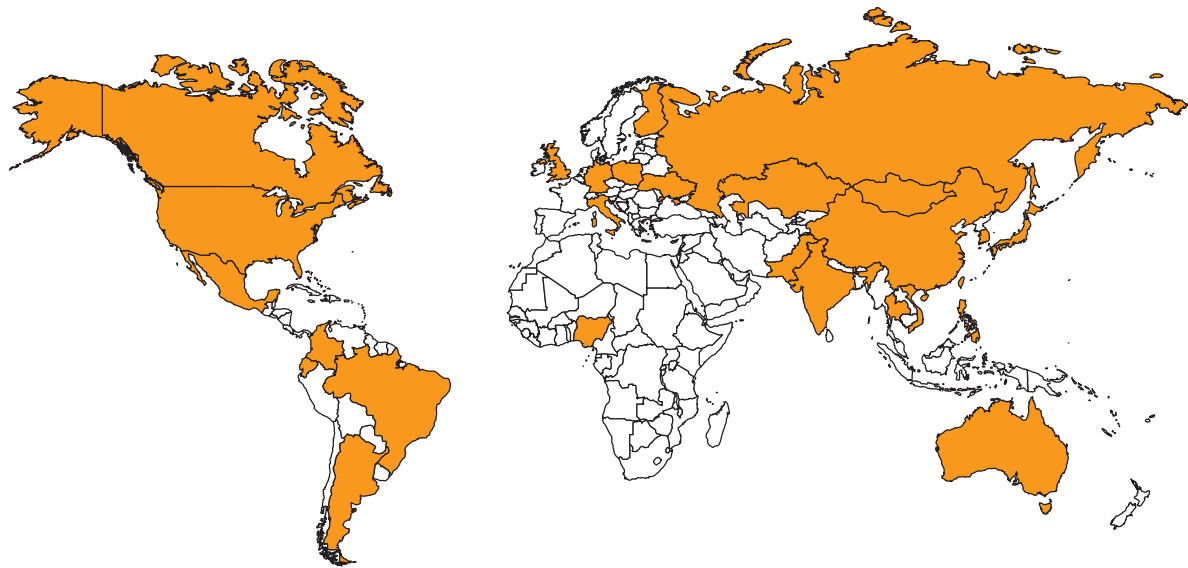




The Methane to Markets Partnership



- | | | | | | | |
|---|---|---|--|---|---|--|
|  Argentina |  China |  Finland |  Japan |  Nigeria |  Republic of Korea (South Korea) |  United Kingdom |
|  Australia |  Colombia |  Germany |  Kazakhstan |  Pakistan |  Russia |  United States of America |
|  Brazil |  Ecuador |  India |  Mexico |  Philippines |  Thailand |  Vietnam |
|  Canada |  European Commission |  Italy |  Mongolia |  Poland |  Ukraine | |

Methane to Markets Partner Countries account for more than 60 percent of the world's anthropogenic methane emissions.

Climate change is a serious environmental challenge that will require all countries around the world to realize significant reductions in greenhouse gases (GHGs). Methane, second only to carbon dioxide in its importance as a GHG, is of particular importance given its atmospheric properties and the suite of currently available, cost-effective reduction options. As such, focusing mitigation efforts on methane can yield near-term climate benefits along with major economic, air quality, and energy benefits (see sidebar on page 3).

In 2004, the United States joined with 13 other countries to focus global attention on the importance of methane emissions by launching the Methane to Markets Partnership. Methane to Markets is a multilateral initiative uniting public and private interests to fight climate change by advancing the recovery and use of methane as a clean energy source. By engaging public and private sector partners, this initiative brings together the technical and market expertise, financing, and technology necessary for methane capture and use project development.

The Partnership focuses on developing projects in four major methane emissions source areas: agriculture, coal mines, landfills, and oil and gas systems. In each of these sectors, cost-effective methane emission reduction technologies and practices are currently available to capture and use the methane gas as a fuel for electricity generation, onsite energy needs, or offsite gas sales. However, despite the availability of proven technologies and the associated environmental and financial benefits, methane recovery and use is not widespread. In many countries, financial, institutional, informational, regulatory, and other barriers have impeded project development. The Partnership is working to identify and address these barriers to combat climate change and deliver clean energy to markets all around the world.

