



Methane to Markets

METHANE TO MARKETS PARTNERSHIP AGRICULTURE SUBCOMMITTEE MEETING

4th Session of the Agriculture Subcommittee
Morelia, Mexico
22 April 2008

Summary

- 1 The fourth session of the Methane to Markets (M2M) Agriculture Subcommittee took place on 22 April 2008 in Morelia, Mexico. The meeting was held in conjunction with a two-day workshop, *Overcoming the Barriers for the Implementation of Anaerobic Digestion in the Agriculture Sector*, hosted by Mexico's Secretariat of Environment and Natural Resources (SEMARNAT). The workshop proceedings are posted on the M2M Web site (<http://www.methanetomarkets.org/events/2008/ag/ag-23apr08.htm>).
- 2 The main agenda items covered:
 - Partner country updates
 - Country specific strategic plans
 - Options to increase Project Network (PN) participation
 - Key methodological issues, including:
 - Development of an international guidance to characterize the environmental performance of anaerobic digestion (AD)
 - Development of an improved methodology for characterizing leakage rates from AD systems
 - Inclusion of agro-industrial waste (such as food and slaughterhouse waste) into the Subcommittee's work
 - Other sources of methane emissions from agriculture (e.g. enteric fermentation and rice cultivation)
- 3 The Subcommittee meeting agenda is posted online on the M2M Web site (http://www.methanetomarkets.org/events/2008/ag/docs/ag22apr08_subcomagenda.pdf).

1. Welcome and Introductions

- 4 Mr. Edgar del Villar Alvelais of SEMARNAT (Mexico representative) welcomed participants and introduced Ms. Sandra Denise Herrera Flores, the Undersecretary of Environmental Regulation of SEMARNAT. Ms. Flores provided a key note address and noted that the meeting was taking place on Earth Day, which was fitting given the Subcommittee's important work to overcome environmental challenges. She noted that methane mitigation from livestock waste management was an important way to reduce greenhouse gas (GHG) emissions and to produce renewable energy.
- 5 Ms. Catalina Rosa Lyonge from the Mexican state government of Michoacan welcomed the meeting participants to Mexico. She stated that it was an honor to host all of the attendees in Morelia and she wished the participants a successful meeting.

- 6 Mr. Jorge Hilbert (Argentina representative and Agriculture Subcommittee Co-chair) welcomed meeting attendees on behalf of his co-chair, Mr Jeremy Eppel, UK, and the rest of the M2M Agriculture Subcommittee. Mr. Hilbert thanked the organizers and hosts of the meeting, and acknowledged the special guests that were attending. Mr. Hilbert also stated that he was looking forward to a fruitful and productive meeting.
- 7 The meeting participants provided brief introductions; the meeting was attended by M2M Partner country delegates, Project Network members, Administrative Support Group (ASG) personnel, members of the press, and other interested observers. A [list of meeting participants](#) is in [Annex 1](#).

2. ASG Update

- 8 Mr. Henry Ferland (M2M ASG) provided an update of the ASG activities, which is available on the M2M Web site (http://www.methanetomarkets.org/events/2008/ag/docs/ag22apr08_henry_ferland_sub.pdf). The presentation provided an overview of:
 - M2M Partnership background
 - Partner/Project Network status
 - Steering Committee meeting outcomes
 - Follow-up from the previous M2M Expo
 - Planning for the next M2M Expo, to be held in late 2009 or early 2010
 - Discussion papers to be presented at the Subcommittee meeting
 - Upcoming meetings and events

