

United States GMI Methane Action Plan

Working Draft 2/26/13

Introduction

In response to the Global Methane Initiative (GMI) Steering Committee's directive, the purpose of this plan is to "articulate the overall vision for a Partner's participation in GMI, outline key country activities and priorities, and provide a mechanism to advance cooperation among Partners by identifying needs and opportunities." This document serves as the working draft of the U.S. Government's GMI Partner Action Plan. This action plan describes ongoing voluntary and regulatory methane reduction activities within the United States, as well as US activities with international partners to promote the objectives of GMI to build capacity and encourage the initiation of more methane reduction projects around the world. This is intended to be a "living document" that will be regularly updated to reflect the US priorities to support GMI by working with GMI Partner countries. This plan outlines the ongoing and planned US collaboration with other GMI country partners. It does not constitute a binding commitment.

Methane is a key greenhouse gas that accounts for 14% of global greenhouse gas emissions and 9.8% of US greenhouse gas emissions. It is a relatively short-lived gas in the atmosphere and has a global warming potential 25 times greater than carbon dioxide. It also contributes to the formation of tropospheric ozone. Methane is the primary constituent of natural gas, a valuable clean-burning energy resource.

US Objectives for Participating in GMI

Through its support for GMI, the US seeks to work cooperatively with other Partners and the private sector to advance methane abatement, capture, and use project development. In so doing, we will reduce greenhouse gas emissions, stimulate economic growth, develop new sources of energy, and improve local environmental quality.

The US aims to build capacity and identify needs and opportunities for advancing methane emission reduction efforts within Partner countries, working collaboratively with other Partners to ensure coordination and leverage resources. Specifically, the US support for GMI aims to achieve the following:

- Support technology transfer and knowledge sharing;
- Identify potential partners and specific opportunities for emissions reductions; and
- Work to identify and remove barriers to methane project development where practicable.

The United States has been a staunch supporter of the GMI since its inception as the Methane to Markets Partnership in 2004. Since then, the US has provided more than \$70 million to support the technical and logistical activities of the Initiative. In 2010, at the GMI launch, the United States pledged \$50 million to ensure the success of GMI over the next five years. These resources support diverse activities that directly support methane project development, including prefeasibility and feasibility studies at potential project sites; capacity-building through technology transfer and training; and the development of tools and resources. EPA also supports the work of the Initiative as a whole by hosting the GMI's Secretariat,

known as the Administrative Support Group. The funds committed by the United States have been instrumental in leveraging funding from other sources, dramatically increasing the reach and influence of U.S. financial support. The consistently strong support provided by the U.S. government has been a major factor in the Initiative’s growth in size, scope, and influence.

Current U.S. Domestic Efforts to Mitigate Methane

U.S. Methane Emissions

In 2010, the United States' total anthropogenic methane emissions—666.5 MMTCO₂E—ranked 2nd in the world.¹ The top six sources of anthropogenic methane emissions in the US are shown in the table below.

Sector	U.S. Methane Emissions (2010) (MMTCO ₂ e) ²	%age of total US anthropogenic emissions
Natural gas systems*	215.4	32.3%
Enteric fermentation	141.3	21.2%
Landfills	107.8	16.2%
Coal mining**	77.6	11.6%
Manure management	52.0	7.8%
Municipal wastewater	16.3	2.4%

*Natural gas system emissions do not include methane emissions from petroleum systems.

**Coal mining sector emissions includes emissions from abandoned underground coal mines.

Total US anthropogenic methane emissions are projected to grow by 13% by 2030 (compared to 2010).³ Methane emissions will vary considerably by sector, with natural gas systems expected to increase emissions by 26%, coal by 16%, and wastewater by 20%, while methane emissions from manure and landfills are expected to decline slightly over this time frame.⁴ EPA estimates that there is significant potential for cost-effective methane emissions reductions globally from these target sectors by 2030.⁵

Key U.S. Actions

The US is undertaking a number of voluntary programs and regulatory actions at the federal level, as well as actions and policies at the state level. These programs and activities are summarized below and are described in more detail in each of the five U.S. Sector Action Plans.

