



# Report and Recommendation of the President to the Board of Directors

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Project Number: 43901-01  
May 2009

## Proposed Loan and Technical Assistance Municipal Waste to Energy Project (People's Republic of China)

In accordance with ADB's public communications policy (PCP, 2005), this abbreviated version of the RRP excludes confidential information and ADB's assessment of project or transaction risk as well as other information referred to in paragraph 126 of the PCP.

Asian Development Bank

## CURRENCY EQUIVALENTS

(as of 24 March 2009)

Currency Unit	–	yuan (CNY)
CNY1.00	=	\$0.14635
\$1.00	=	CNY6.8331
HK\$1.00	=	\$0.12903
\$1.00	=	HK\$7.7502

## ABBREVIATIONS

ADB	–	Asian Development Bank
CEEEL	–	China Everbright Environmental Energy Limited
CEEPH	–	China Everbright Environmental Protection Holdings Limited
CEHCL	–	China Everbright Holdings Company Limited
CEIL	–	China Everbright International Limited
CFB	–	circulating fluidized bed
CH <sub>4</sub>	–	methane
CO <sub>2</sub>	–	carbon dioxide
DMC	–	developing member country
EIA	–	environmental impact assessment
ESMS	–	environmental and social management system
MSW	–	municipal solid waste
NO <sub>x</sub>	–	nitrous oxides
PPP	–	public-private partnership
PRC	–	People's Republic of China
TA	–	technical assistance
WTE	–	waste to energy

## WEIGHTS AND MEASURES

GWh	–	gigawatt-hour
kJ/kg	–	kilo-joule per kilogram
ng	–	nanogram
TEQ/Nm <sup>3</sup>	–	toxicity equivalent per normal cubic meter

## NOTES

- (i) The fiscal year (FY) of China Everbright International Limited ends on 31 December. FY before a year demotes the year in which the fiscal year ends, e.g., FY2009 ends on 31 December 2009.
- (ii) In this report, "\$" refers to US dollars unless otherwise stated.

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.

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## I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed loan of up to \$200 million without government guarantee, of which up to \$100 million (the A-loan) will be funded by the Asian Development Bank (ADB) and up to \$100 million (the B-loan) will be funded by commercial banks under participation agreements between ADB and such banks, to China Everbright Environmental Energy Limited (CEEEL), a special purpose company established in the British Virgin Islands to hold the waste-to-energy (WTE) operations of China Everbright International Limited (CEIL), for the People's Republic of China (PRC) Municipal Waste to Energy Project (the Project). The proceeds of the Loan will be channeled as a part of CEEEL's investment in project companies that will be established to build and operate WTE plants with clean technologies in secondary cities in the PRC.<sup>1</sup> If approved, the Project will be ADB's first private sector project to assist municipal WTE projects. It will constitute ADB's 26th private sector assistance in the PRC. This report also describes proposed technical assistance (TA). If the Board approves the proposed loan, I, acting under the authority delegated to me by the Board, will approve ADB's administering the TA grant not exceeding the equivalent of \$653,000 from the Clean Energy Fund<sup>2</sup> under the Clean Energy Financing Partnership Facility. The design and monitoring framework is in Appendix.

## II. RATIONALE: SECTOR PERFORMANCE, PROBLEMS, AND OPPORTUNITIES

### A. Municipal Solid Waste Management

#### 1. Issues and Technologies

2. Municipal solid waste (MSW) is a waste type consisting principally of household waste, but includes commercial waste, generated in municipal areas. It is estimated that 5.2 million tons of solid waste is generated daily worldwide, of which 3.8 million tons is from developing countries.<sup>3</sup> The failure to manage MSW appropriately causes serious local, regional, and global environmental problems such as air pollution, soil and groundwater contamination, and emissions of greenhouse gasses, methane (CH<sub>4</sub>) in particular.

3. The goal of MSW management is to treat MSW in an environmentally and socially acceptable manner with appropriate clean technologies. The three main MSW treatment options are landfill, composting, and incineration. All waste disposal alternatives eventually decompose organic materials into simpler carbon molecules such as carbon dioxide (CO<sub>2</sub>) and/or CH<sub>4</sub>. In developed countries with rich experience in waste management, incineration is recognized as the single most effective method for MSW treatment,<sup>4</sup> as it reduces waste volume by 90% and eliminates CH<sub>4</sub> emissions. Furthermore, WTE technologies recover the waste heat from incineration process and steadily produce electricity and heat. By substituting for fossil fuel combustion and avoiding CH<sub>4</sub>, it reduces greenhouse gas emissions and mitigates climate change. Using abundant MSW as fuel makes WTE plants attractive and dependable sources of renewable energy.

