



METHANE TO MARKETS PARTNERSHIP AGRICULTURE SUBCOMMITTEE MEETING

Methane to Markets

Seventh Session of the Agriculture Subcommittee
New Delhi, India
5 March 2010

Meeting Minutes

Summary

- 1 The Methane to Markets (M2M) Agriculture Subcommittee conducted its seventh session in New Delhi, India in conjunction with the M2M Partnership Expo. The Expo was hosted on 2-5 March 2010 by the Government of India and the U.S. Environmental Protection Agency (U.S. EPA).
- 2 The Expo included a site visit on 2 March to the Shri Krishna Gaushala in the Karera Village in Ghaziabad, India. A gaushala is a sanctuary for old, sick, abandoned, and stray cows. At the Shri Krishna Gaushala, there are 1,000 cows. The manure from the cows is processed in three onsite anaerobic digesters with a retention time of 40 days. A portion of the biogas produced provides electricity for the site. The remaining biogas is purified and bottled on site for use off site. Total production of biogas is 140 cubic meters per day. The Indian Institute of Technology (IIT) developed and maintains the biogas purification and bottling system. Dr. Virendra Vijay from IIT hosted the site visit and provided an onsite presentation about the process. Effluent from the plant is processed on the site with worms to produce a rich organic fertilizer.
- 3 The Expo also included technical and policy sessions specific to the agriculture sector which took place on 3-4 March 2010. The proceedings from these sessions are available online at: <http://www.methanetomarkets.org/expo/agriculture.htm>. Session themes were:
 - Addressing the Financing Barrier
 - Strategies and Policies to Overcome Barriers and Implement Anaerobic Digestion (AD)
 - Overcoming Barriers of Scale: Project Bundling
 - Opportunities to Use AD Across the Food and Agriculture Sector
 - Other Agricultural Sources of Methane (Enteric Fermentation and Rice Cultivation)
- 4 The M2M Agriculture Subcommittee held its meeting on 5 March 2010, the Minutes of which are below. Key agenda items included:
 - Updates from country representatives.
 - Report out from the Steering Committee meeting.
 - International guidance to characterize the environmental performance of AD systems.
 - The possible inclusion of sources of agricultural methane beyond manure into the work of the Partnership, including enteric fermentation and rice cultivation.
 - Action items for the Subcommittee for the upcoming year.
- 5 The full Expo and Subcommittee meeting agendas are posted online on the M2M Web site at: http://www.methanetomarkets.org/expo/docs/at_a_glance_agenda.pdf.

6 Presentations from the Agriculture Subcommittee meeting are posted online at:
http://www.methanetomarkets.org/news-events/event_detailsByEventId.aspx?eventId=239
Welcome and Introductions

7 Mr. Jeremy Eppel of the U.K. Department for Environment, Food and Rural Affairs (DEFRA) (U.K. representative and Agriculture Subcommittee co-chair) and Mr. Jorge Hilbert of the Instituto Nacional de Tecnología Agropecuaria (INTA) (Argentina representative and Agriculture Subcommittee co-chair) welcomed participants to the Subcommittee Meeting.

8 Meeting participants introduced themselves; the meeting was attended by M2M Partner country delegates, Project Network members, Administrative Support Group (ASG) personnel, and other interested observers. A list of the country delegates is presented in Annex 1.

9 Ms. Cortney Itle of the ASG introduced the Minutes from the last Agriculture Subcommittee meeting in Guangzhou, China, held in September 2009, at which the following topics had been discussed:

- Partner country updates, including status of country profiles and strategic plans
- Development of international guidance for AD
- Possible inclusion of enteric fermentation and rice cultivation
- Update of the activities of the ASG
- Preparations for the Partnership Expo

10 Ms. Itle noted that an outstanding action item from the Guangzhou meeting was the update of country profiles and strategic plans. She reminded all country delegates to create or update their profiles and strategic plans. In addition, Ms. Itle reminded participants that all meeting Minutes were available online on the M2M Web site.

Country Updates

11 Country representatives provided brief updates on the activities in their countries related to the M2M Agriculture Subcommittee

12 **Australia.** Josh Francis from the Australia Department of Agriculture, Fisheries, and Forestry noted that he provided an update on Australian policies and activities during the technical sessions earlier in the week. Mr. Francis noted that Australia has implemented a program to encourage the use of renewable energy. This program supports a \$26 million Australian research program. A portion of the research money is being spent on AD.

