

Subcommittee Draft Action Plan, Years 2 to 5

Introduction

The Methane to Markets Partnership Terms of Reference (TOR) states that each Subcommittee should develop an action plan. The Charge to the Subcommittees adopted by the Partnership along with the TOR notes that “ideally, Action Plans would identify needs, opportunities, and priorities for project development in the sector and for interested Partners, and would be developed with input from members of the Project Network.” The Charge continues by outlining specific elements of an action plan, including:

- 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.
- Outreach to engage Project Network members.

At its second meeting (held in Geneva, Switzerland in April 2005), the subcommittee developed an interim Action Plan, which it later finalized. That interim plan listed discrete short-term activities that the subcommittee agreed to embark upon; this document is intended to incorporate those specific actions into a broader framework that addresses the abovementioned key elements in planning for the subcommittee’s specific activities for years 2 through 5 of the Partnership. This action plan is intended to be a living document, updated on an ongoing basis to reflect the new projects and activities that are undertaken.

After the third meeting of the subcommittee (in Argentina in November 2005), the Action Plan was revisited extensively to respond to new charges from the Steering Committee regarding planning and preparation for the 2007 Partnership Expo. As a result, a number of new activities have since been added and the prioritization and focus of some existing activities have been revised to reflect these new charges.

The following sections describe key areas of the subcommittee action plan and activities that have been completed or are ongoing as of the 4th meeting of the subcommittee (held in May 2006 in Tuscaloosa, USA). Table 1, at the end, itemizes the ongoing subcommittee activities and identifies the lead responsibilities and status of each activity.

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

Methane is produced from underground and surface mines and as a result of post-mining activities including coal processing, storage, and transportation. Underground mines are the single largest source of coal mine methane emissions in most countries. At active underground mines, methane must be removed from underground operations for safety reasons. Large-scale ventilation systems remove the methane by moving massive quantities of it through the mines. At some active and abandoned mines, methane is also recovered by degasification systems (also known as gas drainage systems) using vertical and/or horizontal wells.

- CMM has various profitable uses. The optimal use at a location depends on factors such as the quality of methane, the availability of end-use options, and project economics. The range of

CMM projects includes natural gas pipeline injection, electric power production, co-firing in boilers, district heating, mine heating, coal drying, vehicle fuel, flaring, and manufacturing or industrial uses. Technology is being developed to oxidize low-concentration VAM to produce thermal energy.

Successful CMM projects require a thorough methane resource assessment and analysis of gas liberation, effective integration of mine degasification and utilization with mining operations, and an available, accessible market for the methane. Thus, the first task for project development is to assess the opportunities for CMM project development.

The subcommittee compiled a great deal of country-specific information into a “global overview,” as well as compiling a global database of CMM projects and project opportunities. These products are expected to be made widely available to the Methane to Markets community through the Internet and through workshops.

While these activities in themselves do not directly lead to methane emissions reductions or utilization, they contribute to the overall knowledge base, encouraging such projects and ultimately helping to ensure their successful implementation.

Time frame: Short term and longer term.

Opportunity for project-based methane emissions reductions: low.

Specific activities:

- a) Informational work products.
 - i) Preparation, development, updates to *Global Overview of CMM Opportunities*.
 - Draft in final phases of development; final document scheduled for release in July 2006; activity undertaken by U.S. EPA.
 - ii) Preparation, updates to global database of projects and project opportunities.
 - Draft in development; activity undertaken by U.S. EPA.
 - iii) Preparation of CMM Technologies Database.
 - Draft database developed around technology categories (capture/utilization, drainage/purification, VAM, etc.) presented at 4th subcommittee meeting with request for comments regarding format and content; activity undertaken by Australia

II. Identification of key barriers to project development

The subcommittee recognizes that the Partnership gives priority to activities that have the greatest chance to reduce emissions in the near term. However, a number of important barriers to project development can be addressed that are associated indirectly or in the longer term with emissions reductions.

CMM project developers face a range of technical, economic, and institutional issues that impede progress. The key barriers identified by the subcommittee are the following:

- 1) Lack of clarity about CMM ownership and regulatory issues, as well as the hurdles presented by existing regulations.
- 2) Lack of appropriate technology and technical knowledge.
- 3) Lack of demonstration of the technical or economic feasibility of these projects in a specific situation.
- 4) Lack of financing or understanding of how to obtain financing.

