

Methane to Markets Partnership

Agriculture Subcommittee

Action Plan for 2006/2007

Introduction

1. The Methane to Markets (M2M) Partnership is an international initiative that aims to reduce global methane emissions in order to enhance economic growth, strengthen energy security, improve air quality, improve industrial safety, and reduce emissions of greenhouse gases. In the agricultural sector, methane recovery and use as a clean energy source can be a highly sustainable solution, contributing to a number of environmental objectives as well as providing social and economic benefits for rural communities.
2. The Terms of Reference for the Partnership broadly define the role of the subcommittees as being “responsible for guidance and assessment of area specific activities and engaging representatives of the private sector, development banks, researchers and other relevant governmental and non-governmental organisations”. The Subcommittees are charged with developing an action plan for these activities which should include:
 - Overview of methane recovery and use opportunities and descriptions of available technologies and best practices
 - Identification of key barriers and issues for project development
 - Identification of possible cooperative activities to increase methane recovery and use in the sector
 - Discussion of country-specific needs, opportunities and barriers; and
 - Outreach to engage Project Network members
3. The Agriculture Subcommittee recognises that, under the Partnership, priority is given to activities that have the greatest chance to achieve emissions reductions in the near term. However a number of important barriers to project development need to be addressed that are associated indirectly or in the longer-term with emissions reductions.

Development of the Agriculture Subcommittee and Action Plan

4. At the Ministerial inaugural meeting of the Partnership in Washington in November 2004, the Steering Committee created the Task Force on Agriculture and directed them to consider the extent to which the Partnership should address methane recovery and use opportunities in the agriculture sector. At the second meeting of the Partnership in Buenos Aires in November 2005, the Task Force presented their conclusions which stated that agriculture was a significant source of methane emissions and there were particular opportunities for capturing and utilising methane from manure waste management. The Steering Committee accepted the Taskforce recommendation to establish a new subcommittee on Agriculture.
5. The work conducted by the Taskforce has provided useful background information for the work of the subcommittee and the development of this action plan. Two meetings were held by teleconference and members agreed to develop country profiles to compile information on agricultural emissions and identify emission reduction opportunities. This was followed by a final meeting of the Taskforce where the group held a workshop including presentations of country profiles, technical presentations and case studies.
6. This Action Plan sets out the broad framework of activities for the Agriculture Subcommittee to the end of 2007. It is intended to be a living document that will be updated on an ongoing basis to reflect new projects and priorities as the work of the subcommittee develops. In particular it will need to reflect ongoing preparations for the Partnership Expo and Forum in late 2007, on which each Subcommittee has been asked to make specific inputs, for example on identifying projects, developing guidance on project submissions, and suggesting thematic tracks for the sector. The Annex provides a more detailed summary of ongoing and planned activities.

Overview of methane recovery and use opportunities and descriptions of available technologies and best practices

7. The primary sources of methane emissions from agriculture are livestock enteric fermentation, livestock waste management, rice cultivation, and agricultural waste burning.
8. Of these, livestock waste management offers the most viable, short-term opportunities for methane recovery and utilisation. Opportunities in this area can be realised with currently available technologies, and offer additional benefits in terms of improved environmental quality.

9. Livestock manure accounts for roughly four percent of global anthropogenic (human-related) methane emissions¹. While current estimates indicate that developed countries account for the largest percentage of total methane emissions from livestock manures, emissions from developing countries are substantial, and their share of emissions is expected to rise. Global trends towards more concentrated and commercialised livestock operations will provide increasing opportunities for methane recovery and utilisation from livestock waste management.
10. Methane released from liquid manure management systems can be captured and used as a clean energy source to produce electricity, either for sale or to meet a portion of the farm's energy requirements. A number of techniques for recovery exist, but the most promising seems to be anaerobic digestion.
11. In addition to reducing methane emissions to the atmosphere, this technology enables the recovered methane from livestock manure to be used to generate electricity heat or combined heat and power for sale or for use on-site. The remaining digestate can be utilised as livestock feed, an aquaculture supplement, or fertiliser. In addition it can help to reduce environmental and health risks, such as ground and surface water contamination or eutrophication from manure runoff, and the spread of pathogens and diseases. Finally, anaerobic decomposition virtually eliminates odours from livestock manure.
12. The initial phase of work of the Agriculture Subcommittee is therefore focused on promoting the acceleration of economically viable anaerobic digestion of animal wastes. However, in the longer-term, opportunities exist to further reduce methane emissions from other agricultural sources, such as addressing enteric fermentation in ruminants.