3. Brief Statements and Updates from Country Representatives

Mexico

- 9 Mr. Luis Alberto Lopez Carbajal from SEMARNAT (Mexico representative) described the Mexican activities related to AD in agriculture. Mr. Carbajal stated that Mexico had created an M2M country profile for agriculture, which is currently available on the M2M Web site (http://www.methanetomarkets.org/resources/ag/docs/mexico_profile.pdf).
- 10 Mr. Carbajal stated that agriculture emissions currently comprise 32 percent of the total GHG emissions in Mexico. There are 449 AD systems in Mexico that include 89 AD projects registered under the Kyoto Protocol's Clean Development Mechanism (CDM). The projects are in various stages of the CDM process, and account for GHG emission reductions of 2,566 tons of carbon dioxide (CO₂) equivalent. Most digesters in Mexico flare the biogas produced instead of using it as an energy source.
- 11 Mr. Carbajal summarized the challenges to AD development in Mexico, which include institutional, technological, and economic barriers. Institutional barriers include insufficient investigation into the capture and use of methane, failure to comply with environmental laws, insufficient development of projects to produce renewable energy, and lack of incentives for AD systems to use captured biogas to produce electricity. Technological barriers include a lack of AD developers, lack of design and construction expertise, high operation and maintenance costs, lack of experience in the use of methane, and lack of equipment to produce electricity. Economic barriers include insufficient or uncertain levels of financing, the economic situation of the producers, and ignorance of the funding opportunities by producers.

Thailand

- 12 Dr. Arux Chaiyakul from the Department of Livestock Development within the Ministry of Agriculture and Cooperatives represented Thailand. Dr. Chaiyakul's background is in veterinary science and currently develops AD projects with the World Bank. Mr. Chaiyakul's presentation is available on the M2M Web site (http://www.methanetomarkets.org/events/2008/ag/docs/ag22apr08_arux_chaiyakul_sub.pdf).
- 13 In Thailand, the swine sector has the greatest potential for AD development. At large and medium scale swine farms, covered lagoons and channel digesters are used. There is the potential to produce 2.2 million tons of CO₂ equivalent of methane each year from swine operations in Thailand. Currently 600,000 tons of CO₂ equivalent of methane are captured from swine waste; the goal is to capture 2 million tons by the year 2012. Cattle farms are small and generally pasture based, and there is not much potential for methane production.
- 14 Stakeholders in Thailand's livestock waste management sector include the Ministry of Livestock and Cooperatives, the Ministry of Natural Resources and Environment, the Ministry of Energy, the Energy Research and Development Institute (ERDI), local administrative organizations, and local consultants.
- 15 Mr. Jeremy Eppel from the U.K. Department for Environment, Food and Rural Affairs (DEFRA) asked how many of the AD projects use the biogas for energy, and how many flare the biogas. Dr. Chaiyakul replied that most projects use the energy and do not flare the biogas.

India

- 16 Mr. Anil Dhussa from the Ministry of New and Renewable Energy represented India. Mr. Dhussa's presentation is available on the M2M Web site (http://www.methanetomarkets.org/events/2008/ag/docs/ag22apr08_anil_dhussa_sub.pdf).
- 17 Mr. Dhussa stated that India accounts for 4.6 percent of the global energy consumption; 80 percent of the rural energy in India is from renewable resources. In India, there are 80 million homes (400 million people) that do not have electricity. Mr. Dhussa explained that the demand for electricity is increasing and renewable energy sources can be a solution to this problem.
- 18 There are household and larger scale AD systems in India. There has been a program to support the development of household biogas use since 1982. Currently, 4 million household AD systems utilize the biogas produced from cattle manure. There are two broad categories of AD systems used for household systems: floating dome and fixed dome. There are also approximately 2,000 larger scale biogas systems in operation at large farms. Some of these plants use co-mingled waste streams, including manure and food waste or slaughterhouse waste.
- 19 Mr. Dhussa stated that the Indian government has been providing support for AD development, including: providing subsidies for installation of AD systems, allowing for a preferential rate for the sale of the electricity, building capacity by training staff and disseminating information, sponsoring research and development, and performing monitoring and evaluation.

Argentina

- 20 Mr. Hilbert reviewed the recent activities in Argentina related to the work of the Agriculture Subcommittee. Mr. Hilbert stated that an investigative AD project is being conducted at the Instituto Nacional de Tecnología Agropecuaria (INTA) Research Center. In addition, INTA has created a new bioenergy program, under which AD will be supported as a bioenergy source.

- 21 Mr. Hilbert stated that more than 10 AD projects have been created in Argentina over the past year. Also, INTA completed a proposal for a national AD program and also submitted the proposal for consideration under the U.S. Environmental Protection Agency's (EPA) M2M grants program. In addition, INTA is conducting GIS studies and has initiated three postgraduate studies to research AD.

