



Agriculture

Methane produced and emitted during the anaerobic decomposition of organic material, such as livestock manure, can be reduced, captured, and used as clean energy with the implementation of anaerobic digestion technology. The U.S. government is working with the Methane to Markets Partnership to advance the recovery and use of methane at livestock manure management operations by supporting public-private sector alliances in countries all over the world.

Livestock Waste Management in Southeast Asia

Together, EPA and the World Bank have been supporting livestock waste management projects in Southeast Asia. The World Bank has provided \$21 million to develop affordable pollution control methods for livestock waste management in China, Thailand, and Vietnam, and EPA has provided technical assistance to help implement these projects. The program promotes institutional capacity building and policy development and implementation. In addition, the program supports a measurement effort to quantify pollution reduction.

To date, five methane recovery projects are under construction, with approximately

12 more in planning stages. Each of these projects features systems designed to treat swine waste and recover methane (as biogas) for use as energy. For large operations, engine generators will be installed to produce electricity. Smaller farms and village systems will produce biogas primarily for use as cooking fuel.

Projected reductions from projects utilizing manure from 20,000 swine are estimated at approximately 5,000 tons of CO₂E annually.

Establishing Demonstration Projects in Mexico

Methane recovery is a relatively new concept in Mexico. Most animal waste from large agricultural operations is managed in lagoons, storage units, or discharged directly into surface waters. EPA and USAID are working throughout Mexico to capture and use methane from livestock waste management systems by promoting technology transfer and demonstration projects, strengthening capacity of local institutions, and developing supportive policies to nurture the methane capture industry.

EPA and USAID are creating demonstration projects to showcase the benefits of different methane capture and use technologies in various systems, farm sizes, and climates. The demonstrations operate

Table 1. Methane Capture and Use Demonstration Projects in Mexico

Project	Type of Farm	Number of Animals	Technology	Implementation Costs	Annual Emissions Reduction (TCO ₂ E)
Granja Pegui	Farrow-Finish	500	Bank-to-Bank	\$35,000	130
Guadalupe	Farrow-Wean	180	Bank-to-Bank	\$28,000	65
Paraíso	Farrow-Finish	170	Bank-to-Bank	\$25,000	60
Santa Mónica	Farrow-Finish	5,200	Bank-to-Bank	\$170,000	2,000
Granjas Carroll de México	Nursery	7,500	Modular Covers	\$100,000	800

in two high-density swine regions on a variety of farms and provide the tools for selecting the right technology for each farm type (see Table 1).

Investigating Agriculture Waste Management Opportunities in Colombia

In Colombia, information is not readily available about animal waste management practices that have large emissions profiles. EPA recently partnered with Colombia's Centro Nacional de Producción Más Limpia y Tecnologías Ambientales to support grantees' efforts to investigate current livestock waste management practices and potential technologies for fermentation and energy generation. This work is expected to generate an inventory of the most valuable agricultural waste in Colombia. This inventory will be a key contributor toward future project development.

EPA and USAID are also developing institutional capacity within Mexican agencies responsible for agricultural, environmental, energy, and rural development, such as the federal Environment and Natural Resources Secretariat (SEMARNAT) and the federal Agriculture, Rural Development, Fisheries, and Food Secretariat. Through these efforts, EPA and USAID are educating decision-makers about the financial and pollution control benefits of anaerobic digestion and fostering the development of policies, technical standards, and financing opportunities for anaerobic digestion projects as part of an integrated livestock waste management strategy.

Based on current estimates, the replication of U.S.-supported demonstration projects throughout Mexico could lead to annual emissions reductions of 600,000 tons of CO₂E.

