

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

1. THE METHANE TO MARKETS PARTNERSHIP

The Methane to Markets Partnership (M₂M) 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 of appropriate technologies will serve as the basis for future country-level policy planning and development of an agricultural methane implementation plan to replicate technologies in targeted sectors.

2. ARGENTINA FINDINGS TO DATE

The table below summarizes the findings of the Argentina RA.

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)
Sugar mills + Distilleries	23 sugar mills; 30 MMT sugarcane; ~ 2 MMT sugar COD: 1.8 kg/m ³ , WW: 10.5 m ³ /MT Tucumán ~150,000 MT ethanol/yr, 11 distilleries COD: 80 kg/m ³ , WW: 12 m ³ /MT	41,100	864,600	162,800	1,027,400
Swine	~ 3 million pigs, ~ 2% confined with pull-plug pits, anaerobic lagoons and facultative lagoons	19,600	412,000	77,600	489,600
Dairy	11,500 dairy farms, ~ 10,000 ML/yr; Farms with >4,000 heads were considered to have confined systems and lagoons	16,800	353,000	66,500	419,500
Slaughter houses	38,000 swine and cattle slaughtered per day; consider only capacity > 400 animals/d, assume 50% use lagoons; COD: 4.1 kg/m ³ , WW: 13 m ³ /MT	9,300	196,900	37,000	233,900
Citrus processing	Tucumán processes 5.5 MMT of citrus/year (~ 75% of total production); most plants use lagoons; COD: 30 kg/m ³ , WW: ~0.11 m ³ /MT	4,100	87,800	16,500	104,300
Total		90,900	1,914,300	360,400	2,274,700

MMT: Million metric tons – ML: million litres – 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 odours 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.