Australia

- 22 Ms. Roslyn Prinsley from the Australian Rural Industries Research and Development Corporation provided an overview on the status of AD in Australia. Ms. Prinsley's presentation is available on the M2M Web site (http://www.methanetomarkets.org/events/2008/ag/docs/ag22apr08_bruce_edgerton_sub.pdf).
- 23 The Australian Government has pledged to use 20 percent renewable energy by the year 2020 and is in the process of establishing a mandatory GHG emissions trading scheme. In addition, the Australian government and industry research organizations have invested approximately \$2 million towards the research and development of methane capture and use technology in the Australian intensive livestock industries. Under the program, a major research project is currently being implemented to identify the elements of a methane capture and use system suitable for operation in a carbon constrained economy.
- 24 Mr. Eppel asked if New Zealand is partnering with Australia on any of the work being done to reduce GHG emissions from agriculture. Ms. Prinsley replied that New Zealand has done some research on enteric fermentation emissions, but there have not been many shared interests or activities with Australia to date.

Canada

- 25 Mr. Tim Martin of Agriculture Canada stated that the challenges to AD development in Canada include high capital costs and barriers to power grid access. Canada currently has 10 farms operating AD systems (e.g., dairy, swine, poultry, beef, and food wastes) in several provinces.
- 26 Mr. Martin also indicated that several provinces have adopted policies to increase the use of renewable energy and decrease GHG emissions. Ontario has had a policy in operation for a year that guarantees access to the power grid, provides a good price for electricity generated from AD, allows the AD system to include up to 25 percent of feedstock from another source (such as food waste) without being declared a waste processor, and helps to offset capital costs. This policy has helped to remove some of the barriers, which will hopefully increase the use of AD.
- 27 In addition, Mr. Martin's colleague, Mr. Ray Desjardins, has been leading research on field measurements of agricultural methane emissions using infrared technology. These experiments include some farms that have AD systems in place.

United Kingdom

- 28 Mr. Eppel stated there has been active support for the growth of AD in agriculture and more widely in the United Kingdom. The use of AD supports many of the key policy objectives of the U.K. government, including the production of renewable energy, GHG emissions reduction, landfill waste reduction, sustainable agriculture and reduction of water pollution.
- 29 He explained that there have been several recent research projects undertaken by the European Biomass Initiative, the Institute for Grassland and Environmental Research, The University of Exeter, and AEA

Technology. These studies should help with the optimization of the benefits of expanding biogas use. There will also be a report developed to discuss the inclusion of food waste in AD systems, which is anticipated by the end of 2008.

- 30 Mr. Eppel stated that the U.K. government has in place a law, the Renewables Obligation (RO), which provides financial incentives for the implementation of renewable energy. Electricity suppliers need to obtain a portion of their electricity from renewable sources, which are recorded as Renewable Obligation Certificates (ROCs). AD receives twice as many ROCs as some other renewable energy sources, making it more financially attractive renewable energy source. In addition, the U.K. Waste Resources and Action Programme (WRAP) has developed a standard and protocol for AD digestate. The draft standards are located online (<http://www.r-p-a.org.uk/content/images/articles/PAS%20110%20Second%20draft%201%201.pdf>).
- 31 Mr. Eppel explained there is also financial support available for AD projects and research through new U.K. grant programs, including the Bio-energy Capital Grants Scheme, the Rural Development Program for England, and the Waste Resources and Actions Program's Organics Capital Grant Program. Additionally, the U.K. government is developing a 10 million pound demonstration program to evaluate the effect of various feed stocks, business models, and technology.
- 32 Mr. Eppel reminded the group that the International Energy Agency (IEA) has a working group called Task 37. This group is working on biogas production and high quality digestate from the biological treatment of this organic fraction of municipal solid waste, as well as the anaerobic treatment of organic rich industrial wastewater. The group aims to exchange information, stimulate interest, and promote proper waste management techniques. Mr. Eppel suggested that the M2M Partnership should work more closely with Task 37 since they share many common goals. Ms. Prinsley asked why there is no formal link between M2M and Task 37. Mr. Ferland replied that M2M has been in contact with Task 37 and the relationship between the two organizations could be expanded in the future.

