

**Landfill Gas (LFG)  
Emission Reduction Purchase Agreements  
(ERPAs)  
in China**

**Case Study: Tianjin**

# Methane – Greenhouse Gases (GHGs)

- 23% GHGs from non-CO<sub>2</sub> emissions  
Human related activities
- 15% of GHGs from methane  
Global warming potential: 21 times CO<sub>2</sub>
- Landfills – 4<sup>th</sup> largest contributor to non-CO<sub>2</sub> GHGs

# Kyoto Protocol

- GHG emissions control through 2012 by Annex 1 countries (industrialized)
- Clean Development Mechanism (CDM) allows Annex 1 countries to buy emission reductions in developing countries

# CDM Project Development Stages

- Project Idea Note (PIN)
- Letter of Intent (LoI)
- Project Design Document (PDD)
- Validation
- Emission Reduction Purchase Agreement (ERPA)
- Registration

# CDM Projects

- Registered projects: 785  
56 LFG projects, registered (7.1%)

## China

6 registered LFG projects

2 projects: Review Requested

Additional projects in development – Tianjin,  
ERPA between Tianjin Clean Energy and  
Environment (TCEEE) and World Bank

# Registered CDM Projects (LFG), China

Project Name	Province	tCO <sub>2</sub> e – annual average
<b>REGISTERED</b>		
Nanjing Tianjingwa Landfill Gas to Electricity Project	Jiangsu	246,107
Meizhou Landfills Gas Recovery and Utilization as Energy	Guandong	286,525
Anding Landfill Gas Management and Utilisation Project	Beijing	75,557
Wuxi Taohashan Landfill Gas to Electricity	Jiangsu	75,343
Shenzhen Xiaping Landfill Gas Collection and Utilization Project	Guangdong	471,619
Jinan Landfill Gas to Energy Project	Shandong	112,908
<b>REVIEW REQUESTED</b>		
Guangzhou Xingfeng Landfill Gas Recovery and Electricity Generation CDM Project	Guandong	909,857
Jiaozishan Landfill Gas Recovery and Utilization Project	Jiangsu	153,244

# Tianjin Shuangkou Landfill

- Start of operations: 2001
- Waste receipts: 1,300 tons per day  
1.6 million tons received (December 2006)
- Disposal capacity: 7.4 million tons
- Site life remaining: 15 years

# Tianjin Shuangkou Landfill





# Tianjin Shuangkou LFG Carbon Finance Project

- CDM project ('Carbon Finance') – LFG to electricity
- TCEEE to sell 635,000 tCO<sub>2</sub>e to World Bank with option for 470,000 tCO<sub>2</sub>e
- Bank trustee for 10 funds, including the Spanish Carbon Fund, the buyer

# Critical Activities / Milestones

Critical Activities / Milestones	Date
PIN (Project Idea Note) Submitted by TCEEE approved by the Bank	June 2005
Lol (Letter of Intention) signed between TCEEE (project sponsor) and the Bank	January 2006
EIA (Environmental Impact Assessment) completed, Nankai University Approval by Tianjin Environmental Protection Board	June 2006 October 2006
PDD (Project Design Document), prepared by Shanghai JEC Environmental Consultant Co., Ltd. – initial PDD prepared in 2006, required revisions	April 2006- June 2007

# Critical Activities / Milestones

BOT contract and Nanjing Long Term Environment Technology and Development Co., Ltd., former Brambles LFG company (Australian) that withdrew from the China market	January 2006
Grid connection approval from the North China Power Grid Company and the Tianjin Electric Power Corporation	February 2006
ERPA negotiation: TCEEE and Bank	May 2007
ERPA signing	June 2007
LOA (Letter of Approval) from the Chinese DNA (Designated National Authority) – NDRC (National Development and Reform Commission)	July 2007

# Key Future Activities, Sept. 2007

<b>Key Future Activities, as of 14 September 2007</b>	<b>Expected Date</b>
LOA (Letter of Approval) to be received from the Spanish Carbon Fund (SCF), one of the funds for which the Bank is the trustee. The SCF was created in 2005 with a capital base of US\$202.7 million	September 2007
Validation process to be completion by the Designated Operational Entity (DOE): Japan Quality Assurance Organization (JQA) after the LOA is received from the SCF	October 2007
Public comment period (two months) after validator submits a 'request for registration'	October - November 2007

# Key Future Activities, Sept. 2007

Registration as a CDM project to be completed by the UNFCCC's (United Nations Framework Convention on Climate Change) CDM Executive Board	December 2007
LFG recovery operations start-up	Early 2008
Verification and first issuance (expected) of Certified Emission Reductions (CERs)	January 2009

# Conclusions

- Strong communications
- Trust between the project client (TCEEE) and buyer (World Bank, as trustee)

Long-term relationship between Tianjin and Bank important