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<sup>1</sup> "Primary cities" include Beijing, Dalian, Guangzhou, Qingdao, Shanghai, Shantou, Shenzhen, Tianjin, Xiamen, and Zhuhai. "Secondary cities" are provincial capitols, if the province is not a "super province" such as Guangdong, and other regionally important cities.

<sup>2</sup> Contributors are the governments of Australia, Norway, Spain, and Sweden.

<sup>3</sup> Cointreau, S. 2007. *The Growing Complexities and Challenges of Solid Waste Management in Developing Countries*. Washington, DC.

<sup>4</sup> World Bank. 2000. *Municipal Solid Waste Incineration –Decision Maker's Guide*. Washington, DC.

## 2. Municipal Solid Waste Management in the People's Republic of China

4. Successful economic reforms and significant growth in the PRC economy have accelerated urbanization<sup>5</sup> and led to increases in MSW generation by 8–10% annually.<sup>6</sup> The PRC is now the world's largest MSW generator, producing 148 million tons annually. Yet the PRC's per capita MSW is still only 120 kilograms (kg) per annum, which is less than a quarter of Organisation for Economic Co-operation and Development (OECD) average of 560 kg per annum, leaving significant upward potential.<sup>7</sup>

5. The effective disposal of MSW has been a serious environmental challenge in the PRC. Nearly 50%<sup>8</sup> of MSW is untreated and dumped in un-engineered landfills that contaminate soil and groundwater. This is a particular problem in coastal regions, which have high groundwater tables and land values. Emission control and leachate treatment in engineered landfills often underperform in the PRC for lack of adequate clean technologies and operational know-how.<sup>9</sup>

6. This also poses a serious social challenge, as ever increasing numbers of migrants from rural areas often live near polluting landfills, making them vulnerable to the air pollution and soil contamination. The urban poor are exposed to infectious diseases from MSW and respiratory diseases from air pollution, threats to access to safe drinking water, and the risk of food poisoning from soil and groundwater contamination. Therefore, a more integrated approach to developing an efficient, environmentally sustainable, and well-managed MSW system is needed.

## 3. Waste to Energy in the People's Republic of China and Private Sector Participation

7. The promotion of WTE technologies has been seen as an effective way to mitigate environmental degradation, but it challenges the capacity of local governments to promote good WTE infrastructure with sustainable financing and the timely delivery of public services. Up to 2007, only 67 WTE plants have been built since the first in 1988. They process 11 million tons annually, or only 7.6% of the MSW generated. By 2020, the WTE market is projected to more than quadruple to 47 million tons, and the investment required to meet projected incineration demand is estimated at over CNY70 billion (\$10 billion).

8. Most WTE developers in the PRC have used locally produced circulating fluidized bed (CFB) incinerators, which require supplemental fuels<sup>10</sup> of up to 20-30% coal to burn MSW. The extensive use of coal without adequate emission control may worsen urban air pollution. The substantial deployment of clean WTE technologies is urgently needed.

9. The Government alone cannot continue to be the main funding source for WTE expansion with clean technologies. Private sector participation through public-private partnership (PPP) is expected to play a critical role in improving the sector by (i) providing capital for new investment; (ii) bringing in advanced technology, management, and operations; (iii) helping municipal

<sup>5</sup> The PRC is undergoing massive urbanization, with over 41% of its population already living in urban areas, more than double the rate of less than 18% in 1978.

<sup>6</sup> Nie, Y. 2008. *Development and Prospects of Municipal Solid Waste (MSW) Incineration in China*. *Frontiers of Environmental Science and Engineering in China* Vol. 2, No. 1. Beijing: Higher Education Press.

<sup>7</sup> Assuming a relatively conservative 3% annual MSW increase, MSW generation in the PRC is projected to be 224 million tons in 2020.

<sup>8</sup> Among the 661 municipalities throughout the country, 334 cities do not have any MSW treatment facilities. In terms of the waste collected, only 52% was treated in 2006, while the remainder was disposed of in unimproved landfills.

<sup>9</sup> Altogether, 90.5% of MSW collected in the PRC was dumped into landfills in 2006.

