



Case Study of PPP

Municipal Waste to Energy Project in the People's Republic of China

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Municipal Solid Waste (MSW) in China

- The PRC is now the world's 2nd largest municipal solid waste (MSW) generator with annual waste volume of 220 million tons.
- Yet the PRC's per capita MSW is only about 20% of the average of OECD countries, while the PRC adds another 200 million or more urban residents by 2025, leaving a significant MSW upward potential.



MSW in China (continued)

- Traditionally, governments were responsible for the provision, financing and management of waste management services.
- An imbalance in the quality of municipal waste management infrastructure development is observed by city size.
 - Prefecture-level cities have started implementing waste management projects on PPP basis, yet still more than 20% of municipal waste is dumped in un-engineered landfills.
 - Smaller cities have limited capacity which resulted in larger challenges with untreated wastes which in turn emit harmful gases and contaminate soil and groundwater.

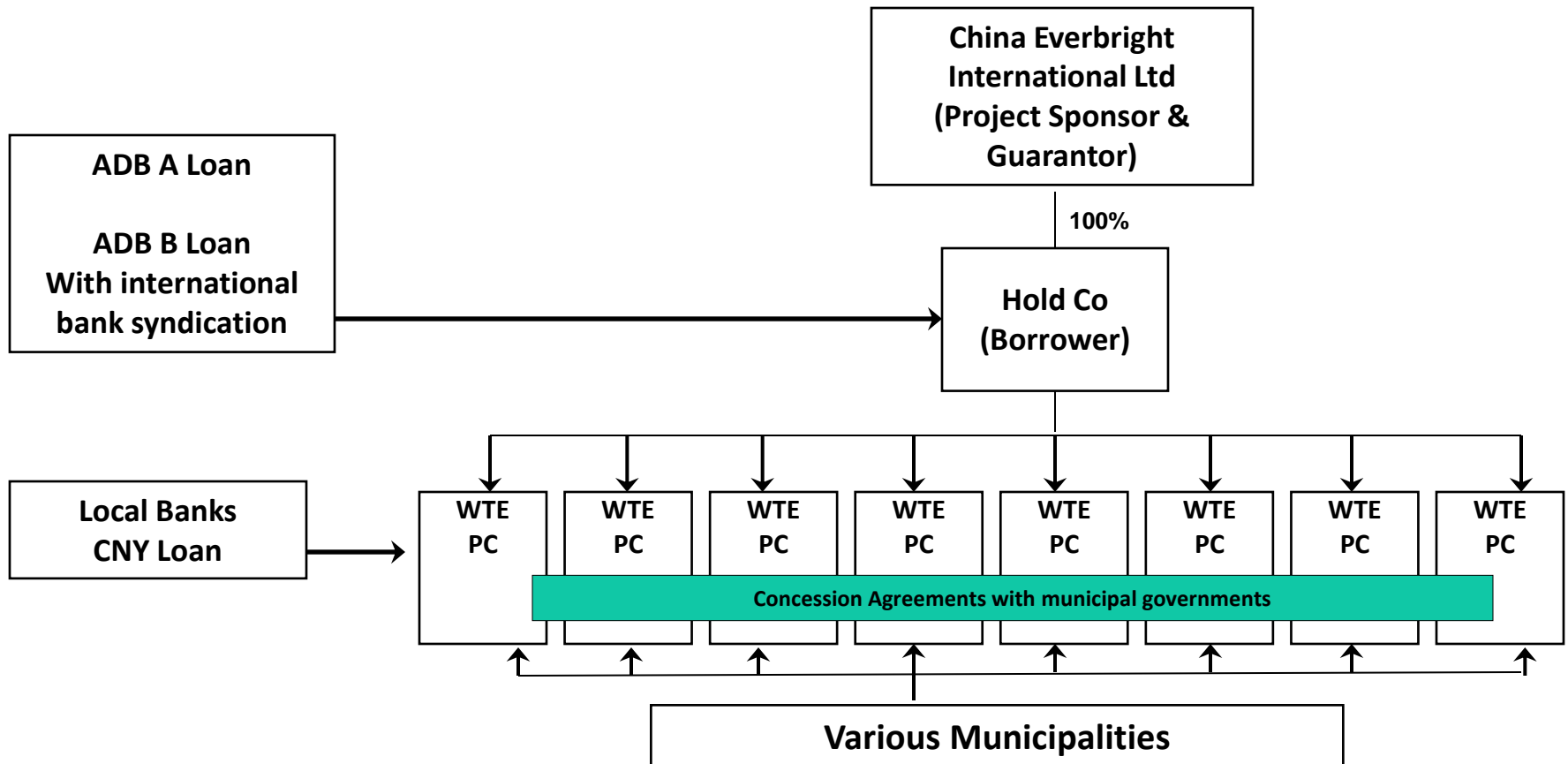
Waste to Energy (WTE) as a Solution