US EPA Voluntary Programs

EPA has a long history of working to reduce methane emissions domestically. In the early 1990s, EPA began establishing partnership programs with industry to reduce methane emissions from some of the largest sources by encouraging the recovery and use of methane as energy. These programs – AgSTAR,

¹ US EPA, 2012. *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2010*. Available at:

<http://www.epa.gov/climatechange/ghgemissions/usinventoryreport.html>

² Ibid.

³ US Environmental Protection Agency. *Global Anthropogenic Non-CO₂ Greenhouse Gas Emissions: 1990 – 2030*. EPA 430-R-12-006. Revised December 2012. Available at:

http://www.epa.gov/climatechange/Downloads/EPAactivities/EPA_Global_NonCO2_Projections_Dec2012.pdf Table A-2.

⁴⁴ Ibid., Tables B-2, B-3, D-5, E-2, and E-3.

⁵ US Environmental Protection Agency. *Global Mitigation of Non-CO₂ Greenhouse Gases*. EPA 430-R-06-005. June 2006. Available at: <http://www.epa.gov/climatechange/EPAactivities/economics/nonco2mitigation.html>

the Coalbed Methane Outreach Program, the Landfill Methane Outreach Program and the Natural Gas STAR program – strive to remove market barriers and increase investment in cost-effective emissions reduction technologies and practices. These programs have been very successful at limiting domestic methane reductions and provided the expertise that EPA has now applied to its international efforts under GMI.

- Through the *AgSTAR Program*⁶, EPA partners with the U.S. Department of Agriculture (USDA) to collaborate with the nation’s agriculture industry to reduce methane emissions by promoting the use of biogas recovery systems to manage animal waste. EPA offers an array of tools and information designed to assist livestock producers in evaluating and implementing methane recovery systems.
- Through the *Coalbed Methane Outreach Program (CMOP)*⁷, the EPA collaborates with coal companies and related industries to reduce methane emissions through the development of environmentally beneficial, cost-effective coal mine methane recovery and utilization projects. The program focuses on mitigating emissions from underground coal mines, both from degasification systems and from mine ventilation systems, as well as from abandoned (closed) underground mines and active surface mines. Examples of the program’s services include identifying project sites, analyzing and demonstrating technologies, conducting mine-specific project feasibility assessments and market evaluations, and analyzing financial incentives and regulatory hurdles.
- Through the *Landfill Methane Outreach Program (LMOP)*⁸, the USEPA provides landfill owners and operators a suite of tools and technical resources to help them overcome the obstacles to developing landfill gas energy projects. It also provides technical assistance to both smaller landfills not covered by USEPA regulations and larger, regulated operations that are combusting their gas but not yet using it as a clean energy resource. LMOP works with landfill owners and operators, industry organizations, energy providers and marketers, state agencies, communities, end-users, and other stakeholders to help them overcome barriers to LFG energy development.
- The *Natural Gas STAR Program*⁹ is a partnership between EPA and oil and natural gas companies to promote the adoption of proven, cost-effective technologies and practices that reduce methane emissions from all sectors of the natural gas supply chain. By working with both domestic and international companies from oil production and all sectors of the natural gas supply chain for two decades, the Natural Gas STAR Program has developed a sound understanding of emissions and mitigation options. The Program works collaboratively with industry to reduce methane emissions, improve operational efficiency, increase natural gas supply, and contribute to a healthier global environment.

Regulatory Efforts

In some instances, EPA has exercised its authority under the Clean Air Act to implement regulations affecting some of the key methane sources, as described below.