United States

- 33 Ms. Erin Birgfeld from EPA explained that the AgSTAR Program develops awareness of AD systems in the United States and provides technical support to system developers and operators. EPA has been supporting their domestic biogas use programs through its AgSTAR program for the past 15 years. She added that EPA is adding resources to this program by adding two more AgSTAR staff members.
- 34 Ms. Birgfeld stated that there are approximately 120 AD systems operating in the United States, mostly at dairy operations. These AD systems produce 215 million kilowatt hour equivalent of electricity per year. Another 20 AD projects are planned.
- 35 Ms. Birgfeld explained that the U.S. Farm Bill is the largest project financing system for AD systems, with \$2 million available for AD systems. Carbon credits might also be an incentive in the U.S. voluntary market. There are two very active states supporting AD development: North Carolina, which has high density swine operations and has plans to support 50 electricity pilot projects; and New York, which is providing \$11 million in funding for biogas projects.
- 36 Research is also being conducted by the U.S. Department of Agriculture (USDA) into nutrient removal from waste streams through digestion, co-digestion of various waste streams, and energy use from AD systems.
- 37 EPA is currently developing a GHG reporting system. This system will require U.S. entities with large GHG emissions to report their emissions to EPA. EPA is currently determining a threshold reporting

amount to distinguish large emitters and require them to report GHG emissions. The GHG reporting system rule is expected to be proposed in 2008 and promulgated in 2009.

- 38 Internationally, EPA has provided grant money for projects related to M2M and issued a grant solicitation in December 2007. Ms. Birgfeld noted that EPA was very pleased with the high quality and quantity of grant proposals they received. Multiple grants were awarded in the agriculture sector, totaling \$1.2 million. These grants support programs in Mexico (along with U.S. AID) and also support work in China, Vietnam, and Thailand to improve water quality.
- 39 Ms. Birgfeld reminded meeting participants that they could review the *U.S Government Accomplishments Report*, which was available at the meeting and online (http://www.epa.gov/methanemarkets/pdf/m2m_07_update_final.pdf).

World Bank

- 40 Ms. Zarina Azizova from the World Bank (WB) was unable to attend the meeting, but she passed along an update on WB activities via email. Mr. Eppel read Ms. Azizova's email to the meeting participants.
- 41 Ms. Azizova explained that the WB has a sector called Agriculture and Rural Development (ARD), which works on the following topics:
- Policy and Strategy
 - Forestry
 - Land Use Management
 - Fisheries
 - Agricultural Technology
 - Livestock
 - Water for Food
 - Commodities Risk Management
 - Agribusiness
 - Rural Finance
 - Land Tenure
 - Portfolio Management
- 42 The use of AD falls under the Livestock category. The WB has not done extensive research on the costs and opportunities for AD, the technological viability, or potential leakage issues. In the WB's 2005 report, *Managing the Livestock Revolution: Policy and Technology to Address the Negative Impacts of a Fast Growing Sector*, the WB mentioned AD as an option if supported with funds from the WB Carbon Funds. Currently, the WB has two large AD programs in China and Thailand, where the bank lends funds to the agriculture sector to develop AD use by farmers and provides co-financing with carbon revenues.
- 43 Ms. Azizova noted that the report states:
"The cost-effectiveness of methane recovery and energy conversion is still modest, although it maybe becoming increasingly attractive in areas were livestock concentration, and therefore the supply of manure is high enough, and alternative sources of energy sources are high. Because of the energy generation and methane emission reduction potential, biodigestion might be of interest for carbon trade, for example, under the Prototype Carbon Fund, as currently explored under the WB funded National Environment Project in Brazil."
- 44 Ms. Azizova also wrote that the WB does not have any input to add to the discussion of leakage from AD, but the WB is very eager to contribute to future technical discussions on this. Ms. Azizova stated that she will review the Subcommittee Meeting minutes to ensure that any proposals or decisions will not undermine the credits from CDM projects and reduce their attractiveness as a CDM project to the buyers.

