



# Methane to Markets

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Landfill Subcommittee Report to Steering Committee

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Monterrey, Mexico

# Overview

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- Sector Action Plan Summary
- Activities since the 2007 Beijing Meeting
  - Recent Subcommittee meetings
  - Partnership Expo Updates (e.g., projects)
  - Selected Subcommittee Achievements
  - Activities by Country
- Issues for Consideration/Decision by the Steering Committee
- Next Steps and Conclusions

# Background and Sector Action Plan Overview

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- Barrier #1: Lack of **country-specific** information on landfill, LFG management practices, policies and regulatory frameworks affecting LFG, and suitable landfills in Partner countries for potential LFG project assessment and development
  
- Planned Action Items:
  - Continue to Identify New Delegates for Countries with Inactive Participation
  - Outreach on the International Landfill Database to promote database population
  - Institute routine schedule of data updates for International Landfill Database
  - Continue to post results of pre-feasibility studies and assessment reports
  - Continue landfill O&M training sessions, and partner with International Solid Waste Association (ISWA) on ISWA training sessions
  - Partnering with International Energy Agency to develop renewable energy database module for LFG
  - Delegates to complete country-specific action plans and a roadmap for how to conduct LFG business in their country

# Background and Sector Action Plan Overview

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- Barrier #2: Insufficient in-country knowledge and experience in obtaining finance and developing LFG recovery and use projects
- Planned Action Items:
  - Focused technical assistance to smaller landfills on modeling, O&M, and financing projects
  - Continue to develop country-specific models and modeling guidance
  - Engage multi-lateral funding agencies (World Bank, Inter-American Development Bank) in the Subcommittee work

# Subcommittee Achievements since November 2007

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- **8<sup>th</sup> Landfill Subcommittee Meeting – 18 June 2008, Buenos Aires, Argentina**
  - 19 attendees
  - Partner Countries: Argentina, Brazil, Ecuador, and United States
  - Project Network: Ameresco, Bunge, UNICEN, ISWA, Finning International, SCS Engineers
  - Approved and posted country-specific action plan template
  - Prioritized subcommittee action plan to focus on data gathering
  - Discussed regional meeting structure
  
- **M2M Asia Pacific Regional Discussion – 3 November 2008, Singapore**
  - Delegate Attendees included China and United States
  - Project Network Attendees included International Solid Waste Association (ISWA), OWT Hong Kong, SCS Engineers, QED Environmental Systems
  - Other participants included a government representative from Serbia and representative from John Zink Flares
  - Collaborated with ISWA on collecting data for International Landfill Database
  - Discussed modeled vs. expected values, leachate saturation, and update on LFG regulations in China and India

# Subcommittee Achievements since November 2007 (con't)

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- **Populating International Landfill Database**
  - Since International Landfill Database was launched in September 2007, focus has been on encouraging use of the tool and data entry. Since November 2007:
    - Number of registered users has increased from 257 to 774
    - Number of Partner Countries with landfills in the database increased from 4 to 9
    - Number of landfills tracked in the database increased from 245 to 302
    - Tool now links to external landfill databases in Brazil and U.S.
- **Country-Specific Action Plans**
  - Added a domestic and international strategy section to existing landfill country profile to minimize new reporting guidelines
  - As of January 5, 2009, updated country action plans have been submitted for Canada, China, and United States
  - Landfill Country Profiles for Argentina, Australia, Brazil, Italy, Japan, and the U.K were previously submitted

## Subcommittee Achievements since November 2007 (con't)

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- **2007 Partnership Expo Site Updates**
  - Argentina – San Javier has signed an ERPA with World Bank and engineering for LFG recovery plant is complete
  - China – Gaoantun Landfill has signed an ERPA with an Italian Company
  - Colombia – La Pradera Landfill will be inaugurated by the Colombian national government in 2009
  - Ecuador – Las Iguanas Landfill in Guayaquil is discussing several biogas Project opportunities with project developers.
  - India – Deonar Landfill in Mumbai is negotiating with Ministry of New and Renewable Energy for a favorable energy tariff

## *Activities by Country*

*(NOTE: include only those M2M countries that are actually on in the Subcommittee)*

