Overview of Landfill Technical Session Attendance

- Average of over 75 attendees per session
- Comprised of national and municipal governments, landfill and landfill gas industry (e.g., project financiers, developers, technology vendors, consultants)
- Strong participation in Q&A stimulated discussion and suggestions for advancing LFG recovery and use under M2M.
## Landfill Sector Posters and Flyers Displayed at the Expo

<table>
<thead>
<tr>
<th>Country</th>
<th>Landfills</th>
<th>Estimated Average Annual Potential Emission Reductions (MTCO2E) over a 15-year project life</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>5</td>
<td>201,900</td>
</tr>
<tr>
<td>Brazil</td>
<td>11</td>
<td>13,824,000</td>
</tr>
<tr>
<td>China</td>
<td>11</td>
<td>199,600 (estimates only available for 5 out of 11 sites)</td>
</tr>
<tr>
<td>Colombia</td>
<td>4</td>
<td>1,688,400</td>
</tr>
<tr>
<td>Ecuador</td>
<td>5</td>
<td>692,900</td>
</tr>
<tr>
<td>India</td>
<td>3</td>
<td>191,200</td>
</tr>
<tr>
<td>Mexico</td>
<td>4</td>
<td>246,700</td>
</tr>
<tr>
<td>Ukraine</td>
<td>4</td>
<td>185,100</td>
</tr>
<tr>
<td>Russia</td>
<td>1</td>
<td>323,700</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>49</strong></td>
<td><strong>17,553,000</strong></td>
</tr>
</tbody>
</table>
Overview and Outcomes of Technical Sessions

DAY 1: Framing the Barriers to LFG

- Image of LFG as an “under-performer” due to:
  - Modeling errors
  - Poor assumptions with respect to actual conditions
    - Waste streams
    - Site Engineering
    - Site Management
    - Environment/Climate
  - Capacity to Operate and Maintain the LFG collection system over the long-term
  - Lack of robust financial sensitivity analysis
  - Contractual/Ownership disagreements
  - Barriers to mid- to small landfill projects
Experiences Shared in Solving the Problems

- **Modeling**
  - Development of country-specific LFG models and multi k models
  - Assessment and guidance for reasonable modeling parameters

- **Field Data to Improve LFG Prediction**
  - An essential component for projecting international LFG projects
  - Ongoing data collection helps to communicate how landfill operations impact gas collection

- **Landfill and LFG Collection Operation and Maintenance**
  - Alternative cover materials and landfill operation and maintenance practices to maximize collection efficiencies
  - Hands-on approach to landfill operator capacity training

- **Technology Experience and Improvement**
  - LFG technologies and project development experience is over 30 years old (conventional/proven)
  - Challenge is to adapt and communicate these technologies to each country’s solid waste management situation
Potential for Future Growth

- LFG industry leaders reinforced the remaining capacity of this market for the foreseeable future
  - Methane mitigation opportunities provide capital and innovation to advance LFG projects
  - To date approximately 50 LFG CDM projects, but there is potential for thousands more
    - Tonnes of waste generated and sent to landfills will continue to increase, especially as developing countries transition to more consumer-based economies
    - Engineering, design, and operation of landfills are evolving into sites that have planned for LFG collection
    - In today’s global energy markets, demand exists for locally produced, reliable energy sources
  - Small LFG Projects
    - Innovative applications of small amounts of gas
    - Bundling smaller sites to reduce fixed costs of CDM development
Landfill Gas Sector Needs

- Country-specific information and tools
  - Guidelines for gas collection potential from annual waste acceptance
  - Models
- Tracking
  - New and improved LFG methodologies
  - Country-specific regulatory frameworks and incentives such as renewable energy tariffs
- Posting results and communicating lessons learned from recent assessment reports and pre-feasibility studies