13 **Argentina.** Mr. Hilbert provided a brief presentation on the activities in Argentina. Argentina has been working to coordinate the activities related to methane recovery in agriculture and agro-industry. There are a large number of activities occurring in Argentina, including—but not limited to—the operation of research digesters and demonstration projects, the development of a resource assessment (RA), the implementation of new plants in the citrus industry, the development of a web page and national network (<http://www.inta.gov.ar/info/bioenergia/bio.htm>), and the organization of multiple conferences and workshops.

14 **Canada.** Mr. Raymond Desjardins from Agriculture and Agri-Food Canada provided a brief overview of the activities in Canada. He noted that much research is being performed to quantify sources and losses of methane, including the development of the report *Better Farming, Better Air: A scientific analysis of farming practice and greenhouse gases in Canada*. Agriculture and Agri-Food Canada has also developed a program, Holos, to calculate farm GHG emissions

(Holos can be downloaded from: <http://www4.agr.gc.ca/AAFC-AAC/display-afficher.do?id=1226606460726&lang=eng>). Mr. Desjardins also mentioned that the International Greenhouse Gases and Animal Agriculture Conference will be held in Banff, Canada on 3-8 October, 2010 (more information is available online at: <http://www.ggaa2010.org/about.shtml>).

- 15 **China.** Ms. Sun Yufang from the Ministry of Energy, Ecology, and Environment from the People’s Republic of China noted that she provided an overview of Chinese policies and activities during the technical sessions. She added that there is a large and well-funded government commitment to support the use of biogas; for example, there is a forthcoming national training campaign to inform people about the use of biogas systems. China has also been supporting research on enteric fermentation and rice cultivation.
- 16 **Columbia.** Mr. Lucio Santos with the Ministry of Environment, Housing, and Territorial Development presented an overview of the activities in Colombia during the technical and policy sessions; He noted that approximately 38 percent of GHG emissions and 66 percent of methane emissions in Colombia are from agriculture. Meat production in Colombia has been increasing significantly in the past several years; there was a 34 percent increase from 2004 to 2008. An RA is currently being performed for livestock waste in Columbia. In addition, the Colombian government is considering emission abatement options for enteric fermentation.
- 17 **Dominican Republic.** Ms. Carol Franco Billini of the Dominican Republic Office of Climate Change and Clean Development Mechanism stated that the Dominican Republic was new to the Partnership as of last year. The first RA has been started in the Dominican Republic for the swine and livestock sector. The government will consider the next steps to take after they have reviewed the results of the RA.
- 18 **Finland.** Mr. Jouko Eskelinen from the Finland Ministry of Foreign Affairs noted that he does not specialize in Agriculture, but he attended the meeting for informational purposes. He noted that the Finnish government is committed to reducing greenhouse gas (GHG) emissions from all sectors, including agriculture. Although there are not currently a large number of AD systems operating in Finland, there is great potential for progress.
- 19 **India.** Mr. Anil Dhussa of the Indian Ministry of New and Renewable Energy (MNRE) noted that he provided a detailed look at the policies and strategies to implement AD during the technology sessions. Mr. Dhussa noted the Indian country profile and strategic plan for agriculture needs to be updated and he will update it in the coming weeks. Mr. Dhussa explained that India is a diverse country and the AD projects are also diverse. In the coming year, there are a small number of very large scale projects planned as well as a large number of very small scale projects.
- 20 **Japan.** Mr. Akira Nagata from the Japan Ministry of Agriculture, Forestry, and Fisheries stated that Japan published new basic policy three years ago to promote better management of manure composting, energy utilization, and biochar. There are currently 73 operating AD systems in Japan. Of those systems, 49 are used for electricity generation and 61 are used for heat production. Some of the systems are not especially successful, and have not been proven to be efficient or effective. Mr. Nagata also mentioned that Japan is very interested in reducing emissions from rice cultivation, as noted in his presentation earlier in the week.
- 21 **Thailand.** Dr. Arux Chaiyukul of the Thailand Department of Livestock Development presented an overview of the activities in Thailand, Dr. Chaiyukul noted that agricultural GHG emissions in Thailand are increasing, and currently account for approximately 24 percent of total GHG emissions. There is a large potential for AD in Thailand; there are currently 94 projects

operating with approval from the Thailand GHG Management Organization (TGO), and 29 projects registered with the CDM Executive Board. The government of Thailand has developed a campaign to provide carbon labels to help inform consumers about the emissions associated with the production, manufacturing, and distribution of products. Another labeling effort in Thailand is the Crown Standard label for CDM projects. This label was created by the TGO to provide incentives for CDM projects to contribute more to the environment and society.