Identification of key barriers and issues for project development

13. A number of key issues and barriers to development of anaerobic digestion technologies have been identified by the Subcommittee, which can be categorised into the 5 key themes of Technology, Financial and Economic, Policy, Outreach, and Project Identification and Development.
14. However, in addition to a number of high-level, general barriers, there is a need to consider country-specific issues and regionally optimal solutions.
15. *The first proposed action therefore is to:*
 - collate and provide methods for country profile analysis to better understand the livestock sector and regional opportunities as well as specific challenges in different member countries/regions.
16. This work will cut across and inform all five of the key themes.

¹ Scheehle, E. A. and Kruger, D. (2004). Global anthropogenic methane and nitrous oxide emissions. *Energy Journal* (forthcoming).

A) Technology

Although anaerobic digester technology exists for methane capture and use from livestock manures, there are a number of barriers which prevent uptake and use of the technology. These include:

- i) Problems with the technology itself e.g. equipment availability, national expertise, readiness, reliability, design and ability to replicate, standardisation, scale
- ii) Cost of the technology
- iii) Appropriateness of research to support technology development: input to R&D and future research priority setting, e.g. knowledge of new technology breakthroughs in the pipeline?

Proposed Actions to address these issues include:

- Share information on proven technologies taking into consideration relative costs and compatibility with manure type and handling methods
- Bring together key technology developers and users through the Project Network
- Collect and share technical information (research reports, relevant articles, case studies etc)
- Identify key technical documents for translation and dissemination
- Technology transfer events (see sections below on outreach and cooperative activities)
- Support technology demonstrations

B) Finance and Economics

The key barriers currently identified in this area are:

- i) Upfront capital costs
- ii) Ability to capture economic co-benefits
- iii) Markets for energy and co-products, and consideration of wider environmental issues around AD (particularly digestate)

Proposed activities include:

- Each country to identify, support and promote investment opportunities through Workshop and Project Expo etc
- Member countries to learn from best practice in involvement in energy markets and co-products
- Engage in any work which may be undertaken to help to capture value from GHG savings and other environmental benefits

- Development of a 'decision-making tree' to help identify situations where and when establishment of AD systems might be economically feasible
- Develop Project Network to include energy companies and other sectors who may benefit from AD processing of agricultural waste

C) Policy constraints

Among the key barriers in this area so far identified are:

- i) Structure of incentives to farmers to take up methane recovery systems
- ii) Regulatory issues related to distributed generation
- iii) Accounting systems

Proposed activities include:

- Analyse differences in policy position between partner countries through responses to the country profile
- International Workshop in November 2006 to share lessons learned from policy development on incentive schemes for farmers (see workshop plans in Outreach section below)
- Engage electricity and other utility companies in the Project Network and work with other subcommittees on energy projects where appropriate

D) Outreach and Education

Lack of awareness about the potential of available technology and project development opportunities is a substantial barrier to uptake of the technology and evolution of a market for methane.

Some of these financial barriers could be partially addressed by stimulation of the market through sectors outside agriculture. The energy sector in particular needs to be convinced of the value of agriculturally sourced methane as a renewable source of energy. Other sectors, such as the water companies, waste processors, the feed industry etc could benefit from AD processing of agricultural wastes. However, their lack of knowledge and/or involvement in the discussions of agricultural methane is a barrier to development of a market for AD.

Proposed activities include:

- Produce guidebooks and technology profiles
- Identify and translate key documents
- Develop and keep up to date information on M2M website

- Member countries to identify and recruit organisations to the Project Network, including those who may not have a 'direct' interest in agricultural methane but may benefit from AD
- Identify case studies and examples of best practice to promote
- Provide input to M2M Project Expo and Forum to be held in late 2007
- Hold an international seminar on methane recovery and use from agriculture towards the end of 2006 (to be hosted by the UK).

