

SUMMARY OF MEXICO FINDINGS TO DATE
October 2010
Methane to Markets Support for Livestock and Agro-Industrial Wastes

1. THE GLOBAL METHANE INITIATIVE

The Global Methane Initiative is an initiative to reduce global methane emissions in four main sectors: agriculture, landfills, oil and gas and coal mines. USEPA is conducting livestock and agro-industry resource assessments (RA) in twelve countries. The objective is to identify and characterize the potential for incorporating anaerobic digestion into waste management systems to reduce methane emissions and provide a renewable source of energy. These RAs, together with feasibility studies and demonstration projects, will serve as the basis for future country-level policy planning and efforts to promote implementation.

2. CURRENT MEXICO FINDINGS TO DATE

Mexico's greenhouse gases (GHG) emissions reached 709 million tons of CO₂e in 2006 (4th Communication to UNFCCC). Agriculture and waste management account for 20% of total GHG emissions. The table below summarizes the current findings of the Mexico RA (October 2010).

Sector	Description of the sector and assumptions	Direct emissions ¹		Indirect ²	Total
		CH ₄ (MT CH ₄ / yr)	CO ₂ e (MT CO ₂ e / yr)	Fuel replacement (MT CO ₂ e / yr)	Direct + Indirect (MT CO ₂ e / yr)
Dairy cattle	6.8 million dairy cows, 10.6 MMT milk/yr, considered ~3.5 million cows in systems using lagoons	539,700	11,332,700	2,134,400	13,467,100
Swine	15 million pigs, considered 50% of industrial, 30% semi-industrial and 5% backyards (1.6 million pigs) use lagoons	29,600	622,400	117,200	739,600
Sugar + ethanol	57 sugar mills, ~5 MMT/yr sugar, 29% use lagoons; 4 distilleries, 19 ML/yr ethanol, all use lagoons, COD (kg/m ³): 3.2 (sugar), 100 (ethanol), WW (m ³ /MT): 11 (sugar), 12.5 (ethanol)	15,300	322,300	60,700	383,000
Slaughter houses	1.7 MMT cattle meat, 1.2 MMT pork meat, ~26% use open lagoons, COD: 4.1 kg/m ³ , WW: 13 m ³ /MT	7,800	164,800	31,000	195,900
Total		592,400	12,442,200	2,343,300	14,785,600

MMT: Million metric tons – ML: million liters – COD: Chemical Oxygen Demand – WW: Wastewater generation

¹. Baseline methane emissions due to the current waste management system; assume CO₂ GWP is 21

². Indirect emissions reduction potential: the emissions that would be reduced by fuel replacement through the use of biogas

3. BENEFITS

Anaerobic digestion provides the following benefits:

- 1) *Water, Greenhouse Gases, and Renewable Energy*: Stabilization of organic wastes and reduction of methane emissions, via combustion of captured methane (biogas) in either a flare or for use as a renewable energy resource. This improved waste management practice also improves kitchen air quality when gas is used as a cook fuel that replaces conventional woody biomass as a fuel source.
- 2) *Sanitation and Human Health*: Eliminates fly attracting odors thereby reducing this disease vector while also directly reducing pathogen levels in the treated wastewater



3) *Economics*: Off-setting of purchased fossil fuel energy as methane can be used as a fuel for electricity generation, and/or direct heat, or as a cooking fuel. In addition, many such facilities have availed themselves of carbon credits, further improving the economics of anaerobic digestion.