- The **Oil and Gas New Source Performance Standards for Volatile Organic Compounds (VOCs)**,¹⁰ finalized in April 2012, includes requirements for new or modified hydraulically fractured wells, compressors, storage vessels, pneumatic controller, and equipment leaks at

⁶ AgSTAR website: <http://www.epa.gov/agstar/>

⁷ Coalbed Methane Outreach Program (CMOP) website: <http://www.epa.gov/cmop/>

⁸ Landfill Methane Outreach Program (LMOP) website: <http://www.epa.gov/lmop/>

⁹ Natural Gas STAR Program website: <http://www.epa.gov/gasstar/>

¹⁰ <http://www.epa.gov/airquality/oilandgas/>

processing plants. EPA estimates a co-benefit of 1.0 to 1.7 million tons of methane reduced annually.

- **Landfill New Source Performance Standard and Emissions Guidelines.**¹¹ Methane capture is required for municipal solid waste landfills under the Clean Air Act (New Source Performance Standards and Emission Guidelines)¹² for landfills that are greater than or equal to 2.5 million Mg and 2.5 million cubic meters in design capacity and have estimated emissions of non-methane organic compounds (NMOCs) of at least 50 Mg per year¹³.

Domestic GHG Data Collection and Reporting:

- Through the **Greenhouse Gas Reporting Program**, EPA requires annual reporting of greenhouse gas emissions from facilities from 41 source categories. For most source categories, reporting requirements apply to facilities that emit 25,000 metric tons of carbon dioxide equivalent or more per year. These data provide a new resource for analyzing domestic methane emissions, and therefore for better identifying reduction opportunities.
 - Active underground coal mines that liberate 36,500,000 actual cubic feet (acf) of methane or more per year are subject to the reporting requirements.¹⁴
 - Landfills that emit 25,000 metric tons or more per year of GHGs are subject to the reporting requirements.¹⁵
 - Oil and gas production, transmission, and distribution facilities over the reporting threshold are subject to the reporting requirements.¹⁶

State and Local Policies and Other Incentives

- **Coal mining:** There are some state-level incentives for reducing coal mine methane emissions. For example, five states (Indiana, Pennsylvania, West Virginia, Ohio, and Utah) expressly include CMM as a targeted energy resource in their statewide alternative energy and renewable energy programs.
- **Municipal solid waste:** While landfill gas recovery for energy offers significant environmental, energy, and economic benefits to the public and private sector, there are still barriers to project development. To help overcome these barriers, Federal and state governments have a number of programs and strategies to create financial incentives for landfill gas energy projects including loans, grants, renewable portfolio standards, renewable energy trust funds, and property, sales, and use tax exemptions. Currently, 26 states, the District of Columbia, and two U.S territories (Puerto Rico, Northern Mariana Islands) define waste-to-energy as a “renewable” source of energy. In states with mandates that power suppliers purchase a certain percentage of their energy from renewable sources, defining waste-to-energy as renewable significantly increases the value of the electricity generated by these facilities.

¹¹ <http://www.epa.gov/ttn/atw/landfill/landflpg.html>

¹² final rule published 3/12/96

¹³ For landfills that commenced construction, reconstruction, or modification on or after May 30, 1991, the NSPS apply. For older landfills that received waste after November 8, 1987, the EG apply.

¹⁴ <http://epa.gov/climatechange/emissions/subpart/ff.html>

¹⁵ <http://www.epa.gov/ghgreporting/reporters/subpart/hh.html>

¹⁶ <http://www.epa.gov/ghgreporting/reporters/subpart/w.html>

- **Municipal wastewater:** To date, domestic efforts to reduce methane from the municipal wastewater sector have been largely state or municipally driven. For example, California has developed a wastewater biogas statewide working group that includes sanitation agencies, Cal-EPA, the California Energy Commission, the South Coast AQMD and EPA Region 9. The Water Environment Federation (WEF), a national professional organization, has established a bioenergy technology subcommittee that promotes biosolids and energy recovery technologies associated with wastewater residuals.
- **Oil and gas sector:** In addition to federal regulations, some States have rules that affect methane emissions from oil and gas operations, including Colorado and Wyoming.