4. Country-Specific Strategies

- 45 Mr. Hilbert chaired the discussion of the country-specific strategy template (Attachment 1 to the agenda). The Agriculture Subcommittee's plan is to expand the Country Profile to include the country-specific strategy information.
- 46 Mr. Ferland explained that the M2M program is evolving, and the Steering Committee wanted to develop more directed, country-specific strategic plans in each sector. The template is the ASG's effort to present or develop strategic plans for each country. Mr. Hilbert asked for input from the country representatives on the strategic plan template.
- 47 Ms. Prinsley and Mr. Bruce Edgerton of Australian Pork Limited summarized Australia's strategic plan, which is available online (http://www.methanetomarkets.org/events/2008/ag/docs/ag22apr08_bruce_edgerton_sub.pdf).
- 48 Mr. Martin asked if the template should report the strategies that are currently in place in each country or if the template should develop new strategies for each country. Mr. Ferland replied that the template could do both, it was up to the country and the Subcommittee to decide. He also stated that the important audience is the project developers, who might review the country strategic plans and know where to focus development efforts.
- 49 Ms. Araceli Arredondo of SEMARNAT stated that the strategic plan would help countries to visualize strategies to overcome barriers. For example, Mexico has climate goals to reach by 2012, and the strategic plan might help them to focus their goals.
- 50 Ms. Birgfeld noted that the template should help countries to focus on steps to overcome the barriers to AD development. She also noted the template could include any international goals that each country might have.
- 51 Mr. Eppel noted that the template was missing information on a national biogas strategy that might exist in many countries. He added the template should include a wider variety of organic feed stocks for AD, and not just animal waste.
- 52 Ms. Prinsley commented the template could include a summary of the incentives in each country, including the financial options.
- 53 Mr. Ferland stated that the ASG will revise the template and distribute it to the Agriculture Subcommittee and include it on the M2M Web site. The country representatives agreed to update their Country Profile and Strategic Plan submissions by the end of July 2008.

5. Options for Increasing Project Network Involvement

- 54 Mr. Ferland introduced the paper entitled Options for Increasing Project Network Involvement (Attachment 2 to the agenda). Mr. Ferland stated that the PN is a diverse group, and the Steering Committee and ASG would like to encourage their participation in the M2M Partnership activities. He noted that options to encourage participation include:
- Issuing meeting invitations to PN members from the host meeting countries.
 - Conducting the Subcommittee meeting in conjunction with technical workshops.
 - Acknowledging PN member attendance at the meetings.
 - Providing formal recognition of PN members through incentives such as awards or highlighting PN members on the M2M Web site.

- Providing informal recognition of PN members by enhancing the PN portion of the M2M Web site or developing case studies or showcase projects.

55 Ms. Prinsley inquired if there were main targets that M2M would like to focus on. Mr. Ferland replied the ASG would like to encourage the participation of all PN members. Ms. Prinsley suggested inviting PN members to speak at the M2M workshops. Mr. Eppel noted that this is a good strategy and many PN members are already invited to speak at M2M agriculture workshops. He added there needs to be time for Subcommittee business in the Subcommittee meeting, so he suggested that the PN involvement be encouraged in the workshops and not overly formalized in the Subcommittee meetings.

56 Ms. Birgfeld noted that project developers might not have the time or funding to attend meetings, so M2M should be sensitive to their situations. She reiterated the options to encourage their participation in M2M by highlighting success stories on the M2M Web site, or developing a formal process to identify superior PN members. Ms. Birgfeld also noted that developing a formal award process would require input and participation from the subcommittee.

57 Mr. Del Villar suggested including PN success stories in the workshop agendas, so that the PN members would know what might be discussed at the meeting. Ms. Arredondo noted that the involvement of the PN is vital to the successful operation of the M2M Partnership, and governments need to work together with the PN members.

58 Mr. Dhussa noted that it seemed that the Agriculture Subcommittee was already performing many of the suggested tasks in Attachment 2. Mr. Ferland agreed, and explained that the document was developed for all sectors and the Agriculture sector is doing more activities for the PN than some other sectors. Mr. Hilbert proposed that the ASG revise the document to be specific to the Agriculture sector and distribute the next version to the Subcommittee by 6th June for further comment and subsequent transmission to the Steering Committee.