<sup>10</sup> Supplemental fuels mean fuel to be added during operation (after start-up) to burn MSW.

governments to mitigate environmental impacts; and to free up limited public funds for other important social spending.

10. In 2006, China Everbright International Limited (CEIL), the project sponsor, commenced commercial operation of the first project in the PRC to adopt advanced clean technologies, including grate incinerator technology, which is state-of-the-art, reliable technology in the United States and Europe and does not require coal as supplemental fuel; and advanced flue gas emission control to meet the world's most stringent standards, such as the European Union II standard for dioxin.

#### **4. Policies and Regulations**

11. In the 1980s, the Government of the PRC began studying and addressing the challenges of prospective energy supply shortages and environmental degradation stemming from the fast-growing economy. Following rapid economic development, the Government further emphasized environmental protection at the 17th Chinese Communist Party Congress and the China Central Economic Works Conference in 2007. It urged the country to pursue scientific development and included in its aims building a society conscious of environmental issues and energy conservation. In November 2007, 18 Government ministries jointly published the Action Plan for Environmental Protection and Good Health in China (2007–2015), which strengthened people-orientated environmental protection policies.

12. To promote waste management and WTE, the Government enacted a series of laws and regulations. The Law on the Prevention and Control of Environmental Pollution from Solid Waste (2004) provides the basic framework for treating different kinds of wastes, and the Urban Domestic Waste Management Regulations (2007), the most recent and comprehensive laws in the PRC, address urban environmental protection and waste management. Further, WTE was identified as a key source of renewable energy in the Renewable Energy Law (2005). The Government has passed new regulations under which grid companies are obliged to take all electricity generated from qualified WTE plants in its grid area and offer a price premium.

13. Under the 11th Five Year Plan (2006–2010), the Government sets the development of a recycling economy as a national goal. Establishing a resource recycling system for the whole society is emphasized in accordance with the principle of resource use reduction, reutilization, and conservation. Primary cities such as Beijing started segregating MSW for recycling. Meanwhile, the Government set a long-term target for WTE, thermal recycling, to increase from 1% of the total waste managed in 2002 to 30% by 2030. The Government has strengthened its commitment to renewable resources generally through investment and favorable taxation policies, and specifically in relation to WTE, having made a high priority of developing the necessary technology. Other relevant targets in the 11th Five Year Plan include (i) investing CNY1,375 billion (\$200 billion) in environmental protection;<sup>11</sup> (ii) 35% of the MSW in the eastern coastal area to be treated through WTE; and (iii) the daily treatment capacity of MSW to be increased by 320,000 tons.

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<sup>11</sup> In addition, environmental protection was identified as one of the 10 priority investment areas in the stimulus package.

## **B. Asian Development Bank Operations**

### **1. Country Strategy**

14. ADB's country partnership strategy for the PRC<sup>12</sup> is based on four development thrusts: (i) inclusive growth and balanced development, (ii) resource efficiency and environmental sustainability, (iii) regional cooperation and public goods, and (iv) an environment conducive to private sector development.

15. The PRC has been steadily transforming into a market economy, which has become the driving force for economic growth and job creation. In addition to ADB's policy advice to the Government on private sector development, ADB provides project-based financial assistance. ADB's private sector operations in the PRC have focused on infrastructure, energy, finance, and environmental improvement. Regarding infrastructure and energy, ADB prioritizes pioneering projects with innovative contractual and financial structuring to encourage private sector participation, enhance management expertise, and improve corporate governance.

### **2. Strategy 2020**

16. ADB's long-term strategic framework 2008–2020 (Strategy 2020)<sup>13</sup> emphasizes ADB's support for achieving poverty reduction and inclusive growth through environmentally sustainable development and private sector development. The Project is in line with infrastructure and environment being two of the five core areas of operations in the strategy. In terms of infrastructure, specifically energy, the Project will embody the strategy, which sets forth that ADB will (i) help expand the supply of energy; (ii) promote energy efficiency through supply-side and demand-side measures; (iii) support clean energy; and (iv) facilitate the removal of policy, institutional, regulatory, technological, and legal constraints on promoting efficient energy use. With respect to the environment, the Project is in line with the strategy's focus on (i) climate change, (ii) livable cities, and (iii) complementary actions. The strategy also aims to promote a larger role for the private sector in financing infrastructure by supporting PPP.

