants: 22 June 2010	TA Completion Date Original: 30 June 2014 Actual: 31 March 2018 Account Closing Date Original: 30 June 2014 Actual: 28 January 2019	

**Description:** This technical assistance project (TA) was a piggyback TA to the Municipal Waste to Energy (WTE) Project which provided a \$100 million A loan and a \$100 million B loan to China Everbright Environmental Energy Limited, a special purpose company for WTE operations of China Everbright International Limited (CEIL). AECOM (Asia) was engaged as TA consultant. The investment was in line with the Government of the People's Republic of China's (PRC) long-term target to increase the use of WTE from 1% of total waste managed in 2002 to 30% by 2030, and the 11th Five Year Plan's target to attain 35% of the municipal solid waste in the eastern coastal area to be treated through WTE facilities. The project loan supported CEIL's construction and operation of waste to energy projects through public-private partnerships in secondary cities in the PRC. The TA was intended to provide a model to spur more private investment in advanced WTE facilities and to support the physical interventions with performance assessment on project engineering, manufacturing, site construction and operation and management. As ADB had limited experience with WTE plants, and there have been only a limited number of privately financed WTE projects in DMCs, it was thought important to have an independent third party with adequate expertise to undertake periodical monitoring of the performance of the plants. At the end of the monitoring, an assessment with specific focus on key risks and lessons learned on the operation of the WTE plants was conducted and their applicability to other DMCs was to be discussed. It was anticipated that the knowledge was to be disseminated and shared within ADB and beyond, through seminars and conferences such as ADB's Asia Clean Energy Forum, Asia Waste to Energy Congress, Asian Sanitation Dialogue, International Solid Waste Association (ISWA) Waste to Energy Conference, and International Renewable Energy Asia Conference.

**Expected Impact, Outcome, and Outputs:** The TA initially had three components: (i) developing a comprehensive environmental and social management system (ESMS) for CEIL; (ii) conducting annual site visits to selected WTE plants to assess their operational, environmental and social performance; and (iii) carrying out capacity building activities to enhance the understanding and skills of CEIL's managerial and operational staff towards ADB's requirements as delineated under the Safeguard Policy Statement. In 2017, the TA was revised to (iv) update the latest operational performance of WTEs and lessons learned based on the monthly operational and environmental reports in 2013–2015; (v) develop financial modelling guidelines to identify the reasonable range of values for use in financial modelling of WTEs; (vi) analyze and update the regulatory framework of the WTE industry in the PRC including operational and environmental controls; and (vii) study key policy considerations including regulatory issues and tariff premiums of other DMCs regarding the development of WTE.

**Delivery of Inputs and Conduct of Activities:** The Terms of Reference were appropriate to the job at hand. The consultants fully performed the tasks outlined in the Terms of Reference, delivering comprehensive reports which included the materials developed and the presentations used for capacity building training. Upon completion of the initially contracted work, the needs for additional work emerged due to diversification of CEIL's business which complemented the intended outcome of the TA, and ADB agreed.

<sup>1</sup> Financing partners: the governments of Australia, Norway, Spain, Sweden, and the United Kingdom.

CEIL appreciated the TA team as being their 'go-to advisor' to improve CEIL's environmental and social management efforts in both the corporate and sub-project levels as the company grows. Indeed, CEIL went beyond the requirements under the ESMS, and voluntarily started issuing its annual Sustainability Report which was one of the first for the environmental businesses in the PRC. Sustainability Report was also implemented by CEIL's subsidiaries such as China Everbright Greentech after the IPO which ADB supported. The TA was not optimally administered, as the project was transferred from PSOD's processing division to its portfolio management division after the final report from the TA, which resulted in delay of payment to the consultant and closure of the TA.

### **Evaluation of Outputs and Achievement of Outcome**

The TA consultants appeared to be efficient in producing the agreed outputs, which were found by the client to be effective. The client was satisfied with the TA. The investment Design and Monitoring Framework presented that an output of the TA would be dissemination of lessons learned on the operation of the WTE plants by 2019, as reported in the annual and final TA reports and TA conferences and/or seminars. Although the original TA sought to broadcast knowledge products as a result of the TA, this was not included as a specific deliverable in the Terms of Reference. The TA consultants were not tasked with broader outreach to disseminate lessons learned, and their reports did not specifically include a "Lessons Learned" section. This output in the overall investment Design and Monitoring Framework will likely remain unachieved unless directly addressed.

### **Overall Assessment and Rating**

The TA was highly successful in (i) developing a comprehensive environmental and social management system. It was successful in (ii) conducting annual site visits to selected WTE plants to assess their operational, environmental and social performance and (iii) carrying out capacity building activities to enhance the understanding and skills of CEIL's managerial and operational staff towards ADB's requirements as delineated under the Safeguard Policy Statement. Without this TA, ADB's support for WTE projects would not be possible.

After the Terms of Reference was modified to include additional activities, the TA was successful in (iv) updating the latest operational performance of WTEs but was not successful in documenting lessons learned based on the monthly operational and environmental reports in 2013-2015. The TA was partly successful in (v) developing financial modelling guidelines to identify the reasonable range of values for use in financial modelling of WTEs. While a financing model was developed, it is not clear whether these were shared, put to use or discussed with anyone. The TA was also partly successful in (vi) analyzing and updating the regulatory framework of the WTE industry in the PRC including operational and environmental controls and (vii) study key policy considerations including regulatory issues and tariff premiums of other DMCs regarding the development of WTE. While these activities were undertaken and were reported in the final report, it is not clear that the analysis was put to any larger use.

As the original objectives of the TA were met, the TA is considered to be partly successful.

### **Recommendations and Follow-Up Actions**

The assessments conducted by the consultants suggest potential activities for future collaboration between ADB's sovereign operations and private sector operations. Improvements in the legislative and regulatory environment could improve conditions for further promotion of WTE activities in south east Asia. Those recommendations were shared with ADB's Sustainable Development and Climate Change Department.

It is recommended to strengthen TA payment and administration capacity in PSPM. This TA was transferred from PSIF2 to PSPM for final payment after the TA final report. The internal administrative steps to make the final payment and closing took significant time mainly due to lack of TA administration capacity

ADB = Asian Development Bank; DMC = Developing Member Country.

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