



**METHANE TO MARKETS PARTNERSHIP
AGENDA FOR THE 4TH SESSION OF THE AGRICULTURE SUBCOMMITTEE
MORELIA MEXICO, 22 APRIL 2008**

<u>Time</u>	<u>Agenda Item</u>	<u>Related Document</u>
9:00 am	1. Welcome and Opening of the meeting	
	2. Review of Meeting Goals and Adoption of Agenda (co-chairs)	Meeting Agenda
	3. ASG Update (Henry Ferland, ASG)	
	4. Brief Country Statements from Countries with new Profiles (5-6 minutes)	
	<ul style="list-style-type: none"> • Mexico • Thailand • India 	
	5. Brief Statements from other country representatives and key international organizations (World Bank, FAO)	
	Statement should be no more than 2 minutes and should briefly review activities and updates since the Beijing meeting, including:	
	<ul style="list-style-type: none"> • Research news • Number of digesters implemented • New laws or regulations • New national or regional projects • How AD is being implemented at a national or local level 	
10:30 am	Break	
10:45 am	6. Country Specific Strategic Plans	Attachment 1
	7. Project Network – how to increase its attractiveness	Attachment 2
12:00 pm	Lunch	
1:00 pm	8. Key Methodological Issues -	
	a) <i>Development of International Guidance for Characterizing the Environmental Performance of Anaerobic Digestion Systems</i>	Attachment 3
	b) <i>Development of an Improved Methodology for Determining Leakage Rates from Anaerobic Digestion Systems</i>	Attachment 4
	9. Inclusion of agro-food waste into the work of the subcommittee	Attachment 5
	10. Other agricultural sources of methane emissions (e.g. Enteric Fermentation, Rice, etc...)	Attachment 6
3:30 pm	Break	
3:45 pm	11. Agriculture Action Plan	
4:30 pm	Close of Meeting	

TEMPLATE FOR METHANE TO MARKETS COUNTRY PROFILE AND STRATEGIC PLAN FOR AGRICULTURE

Summary of emissions and characterization of the animal waste management sector

- a. Briefly provide information on national and regional methane emissions for animal waste management systems by type of system and animal type.
- b. Briefly describe current animal waste management practices (e.g. land application, pasture/range, solid storage, liquid storage, lagoon); livestock types and population numbers (e.g. swine, dairy cattle, beef cattle, poultry, dairy buffalo); and predominant farm sizes.

Describe the key stakeholders in the animal waste management sector

Key stakeholders may include: farmers, farm organizations, utilities, local and/or federal government agencies, non-governmental organizations, equipment providers, consultants, and other private sector representatives.

Overview of methane recovery potential

Provide available statistics on the technical and economic potential for methane recovery and use from animal waste management systems.

Challenges and/or priorities to greater methane recovery and use

Discuss the key challenges or barriers to project development. which may include barriers in the following categories discussed in the Agriculture Action Plan:

- Awareness
- Financial and Economic
- National capacity
- Policy
- Project Identification and Development
- Technology

List of existing or planned methane capture and/or use projects (if available)

Briefly provide information on methane recovery and use practices, including the number of existing digesters and the most common digester types.

Market assessment and reform issues

Describe key market issues related to project development. Key issues could include: end uses for methane, potential for on-site uses, prices and tariffs, competition, market access (e.g. access to electric utility grid, gas pipeline), renewable or green energy standards, and regulatory issues.

Financing options (characterize)

Provide a brief discussion of available financing options such as internal mechanisms, external support, private sector investment, multilateral agreements, and incentives.

Current cooperation among countries or non-governmental organizations

Describe any existing bilateral agreements or cooperation with multilateral development banks.

Country strategy

Briefly describe the country's strategy and goals (if defined) including the legal framework for reducing greenhouse gas emissions and the role (if any) that agriculture emissions play in this strategy.

List the elements the country is using and plans to use to overcome the barriers and promote methane emission reductions from agricultural waste. These elements may include, but are not limited to, the following:

- Data collection and development of information products
- Information sharing
- Targeted information exchange
- Development of financial incentives
- Capacity building
- Adoption of other new policies, including changes to Regulatory Framework
- Specific technical training
- Technology demonstrations
- Support for research and technology development

Other issues related to animal waste management

Other environmental and economic considerations that factor into decisions about animal waste management in your country.

Government Structures

Provide an overview of the governmental or other organization(s) that promote methane emission reductions from agricultural sources (federal and state level, partnerships with private sector, etc).