The Partnership activities that address those barriers can be categorized into four types:

- 1) Information-based activities.
- 2) Technology transfer activities.
- 3) Technical feasibility studies and technology demonstrations.
- 4) Activities that build capacity for project financing and investment.

These categories are not meant to be rigid or exclusive, but merely to characterize the major types of barriers and Partnership activities that can support project development and methane emissions reductions. Below, each of these major types of barriers are briefly discussed, along with potential solutions and specific activities proposed by the Subcommittee to address each of these barriers.

1) Barrier: legal and regulatory issues

One key barrier is lack of understanding about the legal, regulatory, and economic framework in developing countries with potential for project development. Barriers that many countries face include lack of clarity about ownership of coal mine methane in many countries; lack of transparency in regulatory regimes or the processes for obtaining rights to gas in many countries; lack of information about the ways in which infrastructure, economic factors such as taxes or incentives, and market barriers may impact a project; or lack of standardization or harmonization of technical terminology.

The subcommittee will support information-based activities that provide critical information about barriers to project development, such as general information about market, economic, or legal issues. These activities may not directly lead to methane emissions reductions or utilization, but will they contribute to the overall knowledge base and thus encourage project development and—ultimately—successful implementation. Specific examples of such information-based activities include producing reports and white papers that are made widely available to the Methane to Markets community, covering topics such as ownership and regulatory issues and recommendations for standardization and harmonization of terminology and standards in the CMM field.

Specific barriers for a given country include:

- i) Lack of clarity regarding the ownership status of CMM.
- ii) Lack of transparency in regulatory regimes and legal framework.
- iii) Unclear procedure for obtaining rights to gas.
- iv) Lack of information about economic factors such as taxes or incentives, or market barriers that may impact a project.
- v) Lack of standardization of terminology and technical terms in the CMM industry.
- vi) Ownership regulations or other legal restrictions that prevent project developers or investors from working on CMM projects.
- vii) Lack of market-based or tax incentives.

Solution: informational activities.

Time frame: short term and longer term.

Opportunity for project-based methane emissions reductions: low.

Specific examples:

- i) Informational work products (e.g., deliverables or reports), expected to be made widely available to the Methane to Markets community through the Internet; workshops that should be open to participants from a broad selection of Partner countries.
 - Preparation, development, updates to white paper on ownership issues.

- Draft in development, awaiting feedback from questionnaire to subcommittee membership regarding key issues. Activity undertaken by U.S. EPA.
- ii) Document that develops recommendations for the standardization and harmonization of terminology and standards in the CMM field.
 - Preparation of report on uniform terminology in the CMM field.
 - Research being conducted by UNECE, including questionnaire regarding country-specific terminology and suggestions for uniform terminology. Full report planned for June/July 2006 release. Activity undertaken by UNECE.

2) *Barrier: Lack of technology or technical knowledge to implement CMM recovery and utilization projects*

A second key barrier is lack of technology or technical knowledge to implement CMM recovery and utilization projects. Such technical knowledge includes a spectrum of activities such as conducting robust resource assessments; drilling and recovering methane from the coal mine and coal seam efficiently and effectively; designing methane utilization systems for specific project and site needs; and coordinating gas and/or power production with the appropriate end users.

The subcommittee will engage in a variety of technology-transfer activities, providing training or knowledge usually through workshops, enhanced training seminars or sessions, or study tours. (Supporting travel for delegates from developing Partner nations will also strengthen awareness and information about CMM project opportunities.) Through these activities, countries with more developed CMM industries and activities can help countries where such activities are in a nascent or developing stage. Technology transfer creates a critical opportunity to build capacity within each country by developing a core group of knowledgeable practitioners. Typically, it does not directly reduce methane emissions, but by building technical capacity for project development, it helps to ensure that long-run methane emissions reductions will be achieved. The activities can be undertaken in the short term and on an ongoing basis as appropriate and necessary.

Specific barriers include:

- i) Lack of technical expertise to conduct resource assessments.
- ii) Lack of technical expertise to conduct environmental impact assessments.
- iii) Lack of technical expertise to effectively conduct drainage activities (before and during mining) and recover methane.
- iv) Lack of technical expertise to design effective and efficient utilization systems for specific project needs.
- v) Lack of technical expertise to coordinate project activities for gas and/or electricity production with appropriate end users.
- vi) Lack of appropriate technology, such as horizontal or directional drilling equipment, gas upgrade technology, monitoring technology, or end-use technology.

b) Solution: technology transfer activities.

Time frame: short term and longer term.

