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Wastewater Sector Overview

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Wastewater Sector Overview

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Emissions from Wastewater

- Methane is emitted during the handling and treatment of municipal and industrial wastewater, which is comprised of approximately 60% methane and 40% CO_2.
- The organic matter in wastewater produces methane when it decomposes anaerobically.
  - Centralized aerobic wastewater treatment systems (with or without anaerobic sludge digesters) emit small and incidental amounts of methane.
  - Anaerobic systems such as lagoons, open sewers, septic systems, and latrines yield considerable methane emissions.
  - Wastewater from industrial operations also generate methane emissions, with agriculture and pulp and paper operations the largest industrial sources.

Emissions from Wastewater (con't)

- Wastewater accounts for 9% (594.04 MMTCO$_2$E) of the estimated global anthropogenic methane emissions—more than manure management (4%) or even coal mining (6%).
- China, India, the United States, Indonesia, and Brazil are the world's largest emitters in this sector (see next slide), and GMI Partners alone account for nearly 70% of total global wastewater emissions.
- Total estimated methane emissions from waste-water are expected to increase by nearly 20% in the next 10 years.

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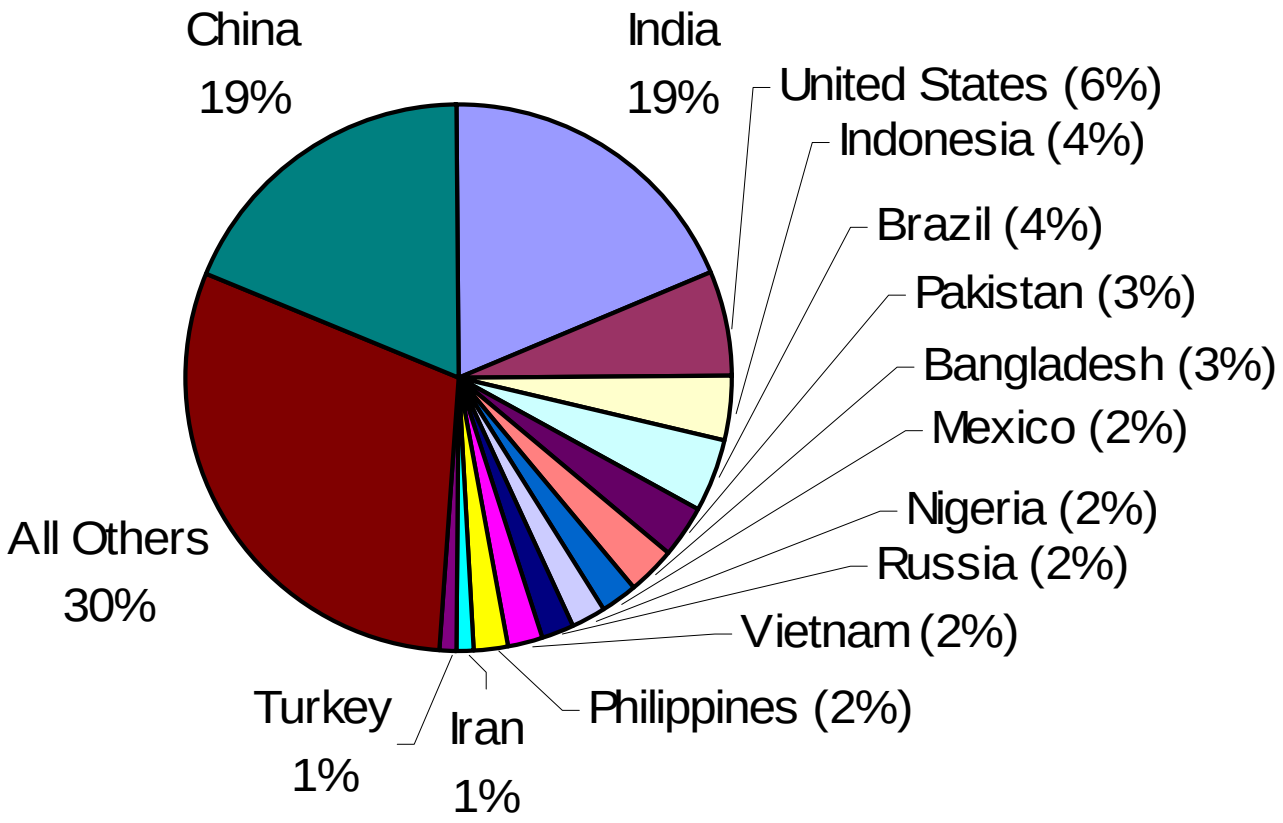
Worldwide Methane Emissions from Wastewater