Country contacts

List the anaerobic digestion contacts in your country, including researcher organizations, technical experts, consulting firms, equipment suppliers, etc.

Conclusions and observations

References and sources

METHANE TO MARKETS PARTNERSHIP

Options for Increasing Project Network Involvement

Discussion Paper

1. Purpose

The purpose of this white paper is to provide options for increasing involvement of the Methane to Markets Project Network by encouraging participation in Partnership activities (e.g., Subcommittee meetings, project opportunities), and acknowledging Methane to Markets accomplishments and contributions of these members.

2. Background

Over the past few years, the Steering Committee has charged the Subcommittees and the Administrative Support Group (ASG) to increase Project Network recruitment and encourage Project Network participation in a variety of ways including: conducting outreach at key meetings and conferences (e.g., Carbon Expo), encouraging Subcommittees to schedule their meetings in conjunction with sector-specific workshops/conferences, and encouraging Partners to recruit Project Network members from their own countries. To date, these efforts have been successful and the Steering Committee has tasked Partner countries and the Subcommittees with continuing these activities. However, there is still opportunity to enhance engagement of the Project Network to further advance the goals of the Partnership.

Providing additional incentives for organizations to join and actively participate could further enhance the value of the Project Network and advance the overall work of the Subcommittees. Over the course of the last year, the ASG has received feedback from existing Project Network members suggesting that one such incentive would be broader and more formal Methane to Markets recognition for Project Network members' participation and/or contributions. This recognition could be for both Project Network members who have demonstrated significant commitment to the Partnership's work (e.g., participation in Subcommittee meetings) as well as to those that have contributed to and realized specific project implementation (e.g., measurable emissions reductions, technology deployment).

At the 2007 Steering Committee in Beijing, the Steering Committee discussed the concept of increasing Project Network involvement and tasked the ASG to work with the Subcommittees to develop a white paper with options and recommendations for consideration by the Steering Committee. Some initial options (outlined below) are organized into three categories:

- Encouraging/Enhancing Participation in Partnership Meetings
- Providing Formal Recognition for Project Network Contributions to the Partnership
- Providing Informal Acknowledgement of Project Network Involvement

3. Encouraging/Enhancing Participation in Partnership Meetings

Based on discussions during the 2007 Steering Committee and subsequent input from Subcommittee and Project Network members polled by Subcommittee chairs, the following options have been identified as ways to increase Project Network involvement.

- **Issue Meeting Invitations from Partner Country.** Encouraging Partner Countries to invite Project Network members to Partnership meetings is a way to potentially increase broader and more robust participation. This approach was recently pursued by both Japan and the United States to encourage Project Network members from their respective countries to attend and participate in the 2007 Methane to Markets Partnership Expo. In both cases, this approach was successful in increasing attendance and engagement and was viewed positively by Project Network members. One option is to encourage other Partner Countries to adopt a similar approach. To facilitate this, the ASG could develop and provide a boilerplate invitation to Partner countries for customization and distribution to in-country Project Network members.
- **Increase Appeal of Subcommittee Meetings to Project Network Members.** Simple changes to the structure or content of Subcommittee meetings also have the potential of enhancing Project Network participation. During the recent Coal Subcommittee meeting in Beijing, several suggestions were offered for consideration. These – and some other options – include:
 - ▶ Limiting the Methane to Markets administrative discussions (e.g., ASG details).
 - ▶ Adding a technical component to Subcommittee meetings.
 - ▶ Co-locating the Subcommittee meetings with other meetings and/or workshops that attract Project Network members, and improving marketing and networking opportunities for Project Network members.
 - ▶ Inviting Project Network members to make presentations during Methane to Markets technical workshops and/or Subcommittee meetings, and then making the presentations available on the Methane to Markets Web site.
 - ▶ Setting aside meeting time for acknowledging contributions from the Project Network and highlighting these contributions in the meeting minutes.
- **Acknowledge Project Network Attendance at Subcommittee Meetings.** Presently, Project Network members are included in the Subcommittee meeting summary attendee lists. In the *Methane International* Subcommittee meeting recaps, a list of Partners as well as the Project Network members that attended could acknowledge participation and show broad public-private involvement. Alternatively, one issue of *Methane International* might be dedicated to recognizing Project Network members that have participated in Subcommittee meetings throughout the entire year. To differentiate between attendance and more active engagement or involvement (e.g., presenting, sponsoring), this list might include an added distinction for those that made presentations and/or sponsored the meeting (see text box).