- Use of WTE is recognized as the single most effective method for MSW treatment which realizes a 90% reduction in waste volume and eliminates methane gas emissions from the waste management processes.
- WTE recovers the waste heat from incineration process and steadily produces electricity and heat, a substitute for fossil fuel combustion.
- Key Issues:
 - Technologies and operation know-how
 - Citizens' concern on the air / water emissions from the WTE plants
 - Access to Finance

Our Response

- ADB selected the clean technologies (which do not require coal) and offered a “portfolio” approach to support multiple WTE subprojects which are often too small and time-consuming for international banks to finance on a stand-alone basis.
- ADB’s loans have two components:
 - A : USD loan of up to \$100 million
 - B : USD loan of up to \$100 million through international bank syndication
- The loans will be channeled to subprojects in various municipalities and be repaid from cashflows of existing and new WTE projects.
- Value-added with technical assistance on environment and social management system to demonstrate “clean” WTE projects which meet the world’s most stringent emission standards.

Project Structure



WTE PC: Waste to Energy Project Company

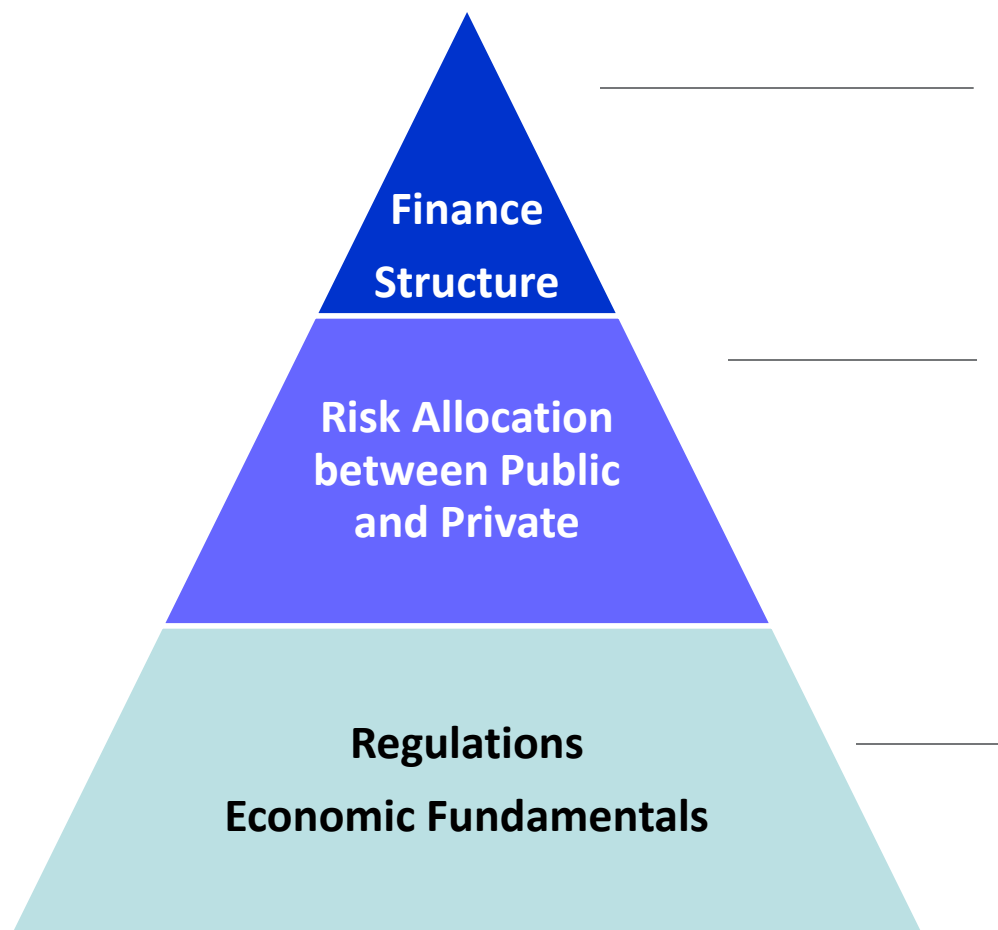
Summary of Role of Government and Private Operator under WTE PPP