Origins and Structure of the Methane to Markets Partnership

The Methane to Markets Partnership is modeled on the United States' suite of domestic methane emission reduction programs. Since 1993, the U.S. Environmental Protection Agency (EPA) has operated four highly successful public-private partnerships: AgSTAR, the Coalbed Methane Outreach Program (CMOP), the Landfill Methane Outreach Program (LMOP), and Natural Gas STAR. These programs have engaged stakeholders, disseminated information, and catalyzed partnerships to remove barriers to project development and achieve significant on-the-ground results for more than a decade. As of 2005, they have helped to reduce annual U.S. methane emissions to 11 percent below 1990 levels.

Why Is Methane Important?

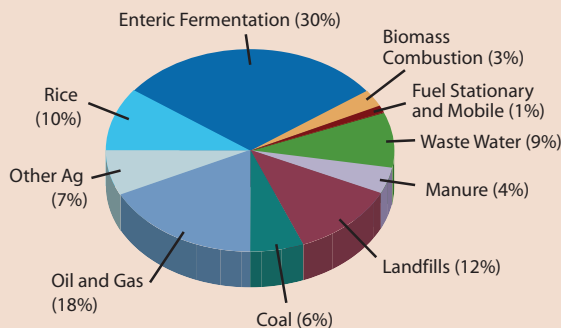
Methane is a hydrocarbon and the primary component of natural gas. It is also a potent GHG that is more than 20 times as effective at trapping heat in the atmosphere as carbon dioxide (CO₂). Methane has a much shorter atmospheric lifetime than CO₂ (about 12 years, compared to about 200 years for CO₂).

As a result, reducing methane emissions can achieve significant near-term climate, energy, and economic benefits. Identifying and capitalizing on cost-effective opportunities to reduce methane emissions lowers the cost of GHG abatement over the long term and allows time for the development of alternative technologies. Also, studies indicate that feasible reductions in methane and other non-CO₂ GHG emissions can help slow global warming over the next 50 years on the same scale as similar reductions in CO₂ emissions. In addition, methane contributes to the growing global background concentration of tropospheric ozone, a greenhouse gas and an air pollutant associated with premature mortality. Thus, reducing methane emissions decreases surface ozone everywhere, yielding

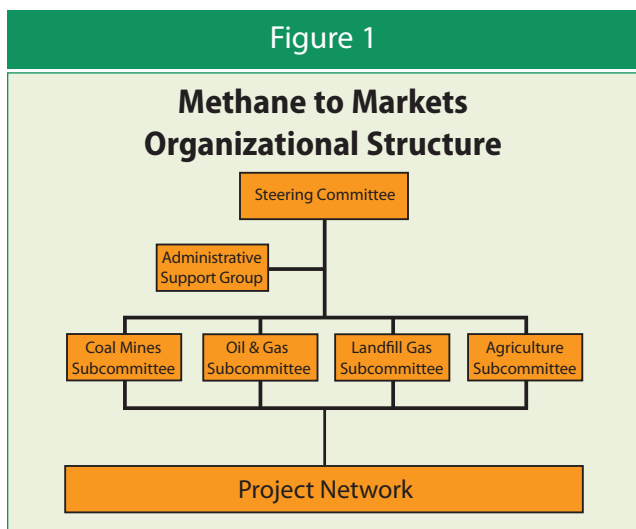
additional climate benefits as well as improvement in local air quality.

Methane accounts for 16 percent of all GHG emissions globally, with about 60 percent of these emissions coming from anthropogenic (human-related) activities.

Estimated Global Anthropogenic Methane Emissions by Source, 2005



Source: Global Anthropogenic Emissions of Non-CO₂ Greenhouse Gases, 1990-2020 (EPA Report 430-R-06-003)