SAMPLE TEXT BOX

Methane to Markets would like to thank and acknowledge the following Project Network members for participation in recent Subcommittee meetings.

- Company A
- Firm B (presenter)
- Organization C
- Corporation D (sponsor)

4. Providing Formal Recognition for Project Network Contributions to the Partnership

Recognizing Project Network members for their contributions can be accomplished formally through recognition of their organizations' actions/activities or through their role in a given project or activity. Additionally, the Partnership could also employ various existing mechanisms (i.e., Web site or newsletter) to raise the profile of active Project Network members.

- **Recognition of Project Network Members.** One option for recognizing Project Network members might involve developing criteria for evaluating organizations' contributions and identifying one Project Network member [per sector] as the "Project Network Member of the Year." This type of program might recognize Project Network member efforts to reduce methane emissions, implement a variety of technologies and practices, and support overall Partnership activities, initiatives, and outreach (e.g., sponsor/attend meetings, translate materials). The Methane to Markets evaluation criteria might be developed by either the Steering Committee or the individual Subcommittees. Based on the criteria, Project Network members would submit appropriate information for consideration. As part of this process, it might be necessary to make distinctions between organizations based on different characteristics, such as size or type (e.g., developer vs. financial institution).
- **Recognition through Project Achievements.** A similar approach might be considered for identifying and recognizing Project(s) of the Year, in which Project Network members might be involved. This approach has the added benefit of highlighting contributions of multiple Project Network members. As with the aforementioned concept, criteria would need to be developed against which project submittals would be evaluated.
- **Recognition for Specific Technologies.** Another opportunity to recognize Project Network members might be related to the development and/or deployment of specific technologies. This option might be applicable when a particular technology has benefits beyond a single project (mentioned above) and/or a Partner purchases technology for installation at multiple locations (e.g., infrared cameras at all gas processing facilities).

For direct recognition of Project Network members, projects, and/or technologies, an "awards" cycle might be required to ensure submittals are received in a timely fashion to allow ample time for evaluation, selection, and notification prior to announcement via certain outreach vehicles (e.g., newsletter, Web site) and/or at Partnership events (e.g., 2009 Expo). In addition, recipients might receive an engraved plaque or award object (e.g., crystal flame) to signify their achievement.

During the Steering Committee meeting, several Partners expressed concern that the above process might require significant time and could be subjective. Alternatively, Project Network members could submit demonstrated results from projects/technologies they have completed/installed. This methodology could utilize a self-nominating, auto-policing process by requiring that any submittals must come from the methane source that benefited from the activities of the specific Project Network members. This source could be a coal mine or landfill operator, or an oil and gas company that owns the facilities. Rather than selecting one Project Network member [per sector], every successful project that submits demonstrated results – along with the Project Network members that made it happen – would be acknowledged. In this way, both the Project Network member AND the project are recognized. As with the other approach, this option might require a cut-off date to submit projects for consideration/acknowledgement.

5. Providing Informal Acknowledgement of Project Network Involvement

The Methane to Markets Partnership has numerous existing communications and outreach outlets that could be used to acknowledge Project Network members and their contributions. Some of these outlets include the *Methane International* newsletter and the Methane to Markets Web site. Some possible informal approaches to increase recognition of Project Network member contributions include:

- ***Enhance the Project Network Section on the Methane to Markets Web site.*** The Methane to Markets Web site has proved an invaluable tool for communicating with the Partnership and highlighting its activities. Areas of the Web site (e.g., Project Network pages) could be modified to feature Project Network members more prominently, particularly those that have been active in Subcommittee meetings and/or project opportunities with demonstrated results. The ASG is also exploring opportunities to capture more detailed information on the types of services and technologies (e.g., expertise) that Project Network members offer. This information would be included in the Project Network listing to help countries and others identify potential project development partners.
- ***Develop Case Studies Featuring Project Network Members:*** To highlight Project Network contributions and/or achievements, the ASG could develop a series of case studies featuring the parties involved in various emissions reduction projects. These case studies would tell the “story” of how the project came to be (i.e., background), the Partner countries and Project Network members involved, and the actual or anticipated results. The case studies would be developed in a graphically appealing template similar to the Methane to Markets fact sheets and posted to the Web site for download, included in issues of *Methane International*, and/or printed for inclusion in Partnership marketing materials.
- ***Showcase Project Network Contributions at the 2009 Partnership Expo:*** At the next Partnership Expo, a “Wall of Fame” could be designated to feature the case studies (above) and/or other Project Network members/projects that have demonstrated results (e.g., installed technology, verifiable emissions reductions). Similar to the poster area at the 2007 Expo, Project Network members would have the opportunity to develop graphics highlighting their achievement.

