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

1. THE METHANE TO MARKETS PARTNERSHIP

The Methane to Markets Partnership (M_2M) 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. COLOMBIA FINDINGS TO DATE

The table below summarizes the findings of the Colombia RA.

Sector	Description of the sector and assumptions	Direct emissions[1]		Indirect[2]	Total
		CH_4 (MT CH_4 / yr)	CO_2e (MT CO_2e / yr)	Fuel replacement (MT CO_2e / yr)	Direct + Indirect (MT CO_2e / yr)
Palm oil	735,000 MT crude palm oil; COD: 56 kg/m^3, WW: ~3 m^3/MT	31,100	652,700	115,000	767,700
Ethanol distilleries	13 sugar mills, 5 distilleries, ~300 ML ethanol; COD: 200 kg/m^3, WW: 2.4 m^3/MT	8,100	169,300	29,800	199,100
Swine	5.2 million pigs; only considered 50% of farms with >100 pigs; pit storage <1 month	7,300	153,600	20,500	174,100
Slaughter houses - cattle, swine	4 million slaughtered animals/yr; Only considered capacity >100 animal/day, assumed 50% use lagoons; COD: 4.1 kg/m^3, WW: 13 m^3/MT	3,700	77,200	10,300	87,500
Slaughter houses - chicken	1 million MT chicken meat; Only considered capacity >10,000 chicken/d; assumed 30% use shallow lagoons, COD: 4.1 kg/m^3, WW: 13 m^3/MT	560	11,700	1,600	13,300
Total		**50,760**	**1,064,500**	**177,200**	**1,241,700**

MT: metric tons – ML: million litres – COD: Chemical Oxygen Demand – WW: Wastewater generation
[1]. Baseline methane emissions due to the current waste management system; assume CO_2 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.