Domestic Accomplishments

The EPA has achieved significant reductions in methane emissions in the U.S through its partnership programs as well as from the regulation of volatile organic compounds and hazardous air pollutant emissions under the U.S. Clean Air Act.

As of 2010, total US methane emissions from four sectors (agriculture/manure, coal mining, landfills, and natural gas systems) were nearly even with 1990 levels, with significant variation among sectors. For example, certain sectors, notably landfills and coal mining, have reduced total methane emissions over this time period.¹⁷ In 2011, EPA's voluntary methane programs were responsible for 63.9 MMTCO₂e in total greenhouse gas reductions.¹⁸

- **Agriculture / manure sector.** Through the AgSTAR program, EPA has supported digester-to-energy projects that produced more than 550 million kWh of renewable energy from farms capturing methane, and has updated and expanded the program's national digester database of over 170 operating digesters. Currently, there are nearly 200 manure operating digester systems in the United States.
- **Coal mining sector.** Through the Coalbed Methane Outreach Program, EPA has helped reduce cumulative methane emissions from the coal mining sector by an estimated 124 MMTCO₂e, and has facilitated the launch of ventilation air methane mitigation projects in the United States.
- **Landfill sector.** Through the Landfill Methane Outreach Program, EPA has collectively reduced methane emissions from landfills and avoided emissions totaling nearly 200 MMTCO₂e and has assisted 545 landfill gas to energy projects since the program began.
- **Natural gas systems.** Through the Natural Gas STAR Program, EPA has achieved cumulative program reductions of approximately 438 MMTCO₂e since the program began in 1993, and now works with 138 domestic and international partners.
- Additional information on these programs and accomplishments is available in the individual U.S. sector methane action plans, in **EPA's Climate Protection Partnerships 2011 Annual Report**, and in the **USG GMI Accomplishments Report**.

Current U.S. International Efforts to Support GMI

¹⁷ US EPA, 2012. *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2010*. Available at: <http://www.epa.gov/climatechange/ghgemissions/usinventoryreport.html>

¹⁸ US Environmental Protection Agency. *Energy STAR and Other Climate Protection Partnerships. 2011 Annual Report*. December 2012. Available at: https://www.energystar.gov/index.cfm?fuseaction=publications.showPublications&view=all&st=Type&pub_type_code=REP&CFID=5883313&CFTOKEN=96374488

Global Methane Emissions

Total global anthropogenic methane emissions in 2010 were estimated to be 7195.6 million metric tons CO₂e.¹⁹ Of this total, more than half (53.6%) come from the five GMI sectors: oil & gas, landfills, coal mines, agriculture (manure), and municipal wastewater (see table). While global methane emissions are projected to grow by 26% from 2005 to 2030, there remains substantial cost-effective abatement potential available today. EPA estimates that there is significant potential for cost-effective methane emissions reductions globally from these target sectors.²⁰

Estimated Global Methane Emissions²¹ in 2010

Sector	Methane Emissions (MMTCO₂e)	% of Total Global Methane Emissions
Oil & Gas	1,677.3	23.3%
Landfills	846.7	11.8%
Coal	588.6	8.2%
Agriculture (manure)	229.2	3.2%
Municipal wastewater	511.8	7.1%
Total (five sectors)	3853.6	53.6%

US Strategy

The United States Government, led by the Department of State and the U.S. Environmental Protection Agency, is taking aggressive international action on reducing methane emissions. Since 2004, the United States has been a significant driver for participation as the Initiative has evolved into the premier multilateral effort focused on methane.