6. Items for Consideration

The following Project Network involvement options are open to consideration:

Encouraging/Enhancing Participation in Partnership Meetings:

- Should the ASG pursue suggestions to encourage/enhance Project Network participation in Partnership meetings (e.g., Partner country invitation template, newsletter listing)?
- Do the Subcommittees wish to consider options for improving Project Network attendance (e.g., limiting administrative business, providing speaking opportunities) at Methane to Markets technical workshops and/or Subcommittee meetings?

Providing Formal Recognition Project Network Contributions to the Partnership:

- Do the Subcommittees wish to develop criteria to evaluate and identify a Project Network Member of the Year? Project of the Year? Technology? Within each sector or Partnership-wide?
- Alternatively, should the Partnership consider a self-policing process for Project Network members involved in projects with demonstrated results?

Providing Informal Acknowledgement of Project Network Involvement:

- Should the ASG explore new ways to use the Methane to Markets Web site to acknowledge Project Network members?
- Should the ASG consider future opportunities (e.g., case studies, 2009 Expo) to further highlight the achievements of Project Network members?

*Development of International Guidance for Characterizing the Environmental
Performance of Anaerobic Digestion Systems*

Introduction: A Proposal to Develop an International AD Performance Protocol

Recognizing that there is growing global interest in implementing AD technologies, the Methane to Markets Agriculture Subcommittee believes that it would be useful to provide a standardized method to measure the environmental performance on various types of AD systems. Currently, there are a number of methods, yielding various results and levels of data reliability on which to measure the environmental performance of these technologies. It was agreed by the Methane to Markets Partnership Subcommittee that it might be useful to develop this type of guidance for use by the international community.

The benefits of developing such a guidance document protocol would provide a consistent way to measure performance of AD systems. If this protocol is widely adopted and used to assess systems the international community would have a consistent way to review and assess potential technologies to implement. It would also provide project developers and potential users with credible and comparable information on a wide range of technology types. Looking at the environmental concerns about final effluents disposal and use the protocol will increase confidence that national and international regulations are being complied with. The intention is not however to produce a new regulatory requirement.

In 2006 the U.S. developed a National Protocol for Quantifying and Reporting the Performance of Anaerobic Digestion Systems for Livestock Wastes¹. Other M2M partner countries which have developed similar protocols, or are planning to do so, need to be identified and actively involved in this work. Details of the US work is presented the Appendix to this paper.

¹ This protocol can be accessed online at <http://www.epa.gov/agstar/resources.html>

Proposed Action

Typical measurement methods in use today include mass balances, micro-meteorology and other sample-based methods. All these methods have their strengths and weakness including issues related to experimental design, sampling method, sampling frequency, data analysis and reporting.

It is therefore proposed that guidance be developed relative to each measurement technique illustrating:

- 1) The comparative strengths and weaknesses of these methods; and
- 2) Developing a final recommendation and single protocol on which of these methods can be used more effectively to characterize the environmental performance of anaerobic digestion technologies.

We recommend engaging a contractor to develop this paper and that the chosen contractor would implement a process and develop a peer reviewed technical paper following the approach below:

- 1) Preparation of an initial draft guidance document for review and comment. This draft could be developed by U.S. EPA using the U.S. protocol as a starting point and incorporating input from other country protocols and equivalent work.
- 2) Convening an international group of experts representing appropriate organizations to review the initial draft guidance and provide comments and suggestions. This group of experts would need to be geographically representative and include leading experts in the field of AD measurement methodologies.
- 3) Preparation of a final draft guidance document reflecting the comments and suggestions provided by the group of experts for final comments and suggestions, and submission to the M2M Agriculture Subcommittee.

- 4) Preparation of a final document for distribution and use, including on the M2M website.
- 5) An Executive Summary of the guidance would be published in a peer reviewed journal. This would serve to disseminate this information further and provide a reference that can be used by the international community.

Uses of the Paper

Once the peer reviewed paper has been developed and provided to the Agriculture Subcommittee, the Subcommittee will need to determine how to promote the use of this report in the future.

As a potential additional or concurrent step in this process, the Subcommittee may wish to consider developing this type of standard under the auspices of the International Standards Organization (ISO) or other appropriate national level or international level organizations.