Opportunity for project, methane emissions reductions: low to medium.

Specific examples:

- i) **Workshops** are a commonly used technology transfer mechanism. They provide a relatively short-duration (typically 1- to 3-day) opportunity to explore a specific topic or aspect of project development. Examples of technology transfer workshops:
 - (1) M2M Regional Workshop (Beijing, China, December 2, 2005; sponsored by Australia AGO, Japan NEDO, U.S. EPA).

- (2) CBMC China Workshop (October 17–18, 2006).
 - (3) UNECE CMM Conference (St. Petersburg, Russian Federation, September 19–20, 2006)
 - (4) 2nd Western State Coal Mine Methane Recovery and Use Workshop (Colorado, USA, September 26–27, 2006).
 - (5) U.S. EPA–sponsored CMM workshop (date/site not yet determined).
 - (6) CMM Utilization Workshop (Austria, June 6–7, 2007).
 - (7) UNECE Ad Hoc Group of Experts (March 13–14, 2007, Geneva, Switzerland).
- ii) **Extended training or seminars** may be used in specific circumstances, for example to provide on-the-ground training in operation of technical equipment. Example:
 - USAID/U.S. Department of Labor is providing training to operate a directional drill at a mine site in Ukraine. The host mine will get to keep the drill (project value ~ U.S. \$1.4 million), which was shipped to Ukraine in March 2006.
 - iii) **Study tours** give participants an opportunity to witness operating projects firsthand and observe their physical and regulatory working environment. They also provide an opportunity for extended conversations with key players.
 - No examples identified at this time.
 - iv) **Information centers (or “clearinghouses”)** are a source of in-country technical and regulatory expertise, collection of data about existing or potential projects and opportunities, and consulting services for in-country as well as foreign project developers and investors.
 - (1) U.S. EPA continues to support China Coalbed Methane Clearinghouse through cooperative agreement.
 - (2) U.S. EPA and U.S. Trade and Development Agency (TDA) are in discussions with the government of India to support development of a clearinghouse for CMM/CBM.
 - (3) U.S. EPA continues to support Uglemetan International Coal and Methane Research Center in the Russian Federation.
 - (4) U.S. EPA continues support for the Ukrainian Partnership for Energy and Environmental Reform (PEER), which promotes the commercial development of CMM projects in Ukraine.
 - v) **Travel sponsorship for delegates from developing Partner nations**, allowing them to participate in appropriate CMM conferences and symposia.
 - (1) U.S. EPA funded travel to CMM conference in Bochum for participants from Ukraine and India (September 2005).
 - (2) Japan (NEDO) provided travel support for five attendees at the 1st Regional Methane to Markets Workshop in Beijing on December 2, 2005.
 - (3) Japan (NEDO) provided travel support for five attendees to the 4th subcommittee meeting in Tuscaloosa, Alabama, on May 22–23, 2006.

3) *Barrier: Lack of demonstrated feasibility and demonstration of successful CMM projects at specific sites.*

A third key barrier is the lack of demonstrated technical and economic feasibility studies and demonstrated technical success at specific project sites. Usually these types of analyses are required before a project developer can obtain external funding for a project.

To address this barrier, the subcommittee will support technology feasibility and demonstration projects. This will help move similar projects closer to commercial implementation. Technology demonstrations actually achieve methane emissions reductions, albeit on a relatively small scale. Specific activities include conducting pre-feasibility studies, detailed economic and technical feasibility studies, and technology demonstrations.

- a) *Solution: technology feasibility and demonstration projects* to assess the technical and economic viability of specific projects at specific locations to move project development closer to commercial implementation.

Time frame: short to long term.

Opportunity for project-based methane emissions reductions: medium to high.

Specific examples:

- i) Technical and economic pre-feasibility analysis.
 - (1) U.S. EPA funded a pre-feasibility analysis of use of VAM to generate electricity in Huainan, China. Pre-feasibility study is under review by mining group and vendors.
- ii) Technical and economic feasibility studies.
 - (1) U.S. TDA awarded a grant in October 2005 for preparation of feasibility study in Donbass coal basin, Ukraine, for CMM and CBM. Site visit by U.S. technical contractor conducted in April 2006.
- iii) Technology demonstration.
 - (1) U.S. TDA provided a technical assistance grant to the Shanxi Jincheng Anthracite Coal Mining Group in China to develop a 120 MW CBM and CMM power plant at the Sihe Mine. Contract for engines in place May 2006.
 - (2) Australia (CICERO), Shanghai Jiatong University, and Huainan Coal Mining Group began a joint project in China to demonstrate VAM catalytic turbine technology. Project ongoing as of May 2006.
 - (3) Australia GHG Abatement Program will support a WestVAMP project to demonstrate VAM technology. Project start scheduled for October 2006.
 - (4) Australia has a project that demonstrates the Hybrid Coal and Gas Turbine System (HCGTS). Completed and operational.