- Municipal Government
 - Arrange tender and select private sector concessionaire through transparent bidding procedure (BOT arrangement)
 - Award 25-30 year concession based on template concession agreement
 - Responsibilities include (i) land acquisition, (ii) collection and delivery of guaranteed amount of waste to the plant, (iii) payment of waste tipping fee.
- State Power Grid
 - Payment of preferential tariff (as renewable energy) and 100% off-take
- Private Operator (Concessionaire)
 - Treatment of pre-agreed amount of municipal solid waste
 - Compliance with emission standards
 - Arrangement of finance

WTE Power Tariff

- Implementation Policies of Renewable Energy Price and Cost-sharing Management, NDRC (2006)
 - Power tariff at premium of CNY0.25/kWh above provincial benchmark tariff for waste-to-energy and methane-to-energy projects
- Administrative Measures of Full Purchase of Electricity Using Renewable Energy Resources by Grid Enterprises, SERC (2007)
 - Obligation of grid company to purchase all electricity and priority dispatch
- Notice on Improving the Policies for Waste Incineration Power Prices, NDRC (2012)
 - Feed-in-tariff of CNY0.65 per kilowatt-hour for municipal WTE projects

Summary of PPP Key Ingredients



- Flexible financing structure
- Minimize transaction costs of smaller projects
- Equitable risk sharing : risk should reside with party most able to manage it. Commercial Issues such as tenure, termination regime and step-in rights.
- Key items:
 - Essentiality
 - Equitable tariff structure
 - Model concession agreement
 - Transparency

Agricultural and Municipal Waste to Energy Project (signed in 2012)



- Agricultural waste management is a growing challenge for PRC, with 45% of the straw directly burned or abandoned and 37% of MSW untreated
- ADB supports China Everbright International to extend its operation to the agricultural WTE business and expand municipal WTE project as solid base to penetrate into agricultural WTE market
- ADB's assistance:
 - A loan: up to \$100 million
 - B loan: up to \$100 million
- Key Features:
 - Encouraging the existing project sponsor to venture into rural area
 - Creating additional income for farmers

Dynagreen Waste to Energy Project (signed in 2013)



- The project is to address imbalance in the quality of waste management between large and small cities
 - ADB will support Dynagreen to treat waste and generate clean electricity based on concessions in the small-medium cities
 - ADB's assistance:
 - A loan: \$100 million (local currency)
 - Complementary loan: \$100 million (local currency)
 - \$500,000 TA for corporate governance
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- Key Features:
 - Know-how transfer to smaller municipalities
 - Catalyzing financing from local commercial banks