Questions for consideration by 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 ISO or other standard setting organizations would be useful?
4. Are you aware of work underway in your country on this issue. If so, please could you 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 digestate/sludge, final disposal etc.)

Appendix

In the U.S., recent construction of a number of successful AD systems and an increased awareness of the benefits of manure biogas has produced an increased level of interest from livestock producers. Concurrently, the number of systems developed increased and a wide variety of system design approaches are being developed with claims about performance superiority. In some instances these claims are supported by results of rigorous performance evaluations, whereas others are based on minimal data.

A significant barrier to project development in the U.S. is that farmers often don't have extensive experience working with AD systems and thus, may not have the tools to select a reliable system appropriate for their circumstances. This protocol was developed so that consumers in the U.S. and the general public could look at claims made by AD technology providers in a way that allows comparison of similar and different types of systems based on directly comparable performance evaluation reports. These reports could be stored in a central repository by interested parties and could possibly be the basis for a design certification program in the future.

The U.S. protocol provides:

- 1) A standardized approach for quantifying the environmental, economic, energy, and greenhouse gas reduction performance achieved by commercial scale anaerobic digestion technologies
- 2) A valid and consistent approach for supporting system developer claims of technology performance;
- 3) A basis for a future US digester labeling or certification program.

The U.S. protocol specifies prerequisites for performance evaluations of operational technologies at commercial facilities such as farms and other agro-food processing facilities. The protocol also describes the required assembly of background information and acceptable methods for data collection to characterize system performance with respect to waste stabilization, biogas production, and utilization. Additionally, a uniform approach for evaluating economic viability and accounting for greenhouse gas emission reductions is established. Technology providers that choose to assess their technologies using this protocol will benefit by being able to provide this information to potential clients.

*Development of an Improved Methodology for Determining Leakage Rates from
Anaerobic Digestion Systems*

Background

The Intergovernmental Panel on Climate Change (IPCC) provides guidance and methodologies to estimate greenhouse gas (including methane) emissions and reductions from an array of waste management systems and animal types and is used for compiling national inventories under the UNFCCC and the mechanisms under the Kyoto Protocol, including the Clean Development Mechanism (CDM). This guidance in many cases is quite rigorous, based on the best available science and data, however in other cases this guidance is not as robust with large margins of error. For example, IPCC provides a single tabular reference to make determinations on methane leakage rates for anaerobic digestion systems that range from 0 – 100%. The accepted CDM methodology for anaerobic digesters sets the default leakage rate at 15%. These generic approaches do not distinguish between various digester types and other parameters which affect leakage rates from these technologies. These differences can result in the potential for significantly under or overestimating leakage rates from specific digester types.

Another important issue is related to the baseline against which methane reductions from the implementation of biogas technology are to be measured.

Introduction

The Agriculture Subcommittee has, at its recent meetings, discussed issues related to agricultural methane emission methodologies and how it could contribute to improving and expanding on these methodologies. A number of issues were identified including the IPCC guidance related to leakage rates from anaerobic digestion systems and the large potential for error that exists under the current framework. The Methane to Markets Agriculture Subcommittee has therefore decided to initiate development of a peer reviewed paper that would provide additional information on leakage rates of digesters based on their type and age. This information could be used by the international community in a wide variety of ways including improvement of IPCC emission factors,

and improved estimates of methane production from AD projects. Leakage from AD systems occur from the physical structure and gas transmission system, the residual emission of methane produced by the effluents when retention time and temperature are not well managed, refractory emissions when undersized or improperly maintained, and by design through features such as hydraulic displacement systems.

Proposed Action

It is proposed that the Agriculture Subcommittee should commission experts to develop an improved methodology for estimating leakage rates from anaerobic digester systems. This methodology could be based on the key parameters which affect leaks that may occur in digester technologies, including:

- 1) Type of system (*e.g.*, covered lagoon, plug-flow, mixed, fixed dome *etc.*);
- 2) Design specifications (including temperature and retention time);
- 3) Construction materials;
- 4) Gas handling and transmission components (including gas storage and lines of conduction); and
- 5) System age.

Based on these and other relevant attributes, a technology specific leakage rate framework could be developed to improve the accuracy of the current estimation methodology. This could be done for intermediate systems such as ambient temperature household systems as well as larger and more complex systems operating at constant temperature, typically with more advanced gas utilization equipment.

The suggested approach for developing this improved methodology is as follows:

- 1) Preparation of an initial draft methodology document for review and comment by members of the M2M Agriculture Subcommittee, and a review of related

scientific data on this matter; this could be done by a contractor commissioned by U.S. EPA.

