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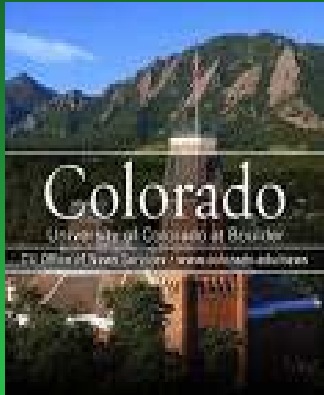
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The Status and Future of Methane Destruction Projects in Mexico

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Abstract

Of the Clean Development Mechanism (CDM) projects that exist in Mexico, methane destruction projects from hog farms dominate the landscape with 56% of the projects developed and 49% of the Certified Emission Reductions (CERs) that will be generated within the country by 2012. These biodigesters, however, have experienced many technical difficulties that place their viability and continued development in question. Because of these challenges, future methane capture in the country may focus on other agro industries or landfills.

Objective

The study’s objective was to investigate the functioning of Mexico’s biodigesters in order to assess the future CDM potential for these projects. This study was a part of Ph.D. dissertation research that identified the barriers to renewable energy, CDM projects in Latin America.

Emission reductions from these biodigester projects are generated by the converting methane produced through anerobic digestion of animal waste into the less potent greenhouse gas of carbon dioxide through flaring or burning in a microturbine for electricity. Electrical production also displaces fossil-fuel intensive generation from the grid.

Mexico is a particularly key market for these projects since it has slaughterhouses and hog and dairy farms of a critical size that is big enough to support these activities for methane capture and, in some cases, electrical production.

Methods

Interviews were conducted with project engineers from Ag Cert and Ecosecurities, who have developed all of the agro-industry methane capture projects in Mexico. Also, background research about the United Nations Framework Convention on Climate Change’s CDM and agro-industry methane capture projects was completed.



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Results

Prerequisites for Digester Functioning

- pH close to 7; acidic or alkaline gas hurts the flare or microturbine used for electrical production
- Temperature between 25 and 30 degrees C
- Few antibiotics or vaccinations
- Low water content
- Agitated pile for uniform content and temperature

Pitfalls in Mexican Digesters

- pH level of gas too alkaline because of food content
- Temperature too low because of high altitude and water on top
- Farm doctors not always informed and continue to use antibiotics and vaccinations liberally
- Water used to push excrement into sewage drain dilutes waste
- Most digesters not designed to have agitation



Investigating excrement content



Normal positive pressure digester



Flare not lit because backup pilot light cable burnt; 3 of the 6 digesters that the author visited did not have flares lit



Positive pressure digester with water on top and no pump to remove it; consequently has low temps and producing no gas

Other Issues for CDM registration

- Methodology for methane capture changed from open to closed flare in fall '06
 - Closed flares 1.5 to 2 times more expensive
- Electrical generation uncertain
 - Unsure how to coordinate the flow of methane into flare and generator
 - High capital costs for turbogenerator
- Regulatory Uncertainty
 - Will future projects be additional now that new Mexican law mandates their existence?

Future Developments

- Will hog farms continue to enjoy this development given the poor performance of the current systems?
- Will dairy farms and slaughterhouses be the next agro-industry methane capture projects or do these areas also have major complications?
- Landfill gas capture in lined, monitored landfills (instead of dumps) has become an interesting project with a high number of potential emission reductions in Mexico. More of these projects will probably be developed before future agro-industry projects given the recent experience with these projects.