The United States plays a very active role in the Global Methane Initiative both in terms of leadership and financial and human resource contributions. The U.S. government has contributed over \$70 million in funding to GMI since 2004 -- contributions that have now leveraged over \$465 million in project financing. The U.S. government efforts under GMI are led by EPA and involve efforts from Department of State, the Department of Agriculture, the Department of Energy, the Agency for International Development (USAID), and the U.S. Trade and Development Agency (USTDA) (see Figure below). The USEPA chairs the GMI Steering Committee, co-chairs 4 of the 5 subcommittees, and hosts the GMI Administrative Support Group (ASG) or Secretariat which supports all aspects of the Initiative. US activities to support the sector-specific activities of GMI build upon the U.S. Environmental Protection Agency's (EPA's) experience and expertise with successful domestic voluntary methane emission reduction programs.

¹⁹ US Environmental Protection Agency. *Global Anthropogenic Non-CO₂ Greenhouse Gas Emissions: 1990 – 2030*. EPA 430-R-12-006. Revised December 2012. Available at:

http://www.epa.gov/climatechange/Downloads/EPAactivities/EPA_Global_NonCO2_Projections_Dec2012.pdf

²⁰ US Environmental Protection Agency. *Global Mitigation of Non-CO₂ Greenhouse Gases*. EPA 430-R-06-005. June 2006. Available at: <http://www.epa.gov/climatechange/EPAactivities/economics/nonco2mitigation.html>

²¹ US Environmental Protection Agency. *Global Anthropogenic Non-CO₂ Greenhouse Gas Emissions: 1990 – 2030*. EPA 430-R-12-006. Revised December 2012. Available at:

http://www.epa.gov/climatechange/Downloads/EPAactivities/EPA_Global_NonCO2_Projections_Dec2012.pdf



US government activities include direct technical assistance, capacity building efforts, and development of tools and resources, as described below for each sector.

As one component of the USG support, EPA initiated a competitive **grants program** in 2007 that has provided almost \$16 million for nearly 100 grants to build capacity and promote international capture and use of methane in GMI Partner countries around the world. EPA intends to continue this grants program in the future as an important mechanism for building capacity and accelerating methane project development in developing Partner countries.

Agriculture Sector (manure and agro-industrial waste):

Internationally, EPA leads US government efforts to promote methane mitigation from agricultural sources (both livestock and agro-industrial facilities) through their participation in GMI. Generally, EPA’s assistance to developing countries involves a number of steps aimed at providing the level of capacity building, institutional building, and technical assistance needed to develop a locally sustainable approach to methane mitigation in subsectors with the greatest potential for achieving methane emissions reductions. Coordination with multi-national lending agencies such as the World Bank, Global Environment Facility, Inter-American Development Bank, and the Asian Development Bank provides financial mechanisms and other critical elements for this approach. EPA provides assistance to develop and transfer technical skills to develop reliable and low risk agricultural methane mitigating projects around the world. EPA also provides assessments, tools, analyses, demonstration projects, training, and various other forms of support. Finally, EPA shares success stories and lessons learned in the development of anaerobic digestion projects with all levels of countries through GMI meetings and its annual accomplishments report.

A comprehensive, **searchable listing of all U.S. government financed agriculture sector activities** is now maintained on the Global Methane Initiative website while a fuller accounting of the U.S. effort in

this sector can be found in the U.S Agriculture Sector Action Plan in the appendix of this document and on the [GMI website](#).

Coal Mines Sector:

Through GMI, the U.S. has been actively engaged for many years in helping to promote recovery and utilization of coal mine methane in many key coal-producing countries, including China, India, the Russian Federation, Ukraine, and Mongolia. The U.S. has maintained strong relationships with these countries and has focused strategically on reducing methane emissions through a wide variety of activities, including the development of CMM/CBM “Clearinghouses” (or in-country information centers) that EPA has supported most recently in China and India. EPA has provided direct technical assistance in the form of pre-feasibility and comprehensive studies assessing the technical and financial feasibility for CMM projects at candidate mines. EPA has supported technology demonstration projects to evaluate the suitability of specific technologies.