- 2) Convening of an international group of experts representing appropriate organizations to review the initial draft guidance and provide comments and suggestions; experts would be appointed to this panel based on their expertise and experience in the field of anaerobic digestion. The group would need to be geographically representative as many technology types are geographically specific.
- 3) Preparation by a contractor of a final document reflecting the comments and suggestions provided by the group of experts for final comments and suggestions; and submission to the Agriculture Subcommittee.
- 4) Preparation of a final document for distribution and use, including on the M2M website.
- 5) As an additional step, the paper would be published in a peer reviewed journal. This would serve to disseminate this information further and provide a reference document that can be used by the international community.

Questions for consideration of the Subcommittee:

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?

Is there any organization or country willing to host the expert meeting for reviewing this topic?

*Incorporation of Food and Slaughterhouse Wastes into the Scope of the
Methane to Markets Agriculture Subcommittee*

Background

The Methane to Markets (M2M) Agriculture Subcommittee was created to focus on the promotion of anaerobic digestion of livestock manure to reduce methane emissions from manure management. In November 2007, the M2M Agriculture Subcommittee proposed to the M2M Steering Committee that anaerobic digestion of agro-industrial food waste (including food processing and slaughterhouse waste) should also be included in the scope of the Subcommittee's work. The Steering Committee supported this proposal, and the Agriculture Subcommittee must now determine the best way to include the potential for anaerobic digestion of food and slaughterhouse waste in the work of the Subcommittee.

Charge to Subcommittee Participants

All Subcommittee participants are requested to come to the meeting prepared to discuss this issue and to provide input on how the wider agro-industrial food sector can be included in the work of the Subcommittee. To assist in this effort, the ASG has undertaken a brief review to try to identify inventory data and emission estimates from the agro-industrial waste category (please see the Appendix).

Ideas for Consideration

The following are some suggestions for ways in which the Subcommittee could take forward this issue:

- Identification of the specific agro-food industrial wastes that are most appropriate for anaerobic digestion;
- Identification of sources of international or national inventory data and emission estimates for this industry sector;
- Incorporation of relevant information about agro-industrial wastes into the M2M Country Profiles for Agriculture; and,
- Establishment of a working group to develop a paper to describe how agro-industrial waste can best be incorporated into the Subcommittee's work. .

Appendix

Inventory Data

The ASG has searched for a central source of international information for agro-industrial food processing industries, as the FAO database (<http://faostat.fao.org/default.aspx>) is a central source of international information for manure management. ASG was unable to locate a central international source of data for this industry.

That does not however mean that none exists, and any knowledge of such data sources which members of the Subcommittee are able to provide would be very welcome.

Information about food processors and slaughterhouses may be available from country census data. For example, the U.S. Census Bureau conducts an Economic Census every 5 years. This census tracks information on facilities in various industrial categories. Food processors and slaughterhouses fall into the “Manufacturing” category. However, obtaining inventory data for food processors might be difficult because not all food processors produce waste that is appropriate for anaerobic digestion.

Methane Emission Estimates

Each country quantifies methane emissions in greenhouse gas emission inventories according to Intergovernmental Panel on Climate Change (IPCC) emission estimation guidance and United Nations Framework Convention on Climate Change (UNFCCC) reporting requirements. The guidance and reporting requirements are divided into sectors to represent each greenhouse gas source and sink category, including:

- Energy;
- Industrial Processes;
- Solvent and Other Product Uses;
- Agriculture;
- Land Use, Land-Use Change and Forestry;
- Waste; and
- Other

Sectors are divided into categories and subcategories. For example, the agriculture sector is divided into the following categories:

- Enteric Fermentation;
- Manure Management;
- Rice Cultivation;
- Agricultural Soils;
- Prescribed Burning of Savannas;
- Field Burning of Agricultural Residues; and
- Other.

Food and slaughterhouse wastes are included in the IPCC guidance and UNFCCC reporting requirements as a subset to a subcategory in the Waste sector. The Waste sector includes the following categories:

- Solid Waste Disposal on Land;
- Wastewater Handling;
- Waste Incineration; and
- Other.