22 **United Kingdom.** Mr. Eppel noted that he had given a presentation about the U.K.'s current strategy, policies and activities during the technical sessions. Mr. Eppel noted that the U.K. Government was giving an ever-increasing priority to AD, and was supporting a £10 million demonstration program for a variety of AD projects. They had developed an online information portal for AD, which is available at: <http://www.biogas-info.co.uk>. The next steps for the U.K. include publishing an AD Implementation Plan, due out before the end of March. For more information, please see the DEFRA Web site at: <http://www.defra.gov.uk/environment/waste/ad>.

23 **United States.** Mr. Kurt Roos of the U.S. EPA noted that the U.S. AgSTAR Program promotes and develops AD in the U.S. The program is supported by the U.S. EPA and the U.S. Department of Agriculture (USDA). The USDA, through the Farm Bill, is the largest financier for U.S AD systems. There are currently approximately 140 AD systems in the U.S., mostly on dairy farms, some with commingled wastes including agro-industrial wastes. There is potential for approximately 6,000 additional farms to install AD systems. The barriers in the U.S. include air emissions regulations for SO and NO_x, the expense of installing and operating systems, and difficulties in selling produced electricity back to the electric grid.

24 **Vietnam.** Ms. Kim Thi Thuy of the Vietnam Institute of Strategies and Policies for Natural Resources and the Environment Department of Livestock Production presented information about Vietnam's policies and activities during the technical and policy sessions. Ms. Kim noted that agriculture composes 50 percent of the GHG emissions in Vietnam. There are increasing numbers of animals and larger farms, so the potential for AD is growing. There are a number of programs to encourage the use of AD in Vietnam, including the Livestock Waste Management in East Asia Project. Most AD systems in Vietnam are small-scale; large-scale systems are less common because they are expensive. Barriers to development of AD in Vietnam include technical barriers for operation and maintenance, a lack of a biogas market, and a lack of strategies and policies to develop AD. The next steps for Vietnam include developing a country profile and strategic plan, performing capacity building, developing a network of experts, and encouraging AD use in the agro-industrial sector (e.g., sugar cane, cassava starch, rubber).

International Guidance for Characterizing AD System Performance

25 Mr. Hilbert explained the development of an international guidance note for characterizing AD performance. He said that some AD projects have failed, unfortunately, which had led some to be skeptical about AD system technology. To help remedy this problem and to provide unbiased information on AD system performance, the Agriculture Subcommittee decided to work on the development of international guidance to establish an evaluation standard for AD systems to meet. Mr. Hilbert had presented information about the guidance during the Expo technical and policy sessions.

26 Ms. Sun Yufang noted that the Chinese government had organized a review of the AD guidance document, and she submitted a summary of the comments to the Agriculture Subcommittee co-chairs and ASG. Ms. Sun Yufang explained that the review panel had the following concerns with the document:

- The development, purpose, and scope of the document should be clarified.
- The name of the document should be changed to ensure that the document is not misinterpreted as compulsory guidance.
- The document should be more representative of different technical and economic development levels in various parts of the world.
- The method for estimating methane reductions should use the published calculations from the Intergovernmental Panel on Climate Change (IPCC) or the United Nations Framework Convention on Climate Change (UNFCCC).

27 Ms. Sun Yufang stated that the Chinese government has seven protocols for the development of AD systems available only in Chinese that she would summarize and provide to the Agriculture Subcommittee. She recommended the Subcommittee perform a review of international protocols and guidance documents to identify other existing resources.

28 Mr. Anil Dhussa stated that the Indian government has published standards for household systems, but not for industrial plants. Mr. Dhussa noted the current guidance document was an excellent starting point, but that it was not applicable to all systems and substrates. Mr. Dhussa acknowledged that field testing the guidance document was a sensible next step. The use of the guidance would help to identify any required changes or additional information needed, and changes could be made to the guidance in the future if there were resources available.