EPA has also supported numerous activities aimed at technology and knowledge transfer, capacity building and technical assistance. One example is the *Best Practices Guidance for Effective Methane Drainage at Underground Coal Mines*, a seminal document that USEPA developed collaboratively with the United Nations Economic Commission for Europe (UNECE) through the auspices of the Ad Hoc Group of Experts on Coal Mine Methane. This document was published in 2010 by the UNECE in several languages, and EPA has sponsored a number of technical workshops and capacity building activities to ensure that it is broadly disseminated.

Finally, EPA has played a critical role in developing and maintaining key information about global opportunities for coal mine methane project development. EPA developed profiles of key coal mining nations around the world as a key resource; developed a global database of all coal mine methane projects that are operating or under development; and supported the revision and updating of an online technology database for different coal mine methane applications. EPA has also developed and continues to maintain key resources such as a financial model that can be used to estimate the financial viability of potential projects. The U.S. looks forward to working collaboratively with others to advance the goal of reducing emissions from coal mining activities in these key countries. A fuller accounting of the U.S. effort in this sector can be found in the U.S. Coal Sector Action Plan in the appendix of this document and on the [GMI website](#).

Municipal Solid Waste (formerly Landfills) Sector:

Under GMI, EPA provides tailored assistance to partner countries in coordination with the MSW Subcommittee delegates. EPA’s efforts in support of the Municipal Solid Waste Sector provides a variety of technical assistance and training with a focus on overcoming technical, institutional, and financial barriers to project development. Assistance is prioritized based on level of methane emissions, potential for reductions and level of engagement by partner countries. The highest level of engagement may include hands-on technical assistance, institutional capacity building, workshops, and customized training and outreach. On an ongoing basis, EPA staff has worked with the GMI MSW Subcommittee to develop tools and resources that may be used by all Partner countries and other solid waste professionals to advance proper landfill gas mitigation, abatement, and utilization.

EPA has engaged in a number of key activities in this sector. EPA supported development of an *International Best Practices Guide* to provide a tool for Partner countries to develop a comprehensive approach to landfill gas management. EPA continues to cooperate with ISWA to provide training and capacity building to participating solid waste professionals. EPA has developed numerous country-specific landfill gas generation models to estimate landfill emissions and project potential. Based on the

success of U.S. companies in utilizing landfill gas directly for thermal needs (industrial boilers, process heating, etc.), EPA is developing a resource packet of case studies, technical consideration, and outreach materials that may be used by the private sector in Partner countries. Finally, EPA continues to build and support a database of landfill and landfill gas energy project information from Partner countries; it is the only central database of operational landfill gas energy project and potential project information.

A comprehensive, [searchable listing of all MSW sector activities](#) is now maintained on the Global Methane Initiative website. A fuller accounting of the U.S. effort in this sector both domestically and internationally can be found in the U.S. Municipal Solid Waste Sector Action Plan on the [GMI website](#).

The US, along with several other countries, is supporting the MSW Initiative of the CCAC (see below). The US, along with Canada, Mexico, the World Bank, UNEP, the Clinton Climate Initiative, and the C40 Cities, is supporting this initiative which targets reducing methane and black carbon from across the municipal solid waste sector by focusing on technical assistance and capacity building to cities.

Municipal Wastewater Sector:

The United States has recently begun engaging in the newest methane source category of GMI, which focuses on methane from the municipal wastewater sector. EPA estimates that wastewater accounts for more than 7% (512 MMTCO₂E) of estimated global anthropogenic methane emissions in 2010 and total estimated methane emissions from municipal wastewater sources are expected to increase by nearly 19% over the next two decades.

The sources of methane generated by municipal wastewater vary by treatment and handling techniques. In developed countries much of the methane from this sector is generated by the biosolids produced during the treatment of wastewater. In developing countries, where centralized treatment systems are less prevalent, methane is produced by the anaerobic conditions found in lagoons, septic systems, open sewers, and latrines.