17. In addition to consistency with the strategy's operational priorities, the proposed Project will contribute to achieving results in areas under the strategy's results framework. The proposed Project will contribute to regional outcomes by reducing greenhouse gas emissions, which addresses the global climate challenge. Its contribution to country outcomes is significant in improvement of the urban environment through clean energy and improved MSW management. The Project will contribute to operational effectiveness as well by bundling multiple medium-sized WTE projects, which is an innovative structure to reduce transaction costs.

### **3. Energy Sector Strategy**

18. ADB seeks to meet energy security, facilitate the transition to a low-carbon economy, and achieve ADB's vision of a region free of poverty. ADB also seeks to help developing member countries (DMCs) to provide reliable, adequate, and affordable energy supplies for inclusive growth in a socially, economically, and environmentally sustainable way. ADB applies three pillars for policy implementation: (i) promoting energy efficiency and renewable energy; (ii) maximizing access to energy for all; and (iii) promoting energy sector reform, capacity building, and

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<sup>12</sup> ADB. 2008. *Country Partnership Strategy (2008–2010): People's Republic of China*. Manila.

<sup>13</sup> ADB. 2008. *Strategy 2020: The Long-Term Strategic Framework of the Asian Development Bank 2008–2020*. Manila.

governance. The existing and proposed WTE plants will generate renewable energy in an economically and environmentally sustainable manner. The Project also promotes energy efficiency with advanced and cleaner technologies.

### **III. THE PROJECT**

#### **A. Project Description**

19. The Project is to support the construction and operation through PPP of CEIL's WTE projects with advanced clean technologies including grate incinerator technology, and advanced flue gas emission control. This will serve the need to treat MSW in secondary cities of the PRC and supply electricity to the local grid. Each WTE plant incinerates waste, recovers waste heat for power generation, purifies waste gas, treats leachate, and disposes of ash. CEEEL, a wholly owned subsidiary of CEIL, was set up to hold CEIL's WTE operations. The portfolio approach, broad in reach, will enable ADB to provide financing support for multiple WTE projects that are often too small for ADB or international banks to finance on a standalone basis.

#### **B. Financing Clean Technologies**

20. Despite the recent policy shift in favor of WTE and the increased interest of municipal governments in clean technologies, market barriers still limit the expansion of WTE projects with clean technologies in the PRC. One of the key bottlenecks is the lack of access to finance, leaving municipalities' demand unmet.

21. According to comments obtained through ADB's Energy Efficiency Initiative consultation process and project due diligence, the main reasons why financially viable clean technology projects fail to attract finance are as follows:

- (i) There are gaps in clean technology knowledge and misperceptions of actual technology risks.
- (ii) Clean technologies require higher initial capital expenditure, making the total investment requirement higher, while commercial banks are often unfamiliar with environment and health benefits that are difficult to quantify.
- (iii) The due diligence costs associated with WTE projects with clean technologies are high because of the need for technical evaluation regardless of the project size.
- (iv) Under PPP arrangements, municipal governments often require private sector partners to fund project equity in hard currency. However, availability of long-term loan to finance project equity, in US dollar in particular, is limited.

22. A window of opportunity exists for ADB to make a real impact in the emerging WTE sector with clean technologies in the PRC. Under the Project, the ADB loan will be provided to a holding company and channeled to the WTE project companies, playing an anchor role to mobilize local funds and create better awareness among international banks.

#### **C. Sponsor**

23. Since its establishment in 1993, CEIL has become one of the leading private companies in the environmental protection industry in the PRC. Following the Government's policy to introduce the private sector participation in the environment sector in 2003, CEIL has focused on environmental protection infrastructure including WTE and wastewater treatment. CEIL has so far



been awarded concessions to operate environmental protraction projects in Suzhou, Yixing, and Changzhou in Jiangsu Province and Jinan, Qingdao, Zibo, and Binzhou in Shandong Province.

## **1. Shareholders**

24. CEIL is a private company established in Hong Kong and listed on the main board of the Hong Kong Stock Exchange (stock code 257). The majority shareholder is China Everbright Holdings Company Limited (CEHCL), a company established in Hong Kong that holds over 56% of CEIL's issued share capital. CEHCL is owned by the state-owned China Everbright Group, which is under the supervision of the State Council of the PRC. The group held total assets of approximately CNY800 billion in 2007 and had over 18,000 employees.