6. International Guidance for Characterizing AD System Performance

59 Mr. Eppel, chairing this item, explained that Mr. Kurt Roos of EPA had developed two papers as a result of discussions at the May 2007 Agriculture Subcommittee Meeting in Buenos Aires. The first of these documents is Attachment 3 to the agenda, *Development of International Guidance for Characterizing the Environmental Performance of Anaerobic Digestion Systems*.

60 Ms. Birgfeld explained that in the U.S., as in other areas of the world, some AD projects have unfortunately failed which has led some to be skeptical about the possibilities for AD systems. To help remedy this and to provide unbiased information on AD system performance, the United States has developed a protocol to evaluate projects. There are approximately 10 farms following the U.S. protocol in New York state. The development of an international protocol, perhaps based on the US model suitably adopted to different natural circumstances, would establish an evaluation standard for AD systems to meet. The document contained five questions for the discussion of the Subcommittee:

1. Is development of an "International AD Performance Protocol" a project that the Subcommittee would like to support?
2. Does the Subcommittee agree to the approach presented in this paper?
3. Does the Subcommittee believe that investigating whether a standard for this could be set through International Organization for Standardization (ISO) or other standard setting organizations would be useful?
4. Are you aware of work underway in your country on this issue? If so, could you please provide relevant contacts?

5. Are there currently any national/federal, state or county level regulations that could affect AD development (e.g., in relation to digester/sludge, final disposal)?

61 The Subcommittee's consensus view was that development of this document would be useful and the Subcommittee should support it. Ms. Birgfeld noted that doing the evaluations using the protocol could be expensive; only systems with significant funding would be able to afford the evaluations. Mr. Edgerton noted that the guidance could summarize the minimum parameters needed to evaluate digester performance to accommodate projects that would not have the funding required to develop data for all parameters. Mr. Edgerton offered to develop a one-page summary of the minimum parameters.

62 Ms. Birgfeld also noted that many variables exist from country to country; therefore country-specific protocols might be more useful instead of general international guidance. Mr. Eppel agreed that it might be difficult to develop an international guidance that would be robust enough to address the situations in every country. He suggested that a more general guidance should be developed, instead of a detailed protocol for every system and situation. The Subcommittee therefore decided not to follow the exact approach in the paper, but instead to develop a revised protocol in more general terms.

63 None of the country representatives supported the involvement of the ISO at this time, given the time required to produce such standards. If the Subcommittee decides to develop standards, then the possibility of creating ISO standards might be reevaluated in due course.

64 A few of the country representatives were aware of similar work being performed in their countries. Mr. Edgerton noted that Australia is currently developing a protocol and has been reviewing the U.S. protocol as a reference. Mr. Martin noted that Canada has a GHG offset quantification protocol for AD systems. Mr. Eppel noted that the United Kingdom has not developed a protocol, but some of the work might overlap with the research he discussed in his country overview.

65 Based on the meeting discussion, EPA will engage a contractor to revise and expand the current document to further describe what the protocol would entail. The next draft will be presented to the Subcommittee for review and discussion at its next meeting and at that time, the Subcommittee might decide to develop the standards. A first draft of the paper would be discussed in a tele-conference as soon as it was feasible to do so.

7. Development of Leakage Rates from AD Systems

66 This second methodological issue is summarized in Attachment 4 to the agenda, *Development of an Improved Methodology for Determining Leakage Rates from Anaerobic Digestion Systems*. The document contained the following questions for Subcommittee discussion:

1. Does the Subcommittee wish to support such an effort at this time?
2. If so, is the proposed approach appropriate?
3. What is a realistic timeline for this work?
4. Can you identify research, agricultural extension, or private sector groups that could contribute to this task?
5. Is there any organization or country willing to host the expert meeting for reviewing this topic?

67 Ms. Birgfeld explained that the current methodologies lack specific guidance for leakage of AD systems. The default leakage rate for CDM projects is 15 percent, regardless of the digester type, size, age, or condition. Ms. Birgfeld noted the United States supports the investigation of leakage rates as long as this work does not create a new obstacle for project development.

