

**Landfill Gas (LFG) Clean Development
Mechanism (CDM) Projects in China
Case Study: Tianjin**

**Washington International Renewable Energy
Conference**

March 4, 2008

Presentation Topics

- Global Warming
 - Greenhouse gas – Methane
 - Kyoto Protocol
 - Clean Development Mechanism (CDM)
- Case Study: Tianjin Shuangkou landfill

Greenhouse Gases (GHGs) - Methane

- 23% GHGs from non-CO₂ emissions
 - Human related activities
- 15% of GHGs from methane
 - Global warming potential: 21 times CO₂
- Landfills: 4th largest contributor to non-CO₂ 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: 948
 - 74 LFG projects, registered (7.1%)
- China
 - Registered: 8
 - Requesting Registration: 2
 - Validation: 12

Registered - CDM Projects (LFG), China

Project Name	Province	tCO ₂ e / yr
REGISTERED		
Nanjing Tianjingwa LFG to Electricity Project	Jiangsu	246,107
Meizhou LFG Recovery and Utilization as Energy	Guandong	286,525
Anding LFG Management and Utilisation Project	Beijing	75,557
Wuxi Taohashan LFG to Electricity	Jiangsu	75,343
Shenzhen Xiaping LFG Collection and Utilization Project	Guangdong	471,619
Jinan LFG to Energy Project	Shandong	112,908
Guangzhou Xingfeng LFG Recovery / Electricity Generation CDM Project	Guandong	909,857
Jiaozishan Landfill Gas Recovery and Utilization Project	Jiangsu	153,244
REQUESTING REGISTRATION		
Tianjin Shuangkou LFG Recovery / Electricity Generation	Tianjin	130,444
Nanning LFG to Energy Project	Guangxi	188,195

Seeking Validation - CDM Projects (LFG), China

Project Name	Province	tCO ₂ e / yr
Kunming-Wuhua LFG to Energy Project	Yunnan	142,909
Nanchang Maiyuan LFG Extraction and Power Project	Jiangxi	193,500
Fuzhou Hongmiaoling LFG to Electricity Project	Fujian	144,325
LFG Extraction Shenyang Laohuchong MSW Landfill, NE China	Liaoning	124,106
Xuzhou LFG Utilisation Project	Jiangsu	215,908
Huai'an Wang Yuan LFG Utilisation Project	Jiangsu	190,016
Kuming Guandu Landfill Site LFG, CDM Project	Yunnan	62,891
Shenyang Daxin LFG to Electricity Project	Liaoning	163,203
Hunan Changsha Qiaoyi LFG Recovery / Electricity Gen Project	Hunan	238,319
Mianyang LFG Utilisation Project	Sichuan	167,387
Suzhou LFG Utilisation Project	Anhui	315,804
Xiamen Dongfu LFG to Energy Project	Fujian	101,736

China / Tianjin



Case Study - Tianjin Shuangkou Landfill

- Construction: 1999
 - Finance: World Bank loan
- Operations: 2001
- Waste receipts: 1,300 tons per day
 - In-place Waste: 2.0 million tons (Dec 2006)
- Disposal capacity (future): 5.4 million tons
- Site life remaining: 14 years

Tianjin Shuangkou Landfill



Tianjin Shuangkou LFG – Carbon Finance Project

- CDM project ('Carbon Finance') – LFG to electricity
- Tianjin Clean Energy and Environmental Engineering Co., Ltd.(TCEEE) to sell 635,000 tCO₂e to World Bank with option for 470,000 tCO₂e
- 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	Jan 2006
EIA (Environmental Impact Assessment) completed, Nankai University Approval by Tianjin Environmental Protection Board	June 2006 Oct 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

Critical Activities / Milestones	Date
BOT contract and Nanjing Long Term Environment Technology and Development Co., Ltd., former Brambles LFG company (Australian) that withdrew from the China market	Jan 2006
Grid connection approval from the North China Power Grid Company and the Tianjin Electric Power Corp.	Feb 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

Critical Activities / Milestones

Critical Activities / Milestones	Date
LOA (Letter of Approval) 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	Nov 2007
Validation process completed by the Designated Operational Entity (DOE): Japan Quality Assurance Organization (JQA) after the LOA was received from the SCF	Dec 2007
Public comment period (two months) after validator submits a 'request for registration'	Jan - Feb 2008

Key Future Activities, Feb. 2008

Critical Activities / Milestones	Expected Date
Registration as a CDM project to be completed by the UNFCCC's (United Nations Framework Convention on Climate Change) CDM Executive Board	March 2008
LFG recovery operations start-up	April 2008
Verification and first issuance (expected) of Certified Emission Reductions (CERs)	April 2009

LFG Header Pipe



Construction of Combustion Engine / Generator Building



Conclusions

- Strong communications
- Trust between the project client (TCEEE) and buyer (World Bank, as trustee)
 - Long-term relationship between Tianjin and Bank important

Thank you

Information Contact

Charles Peterson

- cpeterson@worldbank.org