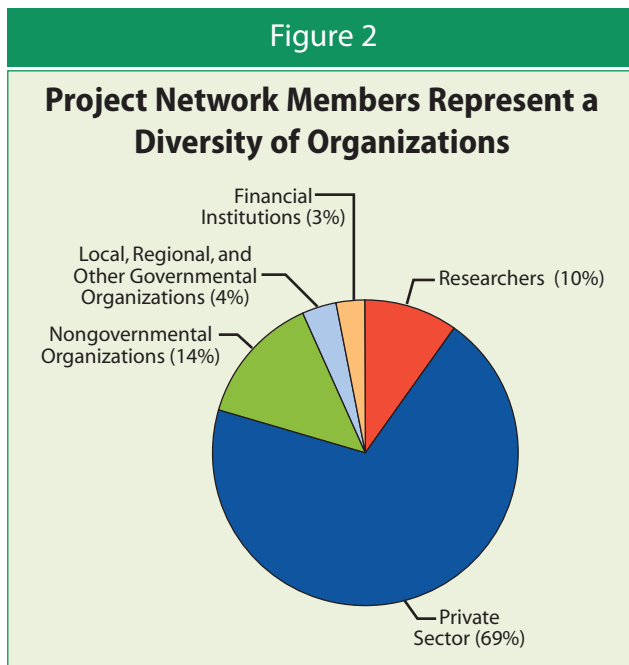


Using a similar approach, Methane to Markets brings together industry, nongovernmental organizations (NGOs), national governments, and other stakeholders to advance project development around the world. The Partnership is structured around the Steering Committee, the Administrative Support Group (ASG), four subcommittees, and the Project Network (see Figure 1). The Steering Committee guides the work of the Partnership and is supported by the ASG, or secretariat, which is currently housed at EPA. The subcommittees (Agriculture, Coal Mines, Landfills, and Oil and Gas Systems) are responsible for the technical work in each of the Partnership's target sectors. Each subcommittee operates as a partnership of government representatives and the Project Network. The Project Network is an engaged community of industry, nonprofit organizations, international financial institutions, and other expert stakeholders who actively participate in meetings and activities as a means of building capacity, transferring technology, and promoting private investment.

The Project Network: Bringing Expertise to International Project Development

The Project Network plays a vital role in the financing, development, and operation of methane capture and use projects. The Methane to Markets Partnership established the Project Network to ensure that national governments pursuing methane emission reductions would be able to leverage the project development knowledge, experience, and resources of these critical stakeholders around the world.

Today hundreds of individuals and organizations participate in the Project Network from countries in Africa, Asia, Australia, Europe, North America, and South America. These diverse organizations (see Figure 2) identify and implement cost-effective methane recovery and use projects globally; address the informational, technical, and institutional barriers to project development; and contribute to capacity-building and technology transfer activities. At the same time, these organizations can increase profits, expand their businesses, distinguish themselves in the marketplace, and more successfully achieve their strategic goals—all while helping to address the critical issue of climate change.



Active participation by the Project Network is critical to the success of the Partnership, and facilitating Project Network member involvement is a top priority for the Partnership. Methane to Markets invites and encourages Project Network members to participate in as many of the Partnership-sponsored meetings, events, and activities as possible.

Growth of the Partnership

The Methane to Markets Partnership has grown in size, scope, and influence. Since 2004, the Partnership has:

- **Expanded from 14 initial Partner Countries to 27** including the European Commission, with Finland, Kazakhstan, Mongolia, Pakistan, the Philippines, and Thailand being the most recent additions in 2008. Together, these 27 Partners represent more than 60 percent of the world's anthropogenic methane emissions.
- **Recruited more than 800 Project Network members** from around the world, including some of the most well-respected financial institutions, NGOs, manufacturers, project developers, and consultants in the industry.
- **Added agriculture as a fourth sector**, creating a subcommittee to focus on facilitating methane recovery and use projects for live-stock waste and manure management systems to start. (The Partnership is currently expanding into other agricultural waste sources.)
- **Tracked the development of more than 140 methane emission reduction projects** in Methane to Markets Partner Countries around the world.
- **Held 41 events in 13 countries**, bringing together methane professionals from a broad range of technical disciplines, countries, and sector interests to share experiences and best practices.

- **Organized the first Partnership Expo**, in Beijing, China, in 2007. The Expo brought together more than 700 members of the international methane community and showcased over 90 potential methane capture and use projects from around the world (see Partnership Expo sidebar on page 6). The event's success has resulted in the Partners planning a second Partnership Expo to be held in 2010.

Dismantling Barriers and Advancing Project Development

The success of the Methane to Markets Partnership Expo and the growth of the Partnership demonstrate the continued success of Partner Countries and Project Network members in removing barriers and advancing methane recovery and use projects around the world. Through the Partnership's subcommittees, both public and private sector partners have successfully developed comprehensive Action Plans for each target methane sector along with country-specific strategic plans to better identify specific barriers to project development within each country. These plans have already guided the development of over 140 projects and activities aimed at delivering near-term methane emissions reductions through training and capacity building, technology demonstration, market development, and direct project development support.