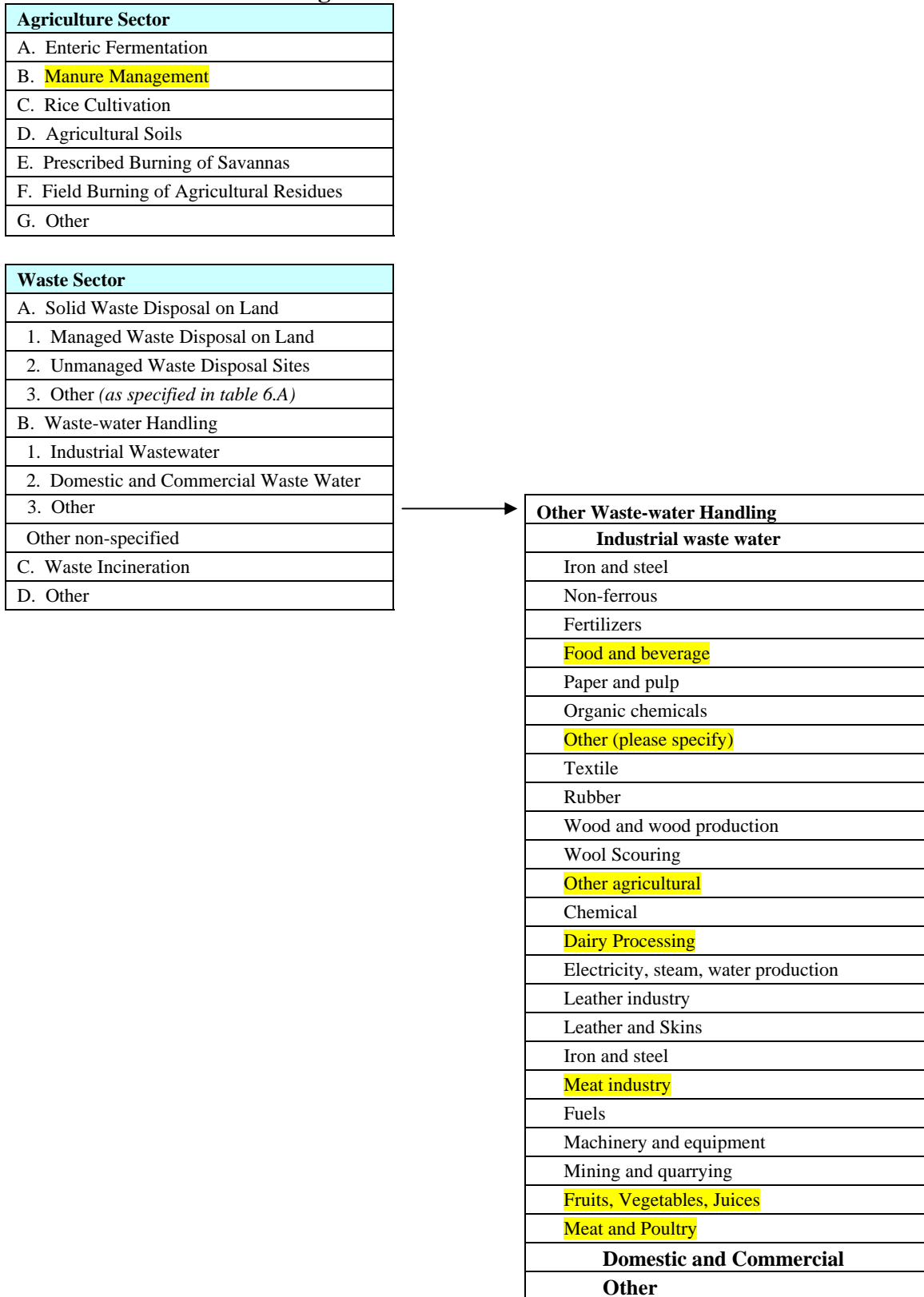
The Wastewater Handling category of the Waste sector is divided into the following subcategories:

- Industrial Wastewater;
- Domestic and Commercial Waste Water; and
- Other

Food and slaughterhouse wastes are included as subsets of the Other subcategory of the Wastewater Handling category of the Waste sector. Please see Figure 1 for a presentation of where food and slaughterhouse wastes emissions are calculated and reported in national greenhouse gas inventories in comparison to manure management emissions.

Obtaining methane emissions estimates for food and slaughterhouse wastes will be more difficult than obtaining methane emissions estimates from manure management. Manure management methane emissions are readily obtainable because manure management is a main category of the Agriculture sector. Many countries may not currently estimate or report methane emissions related to food and slaughterhouse wastes because these activities are not a main category of the Waste sector, they are a subset of a subcategory.