29 Mr. Kurt Roos agreed that field testing was a necessary next step. U.S. EPA has already been contacted to perform field testing of the guidance, which might take place in China and Thailand. In addition, Mr. Roos suggested that the Subcommittee form a working group to work on the guidance document.

30 Mr. Dhussa noted the standards available in India were for small, household-scale projects and were not, therefore, similar to the M2M guidance. Mr. Eppel stated that any standards or protocols might nevertheless be helpful for other countries to review, so country representatives should send them to the ASG and they would be posted on the M2M Web site.

31 Mr. Ray Desjardins suggested that a more informal summary of systems could be performed instead of the detailed analysis currently included in the guidance. Mr. Roos noted the guidance was based on a mass balance approach, so a detailed and qualitative review was necessary.

32 Mr. Roos explained that the U.S. EPA began the process of developing the guidance document by performing a review of existing protocols and asking Subcommittee members to inform the ASG of any existing protocols. The EPA reviewed the identified protocols and developed the guidance document based on input from the existing documents. The protocol developed by the United States (available online at <http://www.epa.gov/agstar/pdf/protocol.pdf>) included the most detailed review of AD systems and therefore, much of the international guidance is based on the U.S. protocol.

33 Mr. Eppel acknowledged that the M2M international guidance included more information and detail than other standards and protocols. However, if other protocols were identified that included additional useful information, the international guidance could be revised and/or expanded in the future.

34 Mr. Eppel concluded that a technical working group would be beneficial and should be established. He suggested the protocol be placed on the M2M Web site and all Subcommittee members should review the document and undertake field testing where possible. Mr. Eppel inquired if any Subcommittee representatives at the meeting would be willing to participate in the

working group; none of the meeting attendees volunteered, so he suggested that Subcommittee representatives nominate others for the working group. In addition, he asked that all Subcommittee representatives send the ASG any other national, regional or local standards or protocols that were in use in their countries.

Report from the Steering Committee

35 Ms. King presented an update on Steering Committee activities. Among other items, the Steering Committee requested that the Subcommittees:

- Continue to promote, track, and report on the project opportunities featured at the Expo.
- Review the Subcommittee leadership every three years and select up to three co-chairs.
- Work with the ASG to update information and events on the M2M Web site and the *Methane International* newsletter.
- Distribute M2M materials or make M2M presentations at relevant conferences or meetings.
- Use the project tracking database to share information on projects and activities,
- Continue to engage PN members.
- Promote the availability of the *Partnership Accomplishments Report (PAR)*.
- Develop and update country action plans.
- Meet once more in 2010.
- Explore the linkage between the Subcommittee's work and other relevant international initiatives and partnerships.
- Consider the Steering Committee's interest in expanding the scope of the Partnership to include methane abatement and how that might impact the work of the Subcommittee.

36 Ms. King noted that the Agriculture Subcommittee could nominate another co-chair given the possibility of having up to three co-chairs in a Subcommittee. Mr. Eppel noted that the Subcommittee would discuss this topic later in the day, and he asked for volunteers or suggested nominees for a third co-chair to be made known to him and Mr. Hilbert during the afternoon break.

37 Mr. Eppel inquired if there were any volunteers to host the next Subcommittee meeting in approximately September to November time frame. He noted the Subcommittee would like to hold the meeting in conjunction with a meeting on a related topic. He requested that Subcommittee members inform the ASG if they were aware of any upcoming events.

38 Mr. Hilbert noted he would like to see improved links between the domestic and international programs of M2M partner countries. One example he noted was that the M2M Web site should include information about upcoming AgSTAR events.

39 Mr. Eppel requested the ASG to compile a list of the country profiles and strategic plans that have so far been submitted to the ASG. The list should include the date of the most recent submission so that country representatives could identify if updates were still needed.

Enteric Fermentation and Rice Cultivation

40 Mr. Eppel explained that in November 2007, the Steering Committee first discussed incorporating other sources of agricultural methane (aside from manure management) within the scope of the Partnership. The main sources of agricultural methane the Partnership is considering are enteric fermentation and rice cultivation. Mr. Eppel noted that speakers from the technical and policy session on this topic were in attendance at the Subcommittee meeting and available for

questions, including Mr. Kay Sumfleth from the International Rice Research Institute (IRRI), Mr. Akira Nagata from Japan, and Mr. Daniel Martino from Carbosur.