Perhaps one of the most important barriers that the Partnership is effectively addressing across all projects and methane sectors is overcoming informational and technology barriers. Methane to Markets has developed a wide array of tools and services that provide accurate and targeted information to the international methane community, helping to catalyze project development. All of these tools, which are made widely accessible through the Methane to Markets Web site (see sidebar on page 7),

2007 Methane to Markets Partnership Expo

Methane to Markets Convenes World's Largest Gathering of Methane Experts

In October 2007, the Methane to Markets Partnership convened the world's largest gathering of methane professionals in Beijing, China. Together with China's National Development and Reform Commission (NDRC), EPA co-hosted this three-day event, which brought together investment, project development, and government professionals to network and collaborate on advancing new methane capture and use projects. In all, the Expo attracted more than 700 attendees from 34 countries and more than 20 corporate sponsors from a cross-section of industries and trades. These sponsors included turbine and equipment manufacturers, alternative energy companies, investment banks, project developers, and consulting firms.

The Expo featured concurrent technical tracks for the agriculture, coal mines, landfill, and oil and gas systems sectors. For each track, breakout sessions gave attendees the opportunity to review and discuss case studies of methane projects, technological advances, financing, and country-specific policy and regulatory barriers and solutions. The Methane to Markets Steering Committee and subcommittees also met in conjunction with the Expo to discuss the implementation of sector-specific subcommittee action plans and other Partnership business.

One of the most significant aspects of the Partnership Expo was the Project Showcase, at which project developers and other parties highlighted potential projects in need of funding and/or technical assistance to move forward. Ninety-one potential methane capture and use projects from 11 countries across all four Methane to Markets sectors were showcased (see Figure 3). The United States provided key technical or financial support to more than a third of these projects. If fully implemented, these 91 projects are estimated to yield annual methane emission reductions of 11.5 million metric tons of carbon dioxide equivalent (MMTCO₂E) by 2015.

Figure 3



The Expo's proceedings also featured presentations and round table discussions on issues relevant to international methane project development. Opening remarks were delivered by Xie Zhenhua, Vice Minister of China's NDRC, and Clark T. Randt, Jr., U.S. Ambassador to the People's Republic of China. "China faces arduous tasks in dealing with climate change but the potential for reducing greenhouse gases is tremendous, and so are business opportunities," said Xie, who is also the Deputy Director of the National Leading Group of Work Responding to Climate Change. Bindu Lohani, Vice President of the Asian Development Bank (ADB), gave the keynote speech ("Importance of Methane Projects in Global Carbon Markets and as a Source of Clean Energy"), while John Beale, Deputy Assistant Administrator of EPA and Co-Chair of the Partnership Steering Committee, spoke about some of the Partnership's recent accomplishments.

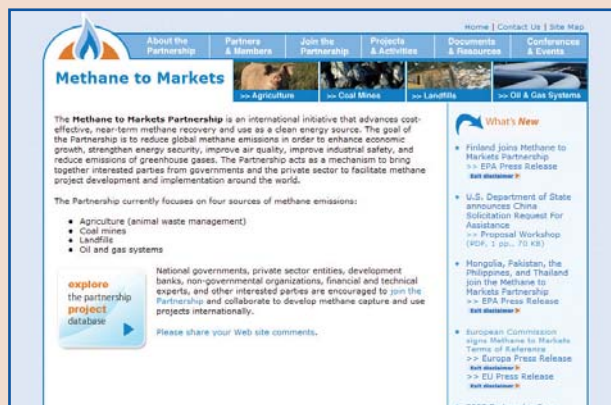


www.methanetomarkets.org

The Methane to Markets Web site features easy-to-use navigation bars to provide quick access to country-specific resources, Partnership administrative information, records of Partnership meetings and activities, and online applications to join as a Partner Country or a Project Network member. The Web site also houses:

- Pages for the Partnership's four sectors (agriculture, coal mines, landfills, and oil and gas systems) that contain all relevant sector information and resources.
- Documents and resources, including funding opportunities, fact sheets, news, information on the Steering Committee, and relevant links.

