



Methane to Markets

Agriculture Subcommittee Report to Steering Committee

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Overview

- Activities since March 2010
 - New Delhi Subcommittee Meeting Highlights
 - Finalization of *International Guidance for Quantifying and Reporting the Performance of Anaerobic Digestion Systems for Livestock Manures*
 - International AD database and tool started

- Next Steps

Subcommittee Activities Since March 2010

- **New Delhi Subcommittee Highlights**
 - International Guidance for AD
 - Subcommittee members provided final comments
 - Enteric Fermentation and Rice Cultivation
 - Subcommittee decided to continue to reach out to other organizations working with these sources
 - Future Work of the Subcommittee
 - Develop an international database of operating AD systems
 - Create a tool to help plan AD systems, which provides estimates of emission reductions, biogas production potential, and costs

Subcommittee Activities Since March 2010 *(continued)*

- International Guidance for AD
 - All comments addressed
 - Guidance finalized in July 2010

- International Database and Tool
 - U.S. EPA has started work on these tasks
 - U.S. EPA will develop the framework
 - Agriculture Subcommittee members will provide country-specific input

Next Steps

- Next Subcommittee Meeting
 - November 11th
 - Venice, Italy
 - In conjunction with the
 - International Symposium on Energy from Biomass and Waste
 - Landfill Subcommittee Meeting, and
 - Wastewater Task Force Meeting.

- Next Steps
 - Agriculture Subcommittee members will implement the international guidance
 - U.S. EPA will continue the development of an international AD database and tool

Appendix: Example Activities by Country

- **Argentina**
 - AD projects are being conducted at the Instituto Nacional de Tecnología Agropecuaria (INTA) Research Center.
 - INTA has also created a new bioenergy program, under which AD will be supported as a bioenergy source.
 - U.S. EPA has collaborated with INTA to develop a country assessment.
 - Several new projects were set up in the agricultural and agroindustrial sector
 - There is a development of a M2M Argentina partnership organizing different institutions and private sector.

- **Australia**
 - The Australian Government has pledged to use 20 percent renewable energy by the year 2020 and is in the process of establishing a mandatory GHG trading scheme.
 - The Australian government and industry research organizations have invested approximately \$2 million towards the research and development of methane capture and use technology in the Australian intensive livestock industries.

- **Canada**
 - Canada currently has approximately 40 operating or soon to be operating AD systems.
 - Several provinces have adopted policies to increase the use of renewable energy and decrease GHG emissions.
 - Canadian scientists have conducted research on field measurements of agricultural methane emissions using infrared technology. These experiments include some farms that have AD systems in place.

Appendix: Example Activities by Country (continued)

- **China**
 - In 2009, the federal government granted \$8 billion RMB for biogas development.
 - Chinese Ministry of Agriculture is partnering with EPA on a number of initiatives to expand improved village- scale digesters and technical training in rural areas.
 - A market assessment of methane recovery and use opportunities in the livestock and agro-industrial waste sector was completed and shows that the most potential for projects and methane reduction is in the southeastern region particularly in medium to large farms in Hunan.
 - The World Bank has provided funding to develop affordable pollution control methods for livestock waste management. This now includes a demonstration projects in Guangzhou (\$7M) and Shanghai (\$5M).

- **Colombia**
 - Country resource assessment under way.
 - U.S. EPA providing funding for a pre-feasibility study for a slaughterhouse facility and processing plant.

- **India**
 - Currently, 4 million household AD systems utilize the biogas produced from cattle manure.
 - There are also approximately 2,000 larger scale biogas systems in operation at large farms. Some of these plants use commingled waste streams including manure and food waste or slaughterhouse waste.
 - Indian authorities are working with the United States to expand the Indian AgSTAR program from the dairy sector to distillery and winery sectors.

Appendix: Example Activities by Country (continued)

- **Mexico**
 - There are currently 449 AD systems in Mexico that include 89 AD projects registered under the Kyoto Protocol's Clean Development Mechanism (CDM).
 - SEMARNAT has corroborated with the U.S. to develop a series of commercial-scale demonstration farms at various swine farms to raise awareness and technical capability within Mexico.
 - USEPA is assisting SEMARNAT to implement the next phase to advance the capability of the Mexican anaerobic digester industry.

- **Philippines**
 - US EPA is collaborating to develop a country assessment.

- **Thailand**
 - The swine sector has the greatest potential for AD development because cattle farms are small and generally pasture based.
 - At large and medium scale swine farms, there is the potential to produce 2.2 million tons of CO₂ equivalents of methane each year in Thailand.
 - Currently 600,000 tons of CO₂ equivalents of methane are captured from swine waste; the goal is to capture 2 million tons by the year 2012.
 - In 2008, Thailand began working with M2M to reduce methane from swine farms in three provinces located near Bangkok.

Appendix: Example Activities by Country (continued)

- **United Kingdom**
 - U.K. Government along with stakeholders has developed an AD Implementation Plan for publication in March 2010.
 - Financial incentives for renewable energy including biogas include:
 - Renewable Obligation Certificates (ROCs) for large scale electricity
 - A feed-in tariff for electricity up to 5MW – April 2010
 - A renewable heat incentive – April 2011
 - Standard for digestate BSI PAS110 and industry certification scheme to be launched soon
 - Financial support for AD projects and research is available through U.K. grant programmes, including:
 - Bio-energy Capital Grants Scheme,
 - Rural Development Programme for England, and
 - WRAP's Organics Capital Grant Programme.
 - U.K. government funding a 10 million pound demonstration programme to show the different benefits of the innovative use of AD.
 - AD advice portal launched in September 2009
 - <http://www.biogas-info.co.uk/>

- **United States**
 - The AgSTAR Program develops awareness of AD systems in the U.S. and provides technical support to system developers and operators. EPA has been supporting the domestic biogas use programs through its AgSTAR program for more than 15 years.

Appendix: Example Activities by Country (continued)

■ United States (continued)

- There are approximately 157 AD systems operating in the United States, mostly at dairy operations. These AD systems produce the equivalent of about 300 million kilowatt hours of electricity per year.
- The U.S. Farm Bill is the largest project financing system for AD systems, with \$2 million available for AD systems.
- Research is also being conducted by the U.S. Department of Agriculture (USDA) into nutrient removal from waste streams through digestion, co-digestion of various waste streams, and energy use from AD systems.
- In May 2010, USDA signed an interagency agreement with EPA to expand the work of the AgSTAR Program.
- The AgSTAR Program is currently updating its *Protocol for Quantifying and Reporting the Performance of AD Systems for Manure* to be more consistent with the International Guidance.
- Internationally, EPA has provided grant money for projects related to M2M.

■ Vietnam

- The World Bank has provided funding to develop affordable pollution control methods for livestock waste management, while EPA has provided technical assistance necessary to implement these projects.
- Through the deployment of AD technologies, the program mitigates water pollution from confined swine production and promotes institutional capacity building and policy development and implementation. In addition, the program includes support for pollution reduction quantification.