## **2. Operations**

25. CEIL's main environmental protection services include solid waste and wastewater treatment. As of the end of 2008, CEIL managed 22 environmental protection projects with an annual WTE processing capacity of 1.5 million tons, annual on-grid power generation capacity of 450 GWh, daily wastewater treatment capacity of 1.5 million tons, and other waste treatment capacity of 20,000 cubic meters per annum.

26. CEIL's board of directors has 10 directors, of which seven are executive directors and the remaining three are independent nonexecutive directors.

27. CEIL will be responsible for identifying, evaluating, selecting, negotiating, implementing, and administering the WTE projects. CEIL aims to set the bar high for the industry by achieving international best practices and technologies.

## **D. Environmental Aspects and Social Dimensions**

### **1. Environment, Safety, and Health**

28. The Project is categorized as FI in accordance with ADB's *Environmental Assessment Guidelines* (2003), and CEIL will adopt an environmental and social management system (ESMS) in compliance with ADB's *Environment Policy* (2002). WTE plants have required a full environmental impact assessment (EIA) in the PRC since 2002, and any future WTE subprojects identified for ADB finance will follow the EIA and disclosure procedures as required by both the Government and ADB. WTE plants have been well regulated in the PRC, with emission standards in place, and the implementation of environmental mitigation will be closely monitored by both national and local governments.

29. CEIL's experience with its existing plants ensures that the environmental impacts associated with WTE plants are well identified and that adequate mitigation measures and monitoring programs are in place. Flue gas emissions from the WTE plants will meet ADB safeguard requirements and national standards, and CEIL has set out to meet more stringent standards, such as the European Union II standard for dioxin of 0.10 nanograms (ng) international toxicity equivalent per normal cubic meter (I-TEQ/Nm<sup>3</sup>), which is 10 times more stringent than the Chinese requirement and twice as stringent as the World Bank–International Finance Corporation standard of 0.22 ng I-TEQ/Nm<sup>3</sup>. Fly ash will be treated with solidification technologies before disposal in designated landfills. The WTE plant site location will be selected by the municipal government to minimize environmental impacts on communities and the environment.

## **2. Social**

30. The Project is classified as involuntary resettlement category B and indigenous peoples category C. Land acquisition, compensation, resettlement, and rehabilitation needs are not significant and, if needed, are normally carried out by the municipal governments before the concessions are opened for competition. This means that CEIL has only a limited role in this regard. Nonetheless, CEIL will adopt a resettlement framework that sets out the policy principles and the screening, due diligence, and resettlement planning process in the event of involuntary resettlement, to ensure that national requirements are met and ADB's *Involuntary Resettlement Policy* (1995) requirements are complied with in ADB-financed subprojects. As the subprojects will be located in urban areas, the Project will not have significant impact on indigenous peoples.

### **E. Development Impacts**

31. The Project aims to promote environmental improvement in the PRC by contributing to resolving urban environmental problems caused by untreated MSW, which contaminates soil and emits harmful gasses. The impact of catalyzing private sector investment in the PRC's emerging WTE industry with the deployment of clean technologies will improve the urban environment and mitigate greenhouse gas emissions by avoiding CH<sub>4</sub> emissions and replacing electricity generated by coal-fired plants.

32. The Project features a strong model for private sector participation in WTE through a PPP for multiple projects in medium-sized municipalities and thus encourages, with multi-faceted demonstration effects, the private sector to invest in WTE projects beyond the Project's specific interventions. First, it will encourage other private investors to invest in WTE projects with clean technologies. Second, by mobilizing available domestic funds, ADB can create better awareness among commercial banks and willingness to finance more WTE projects with clean technologies. Third, the Project will demonstrate a new mechanism to provide a long-term, reliable solution to address MSW problems, which is applicable to other municipalities in PRC and in line with the Government policy to promote a resources-saving society. TA will ensure information dissemination to municipal governments and policy makers.

## **IV. THE PROPOSED ASSISTANCE**

### **A. Loan**

33. ADB's proposed loan is an A-loan of up to \$100 million funded by ADB and a B-loan of up to \$100 million funded by international banks, made to CEEEL and supported by a full, irrevocable guarantee from CEIL. The A-loan will carry an interest rate, as well as commitment and front-end fees, to be approved by ADB's pricing and credit enhancement committee. The Borrower may have the right to convert the interest rate from a floating rate to a fixed rate or vice versa on terms agreed between ADB and the Borrower.