As EPA moves forward with its efforts to support the municipal wastewater sector globally to reduce its methane emissions, it is anticipated that much of this support will take the form of technical assistance and training with a focus on overcoming technical, institutional, and financial barriers to project development.

Some of the early movement in this direction includes the addition of municipal wastewater within the most recent GMI grants solicitation. EPA expects to fund activities in Latin America and Asia as a result of this solicitation. Additionally, EPA has volunteered to co-chair the new Wastewater Subcommittee, which held its first meeting in Singapore in July 2012. Mexico and the Dominican Republic are also serving as co-chairs, supporting the work of the new Subcommittee. At the Singapore meeting, the Subcommittee finalized a [sector action plan](#) which will serve to guide the efforts of both the Subcommittee as well as the technical and training activities that EPA supports. Other future tools and resource materials envisioned include: a sector factsheet, biogas modeling tools, case studies, training activities, and pre-feasibility studies.

Oil and Gas Sector:

EPA launched [Natural Gas STAR International](#) in 2006 to expand on the success of its domestic program and promote methane emission mitigation activities in oil and natural gas operations worldwide. Through nearly 20 years of collaboration with oil and gas companies, EPA has built a comprehensive suite of technical information on methane mitigation activities that have been successfully implemented by oil and natural gas companies. The Natural Gas STAR Program has over 130 oil and gas corporate

partners, 17 of which are international partners. The program’s partners have achieved domestic and international methane emission reductions of over 1 trillion cubic feet (Tcf).

Under these programs, the EPA seeks collaboration with oil and gas companies in order to promote awareness of methane emission sources and volumes as well as voluntary implementation of cost-effective technologies and practices that have been proven to reduce methane emissions from oil and gas operations. Technology transfer is achieved when partner companies share information on their methane mitigation activities, allowing EPA and other companies to gain valuable insight from their successes. To accomplish these goals, EPA provides the following services and resources to partner companies:

- Technical documents describing over 60 technologies and practices that can achieve cost-effective reductions in methane emissions from all sectors of oil and gas operations.
- Technical workshops to raise awareness about the sources and volumes of methane emissions, as well as available technologies to identify, measure and reduce emissions.
- One-on-one assistance for partner companies interested in targeted assistance in analyzing profitable methane reduction opportunities. This type of assistance can range from desktop assessments to estimate key emission sources and reduction opportunities to leak surveys and measurement studies to quantify actual emissions.

A fuller accounting of the U.S. effort in this sector both domestically and internationally can be found in the U.S. Oil and Gas Sector Action Plan in the appendix of this document and on the [GMI website](#).

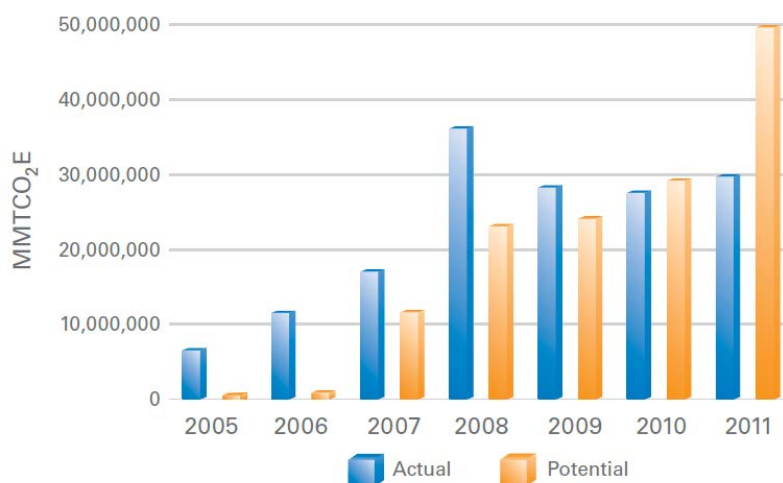
The US, along with several other countries, is supporting the Oil & Gas Systems Initiative of the CCAC (see below), an effort focused on reducing methane and black carbon emissions from this sector by working directly with companies establish voluntary commitments. This work is complementary to and builds upon the work and accomplishments of GMI and the Natural Gas STAR International Program.