E) Project Identification and Development

In parallel with addressing the barriers identified above, a key challenge is identifying project sites that are good candidates for development and working with the owners, investors, and other stakeholders to move them through the project development process.

Proposed activities, dependent on individual country circumstances, include:

- Identify potential project sites in key partner countries
- Support pre-feasibility and feasibility studies at specific sites
- Present these sites at the 2007 Project Expo for possible investment
- Work with farmers, financing organisations, and other stakeholders to fully implement economically viable projects

17. The international workshop in November 2006 will be the major focus of the work of the subcommittee in the short term. It will provide an opportunity to bring together the key players for discussion and information sharing, and act as a showcase for projects and examples of best practice from around the world. As such it will help to take work forward across all the key themes identified above.

Conclusions

18. The Agriculture Subcommittee is determined to work in as collaborative a fashion as possible in taking forward the activities in this Action Plan to develop and disseminate information about opportunities for methane reduction from agriculture. The subcommittee will address key barriers to project development, primarily technology, policy, finance and awareness raising/outreach. The Subcommittee will conduct these activities in a way that promotes cooperation among the Partner nations and the Project Network members. The Subcommittee will continue to work to understand the needs and priorities of individual countries within the Partnership. Having been established after the other technical subcommittees, the Agriculture subcommittee will seek to learn from the experience of other subcommittees and work with them to maximise synergies between them where appropriate.

| Theme | Activity | Date | Lead Action | Status |
|--------------------------|--|---|--|-------------|
| All/cross-cutting | Chase up country profiles | August 2006 | ASG | |
| | Analyse country profiles and identify policy implications | Dec 2006 | TBD | Not started |
| | Hold an international seminar on methane recovery and use from agriculture: <ul style="list-style-type: none"> • Agree key themes for workshop • Recruit speakers • Agree venue/logistics etc • Seek sponsors • Engage Project Network | Late November 2006, in UK August 2006 August-Sept 2006 Ongoing | UK Government/US/ASG | Ongoing |
| | Contribute to Partnership Expo and Forum: Continue participation in Expo Taskforce <ul style="list-style-type: none"> • Develop a thematic conference track for Agriculture sector • Actively identify, solicit, and promote projects to feature at the Expo • Develop Additional Guidance for Project Submissions | End 2006? | | |
| Technology | Bring together key technology developers and users through the Project Network – see outreach commitments below | To be decided (tbd) | | Not started |
| | Subcommittee Members to collect and share technical information | Ongoing | | Not started |
| | Identify and implement technology demonstrations in countries which have interest and infra-structure to do so. | Ongoing | US EPA and World Bank – China US EPA and Mexico | In progress |
| | Identify key technical documents for translation and dissemination | tbd | | Not started |

Annex : Action Plan for M2M Agriculture Subcommittee 2006/7

| Theme | Activity | Date | Lead Action | Status |
|------------------------------|--|---|--------------------|---------------|
| Technology (cont.) | Technology transfer events (see sections below on outreach and cooperative activities) | Possible role for international workshop planned for end 2006 | | Not started |
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| Finance and economics | Each country to identify, support and promote projects/investment opportunities | (dependent on M2M expo timetable) | | Not started |
| | Keep involved in wider work of M2M Partnership on methane trading (?) | Ongoing | | Not started |
| | Develop decision making tree | tbd | | Not started |
| | | | | |
| Policy | Discussion at workshop between countries to share lessons learned from policy development on schemes to promote farm-level AD. | End 2006 | | Not started |
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| Outreach | Produce guidebooks and technology profiles Identify and translate key documents | tbd | | Not started |
| | Develop and keep up to date information on | Ongoing | ASG | Not started |

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|---|--|-----------|-------------|-------------|
| | agriculture section of M2M website | | | |
| | Member countries to identify and recruit organisations to the Project Network | Ongoing | All Members | Not started |
| | Identify case studies and examples of best practice to promote (initially via international seminar at end 2006) | July 2006 | All members | Not started |
| | Conduct cross regional/ country extension events | TBD | All members | Not started |
| Project Identification and Development | Identify project development opportunities in interested M2M countries | TBD | All members | Not started |
| | Support feasibility studies for targeted project sites that could be featured at 2007 M2M Partnership Expo | TBD | All members | Not started |