4) *Barrier: Lack of financing or capacity to obtain financing for CMM projects*

A fourth key barrier is the lack of financing required for project development, as well as the lack of understanding of how to apply for funding or investment from multilateral and other financial institutions. CMM projects are typically quite capital-intensive and individual mines or project developers may not be able to finance a project with private funding. Furthermore, the mines and project developers may not know what type of documentation to present to financial institutions for project funding (e.g., how information should be presented in “bankable documents”), whether from financial institutions or alternative funding mechanisms.

To address this barrier, the subcommittee will help project developers obtain project financing by analyzing key issues, sponsoring project financing workshops, and supporting project expos where project developers can directly market their projects to interested investors and financiers.

- a) *Solution: promoting project financing and investment capacity-building* to enable project developers to obtain project financing from multilateral and other financial institutions.

Time frame: short to long term.

Opportunity for project-based methane emissions reductions: medium to high.

Specific examples:

- i) Identification of sources of finance and capacity-building.
 - (1) U.S. EPA has signed a cooperative assistance agreement with UNECE to build capacity for obtaining project financing for CMM projects in up to three countries, including the Russian Federation. UNECE will kick off mission in Russian Federation in June 2006.
- ii) Country-specific activities to stimulate investment in CMM projects.

- (1) Decree #410, passed in Russia on July 2005, stipulates high fines for methane emissions from mines, creating incentive for recovery.
 - (2) China's government has adopted preferential policies toward project development and foreign investment through reductions of income tax, investment tax, and value-added taxes, which can stimulate CMM project investment.
 - (3) Mexico's government has adopted new gas ownership laws in March 2006. These allow coal mining companies to recover and use CMM; previously they did not have such ownership, and there was little interest in gas recovery.
- iii) Project financing workshops/training sessions.
- (1) World Bank Carbon Finance Unit presentation on carbon financing opportunities for CMM project development (4th subcommittee meeting, Tuscaloosa, Alabama, May 22–23, 2006).
 - (2) UNECE Project Financing Workshop (Geneva, Switzerland, January 31, 2006).
 - (3) PEER workshop to train coal mining community on project finance (Ukraine, scheduled for June 2006).
 - (4) Uglemetan international conference on CMM project opportunities (Russian Federation, scheduled for June 19–20, 2006).
 - (5) CBMC CMM conference (China, scheduled for October 17–18, 2006).
- iv) Project expo.
- (1) A cross-sector Methane to Markets Partnership Expo will be held in the fall of 2007 in Beijing, China. This will be an international forum to showcase methane capture and use projects and technologies in the agriculture, coal mine, landfill, and oil and gas sectors.

III. Identification of possible cooperative activities to increase methane recovery and use in the coal mining sector

Through its regular meetings and contacts among Partner countries and their private sector counterparts through the Project Network, the subcommittee will continue to pursue cooperative activities on a bilateral or multilateral basis that meet the identified needs and overcome key barriers to CMM project development.

Many of the activities identified above, such as providing overview information, developing strategies, or working to reduce barriers to project development, may be carried out in a coordinated fashion among two or more Partner countries. Administrative activities, such as developing a broad set of criteria and goals for the subcommittee to consider, also fall into this category.

Time frame: short to long term.

Opportunity for project-based methane emissions reductions: low to high.

Specific activities:

- a) Determine need to establish criteria for subcommittee activities.
 - i) Draft generated with input from Australia and U.S. EPA for review, comment, and discussion by subcommittee.
- b) Determine need for project-specific criteria and subcommittee goals.
 - i) Identified as an important activity and part of the latest Steering Committee charge to track and define Methane to Markets projects. Discussions are continuing on how best to define and label subcommittee project resulting from Methane to Markets activities.
- c) Coordinate with CMM-related activities and goals of the Asia Pacific Partnership.
 - i) Co-Chair and other delegates have participated in APP meetings; a member of APP's Coal Mining Task Force attended the 4th subcommittee meeting (Tuscaloosa, Alabama, May 22–23, 2006) to provide an overview of that organization's activities. These two partnerships will

continue to communicate in order to develop complementary roles and avoid duplication of effort.