Figure 1. Greenhouse Gas Inventory Categories and Subcategories for the Agriculture and Waste Sectors



The ASG reviewed multiple countries' greenhouse gas inventories as reported to UNFCCC (available online at: <http://unfccc.int/di/DetailedByParty/Setup.do>). The data from this review are presented in Table 1. The UNFCCC search revealed that none of the reviewed countries had values reported for the Other subcategory of the Wastewater Handling category of the Waste Sector. In contrast, all countries had reported methane emissions for the Manure Management and Wastewater Handling categories.

Table 1. Methane Emissions from Manure Management and Wastewater Handling

Country	Manure Management Methane Gg CO₂ equivalent (inventory year)	Wastewater Handling- Other Methane Gg CO₂ equivalent (inventory year)
Argentina	2,077 (1997)	No data available, only Total Wastewater Handling Reported : 2,335 (1997)
Brazil	7,728 (1994)	No data available, only Total Wastewater Handling Reported : 2,653 (1994)
Canada	3,204 (2005)	No data available, only Domestic and Commercial Wastewater: 251 (2005) and Total Wastewater Handling Reported: 251 (2005)
China	18,207 (1994)	No data available, only Total Wastewater Handling Reported : 119,490 (1994)
Germany	4,954 (2005)	No data available, only Domestic and Commercial Wastewater: 91 (2005) and Total Wastewater Handling Reported: 91 (2005)
India	19,866 (1994)	No data available, only Total Wastewater Handling Reported: 8,841 (1994)
Italy	3,151 (2005)	No data available, only Domestic and Commercial Wastewater: 1,106 (2005) and Total Wastewater Handling Reported: 2,322 (2005)
Mexico	1,155 (2002)	No data available, only Total Wastewater Handling Reported: 28,567 (2002)
United States	41,280 (2005)	No data available, only Domestic and Commercial Wastewater: 16,994 (2005) and Wastewater Handling Total Reported: 25,400 (2005)
United Kingdom	2,509 (2005)	No data available, only Domestic and Commercial Wastewater: 799 (2005) and Total Wastewater Handling Reported: 808 (2005)

*Development of a scoping paper to investigate methane reduction and use opportunities
in Agriculture sectors beyond Anaerobic Digestion*

Background

At the Methane to Markets Steering committee meeting in Beijing, October 2007, it was agreed that the Agriculture Subcommittee should investigate the possibility and opportunity for including a broader set of methane emission sources into the Methane to Markets Agriculture portfolio.

In order to help accomplish this goal the Administrative Support Group has agreed to commission a short paper that would provide background information to the Agriculture Subcommittee on this topic. The purpose of this paper is simply to inform the subcommittee on the topic so that they may consider whether it would be worthwhile to expand the Methane to Markets work into new areas.

Process for development and review

In order to achieve these objectives, the ASG will employ a contractor to develop the paper based on an outline approved by the subcommittee (see attached draft outline). The contractor will then solicit comment from the members of the Agriculture subcommittee, Project Network members, and any other experts identified by the subcommittee during May through August (including FAO and other international organizations) The ASG will then incorporate these comments and develop a final paper will to be presented to the Agriculture subcommittee at the meeting in November or December 2008. The subcommittee meeting can at this time discuss next steps and options for presenting this to the Steering committee.

Subcommittee should identify other experts who they would like to review the paper as well. (E.g. experts on ruminants or rice farming etc.)

Suggested Timeline of Tasks

1. Subcommittee members to provide comments to the ASG on the paper outline by May 9, 2008
2. Subcommittee members to send in names of reviewers who we would like to include in the review process by May 20, 2008
3. ASG to send out draft paper for comment by subcommittee by July 15
4. Subcommittee members and other reviewers to provide comment by Sept. 15
5. Co-chairs then need to sign off on this. Final comments incorporated and report will be posted to M2M website by October 20

Proposed Outline of White Paper

- I. Background and Introduction
- II.** Overview of global agriculture related methane emissions sources and identification of top sources and regions/countries where these sources are most important.
- III.** Discussion of top agriculture emission sources not currently covered under M2M
 - a. Overview of the source itself
 - b. Describe potential opportunities for economically feasible mitigation along with a description of mitigation technologies, resource needs and other issues. Include a description of current research.
 - i. Near term – opportunities realized through projects within 1-5
 - ii. Longer term – opportunities realized after 5 years.
 - c. Discussion of barriers to mitigation implementation in each sector.
 - d. Overview of organized international efforts to promote methane emissions reductions from these sectors. This section could include a list of the critical organizations, institutes, research organizations and governments participating in this area.
- IV.** References