Source: EPA, 2006

Clean Energy Benefits

- Cost-effective technologies that deliver clean energy from this source are widely available.
- Benefits of using wastewater digester gas include:
  - Energy cost savings from the utilization of wastewater treatment gas.
  - Stabilized energy costs and production (i.e., protection from the volatility of gas and electricity prices).
  - Progress toward national goals for use of renewable energy.
  - Enhanced energy security from reduced vulnerability to power grid interruptions.
  - Reduced GHG emissions from avoided venting directly to the atmosphere, and from flaring or utilization.
  - Improved local air and water quality.

Mitigation Options/Challenges

- Mitigation options include:
  - Installation of:
    - Anaerobic sludge digestion (new construction or retrofit of existing aerobic treatment systems).
    - Biogas capture systems at existing open air anaerobic lagoons.
    - New centralized aerobic treatment facilities or covered lagoons.
  - Biogas can also be flared and/or used to generate electricity or produce heat.
- Despite options, there are still many challenges:
  - High initial capital costs
  - Lack of local capacity to design and maintain systems
  - Site-specific design characteristics
  - Utility policy barriers
  - Social taboos
  - Limited onsite demand for electricity or heat

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GMI Wastewater Background

- Initially raised/discussed at the January 2009 Steering Committee meeting.
  - Steering Committee tasked ASG with developing a scoping paper to assess the potential for including wastewater in the Partnership.
- ASG presented paper at the September 2009 Steering Committee meeting.
  - Based on findings, the Steering Committee recognized this sector had potential to achieve methane capture and utilization in the near term.
- During March 2010 meeting, the Steering Committee agreed to modify the Terms of Reference (TOR) to add the wastewater sector.

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GMI Wastewater Background (con't)

- The Steering Committee also decided to convene a Wastewater Task Force to assess Partner interest, evaluate possible inclusion in Landfill Subcommittee, and discuss other issues.

- The Wastewater Task Force convened its first meeting via conference call in July 2010.
  - Based on these discussions, the ASG proposed holding a Wastewater Task Force meeting in conjunction with the Landfill & Agriculture Subcommittee meetings.

- At the September 2010 meeting, the Steering Committee adopted the revised TOR language adding wastewater as an area of focus, and approved holding the Venice Wastewater Task Force meeting.

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Potential GMI Activities

- Play a catalytic role in supporting the analysis and documentation of technical and economical options for methane emissions reduction.

- Address questions such as:
  - Definition of the wastewater scope (e.g., municipal v. industrial).
  - How to cost-effectively cover existing anaerobic lagoons to minimize emissions and recover biogas.
  - What are the most cost-effective and technology-appropriate options for anaerobic digestion of sludge, especially in developing countries.

Potential GMI Activities (con't)

- Explore partnership opportunities with NGOs promoting methane emissions reductions in wastewater treatment.
  - Water Environment Federation (WEF)
  - International Water Association (IWA)
  - Global Water Partnership (GWP)
  - Water Supply and Sanitation Council
- Engage Carbon Finance Units and regional divisions of multilateral development banks (MDBs) and other international donor organizations where large wastewater projects are designed.
  - World Bank
  - African, Asian, and Inter-American Development Banks

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Next Steps

- At this meeting and following it, Wastewater Task Force should think about what to recommend for the Steering Committee's consideration at its next meeting.