- 68 Mr. Eppel noted from the Chair that this was an important parameter and it has implications everywhere that emissions estimates from AD might be used (such as GHG registries and carbon credit determination). He stated the United Kingdom was supportive of this work and he noted that Task 37 was also working on this issue.
- 69 Mr. Martin stated that Canada supports this work, and he suggested that his colleague Mr. Desjardins would be a good candidate to lead a discussion on leakage rate issues. In addition, he stated that Canada could host a meeting on this topic. Ms. Arredondo, Mr. Chaiyakul, Mr. Dhussa, Mr. Edgerton, and Mr. Hilbert expressed the support of their respective countries, but noted that the work would take time as more research might be needed.
- 70 Based on the discussion of the Subcommittee, Mr Eppel concluded that the EPA will develop a more detailed document and circulate it to the Subcommittee for discussion at the next meeting with a first draft again being discussed in a conference call.

8. Inclusion of Agro-Industrial Waste

- 71 Mr. Ferland noted that the Agriculture Subcommittee suggested to the Steering Committee that agro-industrial waste (including food waste and slaughterhouse waste) should be included in the scope of the Agriculture Subcommittee's work. The ASG performed a preliminary review of the available information, summarized in Attachment 5 to the agenda, and would like to solicit comments from the Subcommittee on the best method to incorporate this sector into their work.
- 72 Ms. Cortney Itle of ERG (ASG contractor) stated that the inclusion of agro-industrial waste presents some challenges due to lack of data. First, there is a lack of an international inventory data source for agro-industrial waste; international livestock data can be obtained from the FAO but no similar data source exists for agro-industrial waste. Next, there are many categories of agro-industrial food waste and not all categories are favorable for AD; the Subcommittee might decide to define the specific wastes to include in this sector. Finally, Ms. Itle noted that emission data are not as readily available for agro-industrial food waste as they are for livestock waste. Agro-industrial food wastes are included as a subset to a subcategory in country GHG inventories, as compared to livestock manure management, which is a main category. As a result, most countries do not report agro-industrial waste emissions as part of their GHG inventories. In addition, emissions from agro-industrial waste are more challenging to estimate, as more facility-specific information is needed to calculate emissions from these sources as compared to livestock sources.
- 73 All country representatives agreed that the addition of agro-industrial food waste to AD systems is beneficial to the advancement of AD and should be included in Subcommittee's work. Most country representatives noted that these wastes are currently used in AD systems in their countries, but there is a lack of information and data on these systems.
- 74 Mr. Eppel suggested that where data availability is a problem, the countries should include agro-industrial wastes qualitatively in their country profiles, and not at the same level of detail as livestock manure. Ms. Arredondo noted that it would be useful for the Subcommittee to identify the specific agro-industrial wastes that are suitable for AD. Ms. Birgfeld suggested that the Subcommittee invite experts on agro-industrial waste to the next meeting.
- 75 Based on the discussion, it was agreed that country representatives would identify sources of data for the industry for inclusion in the country profiles. The Co-chairs and ASG will consider whether a workshop or special session at a future Subcommittee meeting would be beneficial.