41 Mr. Francis noted there were other international organizations looking at these issues so M2M might not need to be involved. In addition, Mr. Francis stated there were not yet actual projects to reduce methane from these sources so it might be best for M2M to wait until there were projects to be implemented.

42 Mr. Martino noted that there were many efforts to collect data on the amount of methane produced per unit of production. Mr. Martino said that the reality of being able to implement CDM projects for these sources was in his view not too far into the future. Mr. Sumfleth noted that projects have been submitted to CDM, although none have been approved to date.

43 Ms. King suggested that national resource assessments (RAs) could be developed for enteric fermentation and rice cultivation, similar to the RAs that are being developed for AD from manure management.

44 Mr. Eppel observed that there were other organizations involved with these sources and that the Agriculture Subcommittee should communicate more with these organizations to determine how or if M2M could play a role without duplicating efforts. Mr. Eppel also proposed that the next Agriculture Subcommittee meeting could include a workshop to give more focus to the potential for practical projects on methane reduction from enteric fermentation and rice cultivation.

Possible Next Steps for the Upcoming Year

45 Ms. King stated the Agriculture Subcommittee should determine their priorities for work in the coming year. She encouraged all meeting participants to provide input and suggestions either during the meeting or to the ASG after the meeting.

46 Mr. Hilbert suggested that international guidance could be developed for food waste, standards for building AD systems could be developed, and an international database of AD systems could be created. Mr. Roos agreed that an international database for AD systems would be beneficial, although he noted that small-scale systems would have to be on a different level than large-scale systems. Mr. Hilbert suggested that it might be helpful for the ASG to develop and send out a list of database fields that would need to be populated for Subcommittee members to review and comment on.

47 Mr. Roos explained that the U.S. EPA has developed a software tool, FarmWare, to help plan AD systems. Mr. Roos suggested the Subcommittee could support the development of an international version of FarmWare. Mr. Roos noted the international version of FarmWare would require a lot of input from individual countries.

48 Mr. Eppel suggested the Subcommittee could develop a standard for digestate; this had been an important issue in the United Kingdom, and was a significant topic to be considered.

49 Mr. Eppel also noted that he and Mr. Hilbert had talked to partner country delegates during the break to see if any were interested in becoming a third co-chair of the Sub-Committee. Mr. Dhussa of India had indicated his willingness to do so: he had been instrumental in helping to organize the agriculture field trip as well as the technical and policy sessions of the Expo, and his contribution to past meetings had been extremely valuable. Mr. Dhussa thanked Mr. Eppel and Mr. Hilbert and, there being no dissent from any of the members of the Sub-Committee, Mr

Dhussa was duly elected. He thanked the Sub-Committee for its confidence in asking him to take on the role of co-chair.

Summary of Action Items

- 50 Ms. Itle summarized the action items from the Subcommittee meeting, namely:
1. Subcommittee members will continue efforts to complete country-specific action plans; the template is located online at:
http://www.methanetomarkets.org/documents/ag_cap_profile_template.doc
 2. U.S. EPA will review and respond to the comments on the international guidance for AD systems.
 3. The ASG will post the international guidance on the M2M Web site.
 4. Subcommittee members will implement and field test the international guidance where appropriate.
 5. Subcommittee members will identify any existing country standards or protocols and provide them to the ASG to post on the M2M Web site.
 6. The ASG will continue to research and communicate with other organizations working on enteric fermentation and rice cultivation. In addition, the ASG will investigate what the timeline might be for potential project implementation in these areas. The ASG would also explore the inclusion of a workshop on enteric fermentation and rice cultivation in the next Subcommittee meeting.
 7. Subcommittee members will inform the ASG of any upcoming events related to methane emissions and agriculture, and any possibilities for co-location for the next Subcommittee meeting.
 8. The ASG will consider possible additional future activities with the co-chairs and agree where best to focus scarce resources. Potential the activities included an international guidance for AD of agro-industrial waste, an international database of AD systems, standards for construction of AD systems, an international version of FarmWare, a standard for digestate, and RAs for enteric fermentation.

Closing Remarks

- 51 Mr. Eppel thanked the meeting participants for a very productive session and reminded everyone that the meeting proceedings would be available on the M2M Web site. Mr. Hilbert thanked the hosts of the event and adjourned the meeting.



Annex 1- Agriculture Subcommittee Meeting Participant List

New Delhi, India
5 March 2010

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