IV. Discussion of country-specific needs, opportunities, and priorities

Most subcommittee members have submitted country-specific profiles that begin to identify their countries' needs, opportunities, and priorities. Learning the specific needs of Partner countries will be an ongoing activity of the subcommittee.

V. Outreach to engage Project Network members

Encouraging private sector organizations to join the Project Network will continue to be a vital component of the subcommittee's activities in each of the specific areas identified above. Each country should work to open lines of communication with the relevant private sector parties to ensure their active participation in the ongoing activities of the Partnership.

Time frame: short to long term.

Opportunity for project-based methane emissions reductions: low to high.

Specific activities:

- a) Encourage private sector organizations to join the Project Network to increase awareness of project opportunities and barriers.
 - i) All countries.
- b) Develop a comprehensive Coal Subcommittee Web site with portal to other key Web sites and tools to make information accessible to all.
 - i) Web site has been developed through the M2M Administration Support Group.

Conclusions

The subcommittee is committed to cooperating on activities that will help to develop and disseminate general information about opportunities for coal mine methane project development and address the key barriers to project development: lack of information, lack of technology and technical knowledge, lack of demonstration for project feasibility, and lack of financing or financing capacity. The Subcommittee will conduct these activities in a way that promotes cooperation among the Partner nations and the private sector Project Network. The Subcommittee will also continue to work to understand the needs and priorities of individual countries within the Partnership.

**Table 1. Coal Mine Methane Subcommittee Activities Undertaken Under Action Plan
(as of May 23, 2006)**

Action Plan Element	Activity	Lead/Participants	Status	Next Steps
Overview of methane recovery and use opportunities	1. Draft global overview of CMM activities	U.S. EPA	Draft completed and to be posted to M2M Web site in mid-June 2006 for final comment period	Publish final version in July 2006 on M2M Web site
	2. Draft global database of CMM activities	U.S. EPA	Web-based global database of CMM projects under development, with input from countries and Project Network	Finalize a draft database to be circulated among subcommittee members for review and comment
	3. Develop database of technologies and technology providers	Australia	Draft database of technologies distributed to subcommittee members at May 2006 subcommittee meeting for review and comment	Consider integration with global database of CMM projects and finalize by fall 2006
Address key barriers: (1) Clarity of legal, regulatory issues	4. Develop a white paper on regulatory issues, including ownership	U.S. EPA Project Network (K. Schultz)	Questionnaire requesting information from Partners and Project Network sent out in 1 st quarter 2006; draft white paper under development	Follow-up request for additional information based on results of questionnaire will be sent in June 2006; goal is to finalize paper in fall 2006
	5. Develop recommendations for adopting uniform technical standards and terminology	UNECE Australia U.S. EPA	Have begun ad hoc compilation of CMM terminology and distributed survey to subcommittee members and countries soliciting feedback	Final recommendations for terminology to be drafted by UNECE based on survey results; full report on findings planned for June/July 2006 release

Action Plan Element	Activity	Lead/Participants	Status	Next Steps
Address key barriers: (2) Technology transfer	6. Conduct workshops			
	6a. Regional M2M Workshop	Australia AGO Japan NEDO U.S. EPA China CCII	Held on December 2, 2005, Beijing, China; workshop report published by NEDO	ASG to post workshop report on Methane to Markets Web site
	6b. CBMC China Workshop (October 17–18, 2006)	CBMC	To be held	
	6c. UNECE CMM Conference (September 19–20, 2006, St. Petersburg, Russian Federation)	UNECE	To be held	
	6d. 2 nd Western State Coal Mine Methane Recovery and Use Workshop (September 26–27, 2006, Colorado, USA)	U.S. EPA Raven Ridge Resources	To be held	
	6e. U.S. EPA–sponsored CMM workshop (date/site not yet determined)	U.S. EPA	To be held	
	6f. UNECE Ad Hoc Group of Experts (March 13–14, 2007, Geneva)	UNECE	To be held	
	6g. CMM Utilization Workshop (June 6–7, 2007, Austria)	GE Jenbacher	To be held	
	7. Sponsor study tours			
	8. Establish information centers/clearinghouses	U.S. EPA India	Under discussion	Framework agreement, cooperative agreement
9. Travel to conferences				