34. The B-loan of up to \$100 million will have a maturity equal to or shorter than that of the A-loan and be on terms and conditions agreed by the Borrower, CEIL, participating banks, and ADB. ADB will charge an annual administration fee determined by ADB's pricing and credit enhancement committee.

## **B. Technical Assistance**

### **1. Impact, Key Activities, and Output**

35. As ADB's first private sector project to provide assistance to municipal WTE projects, the proposed Project will facilitate the deployment of advanced and clean WTE technologies that do not require supplemental fuel and can therefore meet high environmental standards, ensure project implementation, and demonstrate WTE as a solution to MSW disposal in the PRC and other DMCs. The lessons learned will be disseminated to municipal governments. The TA will have two components: (i) assessment and evaluation of operational performance of the WTE plants, and (ii) capacity building in CEIL in environmental management in relation to WTE technologies. The TA is classified as capacity development technical assistance category B.

36. The outputs of the TA will be annual reports and a final report prepared by independent technical advisors and the dissemination of lessons learned on the operation of the WTE plants and their applicability to other municipal governments in the PRC and DMCs through seminars and conferences, as well as through published reports.

### **2. Cost and Financing**

37. The TA is estimated to cost \$705,000 equivalent, of which ADB will finance \$653,000 as a grant through the Clean Energy Fund<sup>14</sup> under the Clean Energy Financing Partnership Facility program.

### **3. Implementation Arrangements**

38. ADB, as the Implementing Agency for the TA, will be responsible for all technical implementation issues, but with full support and cooperation from CEIL. The outputs will be monitored by ADB through consultants' reports, and certain key documents will be reviewed by ADB and CEIL for approval. ADB and CEIL will form a TA task force comprising representatives at appropriate levels from ADB and CEIL, as well as the consultants to be hired. The task force will communicate regularly to assess needs, monitor progress, and discuss relevant issues. The TA will be implemented intermittently over 54 months from the date its services start.

39. Consulting services required for the TA include 17 person-months of international consulting and 25 person-months of national. A consulting firm will be selected using the quality- and cost-based selection method with the simplified technical proposals. The recruitment of the firm will be in accordance with ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time). Disbursements under TA will be made in accordance with ADB's *Technical Assistance Disbursement Handbook*.<sup>15</sup>

## **C. Justification**

40. ADB's assistance for the Project is justified by its development impacts. It supports the Government's development plans and ADB's operational strategies, and ADB's participation will add value to the Project in the following ways:

- (i) The Project will provide access to clean, reliable, and safe MSW treatment to people living in secondary cities where adequate WTE infrastructure is lacking

<sup>14</sup> Contributors are the governments of Australia, Norway, Spain, and Sweden.

<sup>15</sup> ADB. 2008. *Technical Assistance Disbursement Handbook*. Manila.

and demand is currently not fully met. It will support the Government's strategic priorities for the environment as set forth in the 11th Five Year Plan. The Project introduces a new mechanism to efficiently address both MSW management and electricity supply, which will help to raise urban living standards, arrest environmental degradation, and advance sustainable urban development. This will particularly benefit the urban poor, who suffer severely from air and water pollution.

- (ii) The Project is in line with ADB's country strategy for the PRC, which is based on four development objectives, one of which is environmental improvement. The Project will embody ADB's Strategy 2020, which emphasizes more support in ADB's lending portfolio for environmentally sustainable development and private sector development. The Project seeks to address regional and global environmental impacts. By introducing clean technologies to utilize abundant MSW as fuel, the Project will address regional environmental problems and mitigate greenhouse gas emissions.
- (iii) The Project will support a series of medium-sized WTE projects with clean technologies to be built through PPP. It will contribute to the introduction and transfer of state-of-the-art technologies to be utilized to address urban waste-management problems, which is in line with ADB public sector efforts and can be used by the Government as a model for other projects. TA will ensure information dissemination to municipal governments and policy makers.
- (iv) The Project has pioneering features that embody ADB's private sector operations policy in the PRC. As a multi-project facility, the Project will enable ADB to extend its reach to multiple municipal WTE projects that would be difficult to assist directly, while leveraging the experience and know-how of an experienced developer. The ADB loan in US dollar is essential for a holding company to invest in US dollar as often required and will act as a leverage to mobilize local currency financing from local banks, which are unfamiliar with the clean technologies that the Project will employ.