- Project Network member information, searchable by geographic area of interest and description of services.



provide critical data and information on project opportunities and technologies. Some of these tools include:

- **Project Tracking Database.** This database allows users to submit information for ongoing or proposed methane capture and use projects. For each project submitted, the database contains information such as a project description, anticipated benefits and outcomes, estimated annual GHG emission reductions, and primary contacts. The database is intended to connect a variety of stakeholders and to help promote the development of new projects. It contains information on more than 100 ongoing and 40 proposed projects.
- **International Landfill Database.** Developed by EPA to facilitate the development of landfill gas energy projects, this database helps those looking to advance methane capture and use projects from international landfills. It houses key data for project development, including landfill location and contact information, landfill physical characteristics, gas collection system characteristics, waste characteristics, and landfill operations. Launched in September 2007, the database stores information from more than 250 landfills around the world.
- **International Coal Mine Methane Projects Database.** This database, designed by EPA, stores critical data for coal mine methane (CMM) projects such as a mine's name and location, physical characteristics, type of methane drainage system, thermal and electric capacity, annual GHG emissions avoided per year, and contact information. It contains information on more than 215 CMM recovery and utilization projects that are operating, in development, or planned in 13 countries.
- **Coal Mine Methane Technology Database.** Compiled by Australia's Department of Tourism, Industry, and Resources, this database provides information, contacts, and case studies for a range of CMM recovery and utilization technologies. It contains information on a number of different technologies relating to methane combustion, drainage gas purification for pipeline or town gas, ventilation air methane (VAM) mitigation

and utilization via thermal oxidation, VAM mitigation and utilization via catalytic oxidation, enriching diluted methane, and measuring and monitoring methane. It also includes case studies that cover drilling, methane combustion, and VAM mitigation and utilization via thermal oxidation.

- ON TIME.** The government of Canada developed this new online tool to provide policymakers, project developers, financiers, and other important stakeholders easy-to-access, credible information on cost-effective technologies and practices that reduce methane emissions in the oil and gas sector (see Figure 4). The tool displays interactive flow diagrams of the oil and gas industry, allowing users to navigate among different industry processes, from the extraction of oil and gas to its market delivery.

Partnership Efforts Are Yielding Results

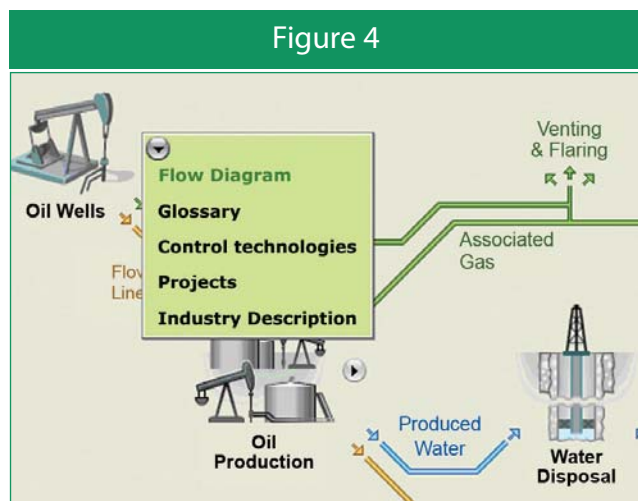
The Partnership expects to achieve significant economic, environmental, and energy benefits. The United States estimates that

"The Methane to Markets effort is an excellent example of a public-private partnership that is combining the best from both government and industry."

Neil Hirst, Director
International Energy Agency
November 2007

within 10 years, the Partnership has the potential to deliver estimated annual reductions in methane emissions of more than 180 MMTCO₂E. This is the equivalent of recovering more than 760 billion cubic feet of natural gas, the annual emissions from 50 million cars, or the annual emissions from 76 500-megawatt (MW) coal-fired power plants. If achieved, these reductions could lead to stabilized or even declining levels of global atmospheric concentrations of methane.

A forthcoming report, *The Methane to Markets Partnership Accomplishments Report*, will be published before the 2010 Partnership Expo. It will summarize the collective accomplishments of the Partnership and its global impact since inception.



This flow diagram from ON TIME shows the “Oil Well” drop-down menu. Users click on the different menus to access additional information on oil well-related activities.