Action Plan Element	Activity	Lead/Participants	Status	Next Steps
	9a. Travel to 1 st M2M Regional Workshop in Beijing, December 2, 2005	Japan (NEDO)	NEDO provided travel support for five attendees	Completed
	9b. Travel to 4 th subcommittee Meeting in Tuscaloosa, Alabama, May 22–23, 2006	Japan (NEDO)	NEDO provided travel support for five attendees	Completed
	10. Technology feasibility studies—capacity-building			
	10a. Pre-feasibility analysis of use of VAM to generate electricity in Huainan, China	U.S. EPA China	Underway, with pre-feasibility study under review by mining group and vendors	Prepare final pre-feasibility report
	10b. Feasibility study in Donbass coal basin, Ukraine, for CMM and CBM	U.S. TDA Ukraine	Underway; site visit by US technical contractor conducted in April 2006	Conduct study and produce report
Address key barriers: (3) Support development of demonstration projects	11. Demonstration projects			
	11a. Demonstration of in-mine drilling in Ukraine	USAID Ukraine	Underway; drill delivered in March 2006	Drill to be installed and instruction on operation to begin
	11b. Technical assistance grant to develop a 120 MW CBM and CMM power plant at the Sihe Mine in China	U.S. TDA Shanxi Jincheng Anthracite Coal Mining Group	Contract for engines in place May 2006	Installation and operation start-up

Action Plan Element	Activity	Lead/Participants	Status	Next Steps
Address key barriers: (4) Identify finance sources and build capacity for financing	12. Conduct finance workshops			
	12a. UNECE Project Financing Workshop	UNECE U.S. EPA	Held on January 31, 2006, in Geneva, Switzerland; materials from workshop, including presentations, posted on UNECE Web site (www.unece.org/ie/cmm)	
	12b. International Conference on Coal Mine Methane: Recovery, Utilization, Investment	Ugletmetan, Russia	To be held June 19–20, 2006	
	12c. Ukraine workshop to train coal mining community on project finance	PEER, Ukraine	To be held in June 2006	
	13. Project to develop capacity for finance in Russia and other ECE countries	UNECE U.S. EPA	Year 1 of 3-year program underway	
	14. Participate in Partnership Expo, an international forum to showcase methane capture and use projects and technologies in the agriculture, coal mine, landfill, and oil and gas sectors.	All subcommittee members	Cross-sector Methane to Markets Partnership Expo will be held in the fall of 2007 in Beijing, China	
	14a. Develop draft agenda for sector-specific portions of the Partnership Expo	subcommittee Co-Chairs Partnership Expo Task Force	Straw man agenda under development	Submit straw man agenda to subcommittee members and Partnership Expo Task Force for consideration

Action Plan Element	Activity	Lead/Participants	Status	Next Steps
	14b. Develop template for collecting critical CMM project information that can be used as background information to showcase projects in the Partnership Expo	U.S. EPA, with input from subcommittee members	First draft template will be developed based on UNECE/U.S. EPA CIS project template.	Distribute first draft of template to subcommittee members and then finalize for next subcommittee meeting
	14c. Develop a short list of projects in each country to participate in Partnership Expo	All Partner country delegates	Lists of projects are under development to support planning for Expo	Country delegates to submit lists of projects to subcommittee Chairs and collect background information to match template
Country-specific needs and opportunities	15. Expand database of CMM activities within each country	All Partner country delegates	10 country profile updates were presented at the 4 th subcommittee meeting on May 22–23, 2006	ASG to post country profile updates on M2M Web site
	16. Report on CMM-specific regulatory regime	All Partner country delegates	10 country profile updates were presented at the 4 th subcommittee meeting on May 22–23, 2006	ASG to post country profile updates on M2M Web site
	17. Identify country-specific infrastructure needs	All Partner country delegates	10 country profile updates were presented at the 4 th subcommittee meeting on May 22–23, 2006	ASG to post country profile updates on M2M Web site
	18. Identify specific project opportunities within each country	All Partner country delegates	Lists of opportunities are under development to support planning for Expo	Delegates to report project opportunities to subcommittee Chairs
	19. Identify project-specific needs within each country	All subcommittee members	On-going	Report needs through ASG project tracking database
	20. Address project-specific needs within each country	All subcommittee members	On-going	

Action Plan Element	Activity	Lead/Participants	Status	Next Steps
	21. Develop pre-feasibility and feasibility studies for projects in each country	All subcommittee members	On-going	Provide completed studies to ASG for posting on M2M Web site