9. Investigating Other Sources of Methane Emissions (e.g., Enteric Fermentation, Rice Cultivation)

- 76 Mr. Ferland explained that the Agriculture Subcommittee had discussed the incorporation of other sources of agricultural methane (aside from manure management) with the Steering Committee. This issue is summarized in Attachment 6 to the agenda.
- 77 Mr. Ferland stated that the Steering Committee has historically been focused on not only reducing GHG emissions, but also capturing and using the biogas. Emissions from enteric fermentation, rice cultivation, and agricultural soils cannot be captured and used. However, options might exist that could reduce the emissions from these sources and the GHG reductions could be marketed as carbon credits. If these methane sources were included in the Subcommittee's work, it would represent a change in the philosophy of the Steering Committee and be the first time the M2M Partnership had considered only the methane reductions as the marketable entity versus the capture and use of the methane.
- 78 Mr. Eppel noted the United Kingdom first mentioned this issue to the Steering Committee at its last meeting and supports this work. However, an assessment is needed to determine the viability and resource implications of including these sources into the work of the Subcommittee. Ms. Birgfeld noted that the proposed document could provide an overview and not delve too deeply into the issue. The paper could also identify the key players and summarize the work being undertaken elsewhere and thus inform the Subcommittee and Steering Committee.
- 79 Mr. Hilbert stated that the majority of agricultural emissions in Argentina were from enteric fermentation and INTA was conducting research on these emissions.
- 80 Mr. Dhussa stated he was not convinced that the other sources of agricultural methane should be included in the Subcommittee's work. Ms. Prinsley added that enteric fermentation is the largest source of methane in Australia and there is research being done to investigate mitigation techniques. She stated that the work of the Subcommittee might be diluted by exploring too many sources and she was not sure that the Subcommittee was the most appropriate organization to investigate these sources.
- 81 Mr. Eppel noted that the Steering Committee guidance does not commit the Agriculture Subcommittee to incorporate these sources into its work, but an investigation of the current state of research and activity on these sources would be useful for the Subcommittee to make informed decisions about whether or not to explore the possibility of taking forward any work. If M2M identifies an information gap, then M2M could encourage other organizations to conduct more research rather than undertaking it itself.
- 82 The Subcommittee decided that the ASG should engage a contractor to identify the current work being performed (including research efforts) to reduce methane emissions from agricultural sources aside from manure management. The Subcommittee will discuss the issue at the next meeting in December 2008, preceded by a Conference call to discuss a first draft before the end of July 2008.

10. Closing Remarks

- 83 Mr. Hilbert and Mr. Eppel warmly thanked SEMARNAT for hosting the meeting and the ASG for organizing the materials for the event. Finally, Mr. Eppel thanked the meeting participants for a productive session and the interpreters for their excellent work, and adjourned the meeting.

Action Items

Following the meeting, the ASG compiled and distributed a list of action items and anticipated completion dates to the Subcommittee:

1. Country-Specific Strategic Plans
 - The ASG will revise the template based on the suggestions at the meeting, and send the revised template to the Subcommittee by 16 May 2008.
 - Country representatives will update their profiles to include strategic plan information by 31 July 2008.
2. Increasing Project Network Involvement
 - The ASG will prepare a summary of the Subcommittee's proposed activities to increase PN involvement (including those activities already taking place) and provide it to Subcommittee representatives by 6 June 2008.
3. Developing an International Guidance for Characterizing the Environmental Performance of AD Systems
 - The Subcommittee agreed that a general guidance document applicable to a variety of countries would be helpful.
 - Australia (Bruce Edgerton) volunteered to develop a one-page document to highlight the minimum parameters needed for this guidance.
 - EPA will develop a document based on the meeting discussions and circulate it to the Subcommittee by 15 July 2008.
 - The draft paper will be discussed via a teleconference by 31 July 2008.
 - The Subcommittee will discuss the issue at the next meeting in December 2008.
4. Development of an Improved Methodology for Determining Leakage Rates from AD systems
 - EPA will develop a more detailed document based on the meeting discussions and circulate it to the Subcommittee by 15 July 2008.
 - The draft paper will be discussed via a teleconference by 31 July 2008.
 - The Subcommittee will discuss the issue at the next meeting in December 2008.
5. Inclusion of agro-industrial food waste into the Subcommittee's work
 - Country representatives will identify sources of data for the industry and include the information in the country profiles.
 - The Co-chairs and ASG will consider whether a workshop or a special session at a Subcommittee meeting would be beneficial.
6. Investigating other sources of methane emissions from agriculture (e.g., enteric fermentation, rice cultivation)
 - The ASG will engage a contractor to identify the current work being performed (including research efforts) to reduce methane emissions from agricultural sectors aside from manure management.
 - A first draft of this document will be circulated by 15 July 2008.
 - The draft paper will be discussed via a teleconference by 31 July 2008.
 - The Subcommittee will discuss the issue at the next meeting in December 2008.



Annex 1- Agriculture Subcommittee Meeting Participant List

**MORELIA, MEXICO
22 April 2008**

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