- Argentina
  - Hosted 8<sup>th</sup> Landfill Subcommittee meeting, in conjunction with International Solid Waste Association Beacon Conference on Sanitary Landfills
  - University of the Central Province of Buenos Aires was 2008 M2M Grant recipient for using LFG as a pyrolysis furnace for medical waste
  - CIFAL provided workshop on LFG opportunities in Buenos Aires (6-7 November 2008) under 2007 M2M grant
  
- Brazil
  - Promar Foundation was 2008 M2M Grant recipient for Landfill Management in Espirito Santo
  - CIFAL provided workshop on LFG opportunities in Sao Paolo (4-5 September 2008) under 2007 M2M grant
  
- Canada
  - Submitted country-specific action plan (June 2008)



## *Activities by Country (con't)*

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- Colombia
  - CIFAL provided workshop on LFG opportunities in Barranquilla (27-28 March 2008) under 2007 M2M grant
  
- China
  - Submitted country-specific action plan
  - Environmental Sanitation Engineering Technical Research Center was 2008 M2M Grant recipient for a LFG feasibility study
  
- Ecuador
  - Roberto Urquizo named as vice-chair of subcommittee
  - Municipality of Guayaquil was 2008 M2M grant recipient for researching activities to advance methane recovery and use at Las Iguanas landfill
  - CIFAL provided workshop on LFG opportunities in Quito (22-23 July 2008) under 2007 M2M grant
  
- India
  - Institute for Environmental Management was 2008 M2M grant recipient for Improving LFG recovery

## *Activities by Country (con't)*

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- Mexico
  - Hosted 9<sup>th</sup> Landfill Subcommittee meeting in Monterrey
  - Border Environment Commission Completed LFG feasibility studies for Satio, Coahuila, Hermosillo and Sonora landfills
- Nigeria
  - Center for People and the Environment was 2008 M2M grant recipient for pre-feasibility study of LFG to electricity
  - ISWA completed inventory of Nigerian landfills under 2007 M2M grant. Data was added to International Landfill Database.

## *Activities by Country (con't)*

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- Republic of Korea
  - Korean District Heating Corporation completed 3 landfill pre-feasibility studies for LFG recovery and use under 2007 M2M grant
- Ukraine
  - 2008 M2M grant recipient for LFG feasibility study at Rivne Landfill

## *Activities by Country (con't)*

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- United States
  - Funded and prepared 6 new pre-feasibility studies and assessment reports for India, China, and Ukraine
  - Finalized 14 pre-feasibility studies and assessment reports from Expo projects
  - International Landfill Database (ILD)
    - Sponsored ILD data server
    - Funded database administration and design updates to include a new LFG energy project module

## *Activities by Country (con't)*

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- United States (cont'd)
  - Workshops and Conferences - Conducted 8 Training Workshops on LFG and Landfill O&M – reaching nearly 700 people
    - Landfill O&M Training Courses
      - Buenos Aires, Argentina
      - Kiev, Ukraine
    - Landfill Gas Energy Workshops
      - Krakow Poland
      - São Paolo, Brazil
      - Shenzen and Beijing China
      - Colombia (two workshops)
    - Presented at:
      - 5<sup>th</sup> Asian-Pacific Landfill Symposium: Sapporo, Japan
      - Global Waste Management Symposium: Colorado, USA
      - 2008 ISWA Annual Congress: Singapore
      - ISWA Beacon Conference on Sanitary Landfills: Buenos Aires
      - National Environmental Engineering Research Institute Air Pollution Control Conference: Nagpur, India

# Issues for Consideration/Decision by the Steering Committee

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- **Does Steering Committee support regional meeting structure proposed by landfill subcommittee?**

## Next Steps

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- Next Steps
  - Plan 10<sup>th</sup> Landfill Subcommittee Meeting
  - Plan technical agenda for Partnership Expo 2010
  - Identify new landfills for LFG pre-feasibility studies
  - Collect and enter data in International Landfill Database
  - Expand landfill O&M training events to improve site conditions for gas recovery

# Conclusions

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- Conclusions
  - Since November 2007 the landfill subcommittee prioritized its efforts to improve access to data and information on candidate sites for LFG recovery and train landfill personnel.
  - Significant accomplishments made to address the barriers of lack of information and training include:
    - Finalized and posted results of LFG pre-feasibility studies on Partnership Project Tracking Database
    - Expanded the number of landfills included in the International Landfill Database
    - Trained landfill personnel and LFG stakeholders on landfill O&M practices and beneficial use LFG recovery technologies