#### **D. Anticorruption, Combating Money Laundering and the Financing of Terrorism**

41. CEIL and CEEEL were advised of ADB's *Anticorruption Policy* (1998, as amended to date) and policy relating to the *Combating Money Laundering and the Financing of Terrorism* (2003). Consistent with its commitment to good governance, accountability, and transparency, ADB will require CEIL and CEEEL and its subsidiaries to institute, maintain, and comply with internal procedures and controls following international best practice standards for the purpose of preventing corruption or money laundering activities or the financing of terrorism and covenant with ADB to refrain from engaging in such activities. The documentation between ADB, CEIL, and CEEEL will further allow ADB to investigate any violation or potential violation of these undertakings.

#### **V. ASSURANCES**

42. Consistent with the Agreement Establishing the Asian Development Bank<sup>16</sup>, the Government will be requested to confirm that it has no objection to the proposed loan. No funding will be disbursed until ADB receives such confirmation.

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<sup>16</sup> ADB. 1966. *Agreement Establishing the Asian Development Bank*. Manila.

## VI. RECOMMENDATION

43. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Asian Development Bank (ADB) and, acting in the absence of the President, under the provisions of Article 35.1 of the Articles of Agreement of ADB, I recommend that the Board approve a loan of up to \$200,000,000 to China Everbright Environmental Energy Limited to finance the Municipal Waste to Energy Project, consisting of

- (i) an A-loan funded by ADB in an amount up to \$100,000,000, to be provided from ADB's ordinary capital resources without government guarantee; and
- (ii) a B-loan funded by international banks in an amount up to \$100,000,000 on terms and conditions to be mutually agreed upon between the borrowers, the participating banks, and ADB,

and on such other terms and conditions as are substantially in accordance with those set forth in this report, and as may be reported to the Board.

C. Lawrence Greenwood, Jr.  
Vice-President

12 May 2009

## DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and/or Indicators	Data Sources and/or Reporting Mechanisms	Assumptions and Risks
<p><b>Impact</b> Urban environmental management in secondary cities in the PRC is improved through the deployment of clean MSW treatment technologies.</p>	<p>70% of MSW in urban areas in the PRC is properly treated, with 30% incinerated, by 2020.</p> <p>Proper MSW treatment reduces greenhouse gas emissions by approximately 4 million tons per annum.</p>	<p>Central and municipal government reports and statistics</p> <p>Published environmental market and industry reports</p>	<p><b>Assumptions</b> The PRC remains committed to improving environmental protection.</p> <p>Private sector continues investment in environmental protection sectors.</p> <p><b>Risk</b> MSW generation grows faster than the Government's assessment.</p>
<p><b>Outcome</b> Technically and financially stable WTE plants based on public-private partnerships process MSW and generate electricity in municipalities.</p>	<p>MSW from 16 million urban residents is treated by 2013.</p> <p>Approximately 800 GWh of clean energy is produced annually by WTE plants</p> <p>Greenhouse gas emissions are reduced by approximately 350,000 tons per annum, improving urban air quality.</p> <p>Rates of return of joint ventures exceed 12%.</p>	<p>Central and municipal government reports and statistics</p> <p>Published environmental protection industry reports</p> <p>Project monitoring reports</p>	<p><b>Assumption</b> Municipal governments and off-takers honor the concession and MSW supply agreements.</p> <p><b>Risks</b> Competitive bidding projects' profitability.</p> <p>Private sector and commercial banks are not interested or do not have the capacity to provide loans for WTE projects.</p> <p>Unforeseeable technical issues keep the plants from being fully utilized.</p>
<p><b>Outputs</b> Installation and operation of four WTE plants by 2013</p> <p>Dissemination of lesson learned on the operation of the WTE plants by 2019</p>	<p>At least two municipalities award concessions by 2011.</p> <p>Daily processing capacity of 8,000 tons of MSW by 2013</p>	<p>Project monitoring reports</p> <p>Annual project reviews</p> <p>Annual and final TA reports</p> <p>TA conferences and/or seminars</p>	<p><b>Assumption</b> Project sponsor maintains technical and operating capacity to identify WTE projects and implement services.</p> <p><b>Risk</b> The willingness of municipal governments to invite private sector participation is limited.</p>

ADB = Asian Development Bank, CEIL = China Everbright International Limited, GWh = gigawatt-hour, MSW = municipal solid waste, PRC = People's Republic of China, Q = quarter, TA = technical assistance, WTE = waste to energy.