US International Accomplishments

The ongoing cooperative efforts to reduce methane emissions through GMI are having a significant impact on global climate change in the near term, while delivering valuable long-term energy, economic, and environmental benefits. US efforts have helped dismantle barriers to project development. In fact, since 2004, the United States has provided technical, financial, and capacity building support to more than 700 methane reduction projects and activities around the world. These activities have achieved a total of nearly 30 MMTCO₂e reductions in 2011 alone and have reduced emissions by nearly 160 MMTCO₂e cumulatively since 2005. These projects include the world’s largest coal mine methane project in China, as well as projects at landfills, coal mines, oil and gas, and agricultural facilities in many Partner countries. The figure below illustrates the annual actual emissions reductions achieved (blue bars), as well as the potential opportunities for emissions reductions identified through GMI activities (orange bars). The “potential” emissions reductions signify the annual emissions reductions that were identified through a GMI activity such as a site-specific pre-feasibility study, and that could be achieved if these projects were fully implemented.

*Annual Methane Emission Reductions from U.S.-Supported Projects, 2005-2011*²²

²² United States, Global Methane Initiative, [The U.S. Government’s Global Methane Initiative Accomplishments](http://www.epa.gov/globalmethane/accompreport.htm). Available at <<http://www.epa.gov/globalmethane/accompreport.htm>>



GMI’s accomplishments and the reservoir of technical resources and expertise were in many ways foundational for the establishment of a new international effort focused on short-lived climate pollutants (SLCPs). In February 2012, the **Climate and Clean Air Coalition (CCAC) to Reduce Short-Lived Climate Pollutants** was launched with a focus on reducing black carbon, hydrofluorocarbons (HFCs), and methane. The United States was one of six founding Partner countries, together with the UN Environment Programme. The Coalition has since grown to 28 Partner countries and 50 non-state organizations including the World Bank. The United States has committed \$12 million to the CCAC and will work to ensure that GMI is an important component of any methane work undertaken. To date, the US has provided technical and financial support to two specific methane-related initiatives: municipal solid waste and oil and gas systems. These two initiatives were in fact designed and implemented to build upon and leverage the experiences and expertise of GMI in these sectors.

United States Plans for Future Support through GMI

Under the Obama Administration, the U.S. government is continuing to promote the Initiative’s success, urging more robust action and stronger financial commitments, engaging the private sector, and ensuring that GMI evolves in a manner that supports and complements the UNFCCC.

The United States hopes to facilitate the continued growth and effectiveness of GMI by maintaining its current domestic and international activities in addition to expanding its efforts in complementary areas. In 2013, the U.S. government is expending slightly more than \$8 million on GMI – continuing to provide support for capacity building in all GMI developing countries. The U.S. is tailoring its approach in each sector and outlines specific areas of emphasis in each of the sector-specific action plans.

In particular, the United States will support GMI by focusing on these key areas:

- Promoting Emission Reductions. The U.S. government will continue to actively support methane recovery and use and abatement opportunities in the agriculture (manure management), coal mines, municipal solid waste, oil and gas systems, and municipal wastewater sectors. We will continue to provide technical and capacity building support to developing countries based on our analysis of key emission reduction opportunities in each sector. Our preliminary analysis indicates that our priorities for this work in the near term would include the following:
 - Agriculture (manure management): China, India, Indonesia, Mexico, Nicaragua, Philippines, Thailand, Vietnam

- Coal mining: China, India, Russia, Ukraine
- Municipal Solid Waste: Brazil, China, Indonesia, Ukraine
- Oil & Gas: China, Colombia, India, Indonesia, Mexico
- Municipal wastewater: Chile, China and Mexico
- Providing assistance to developing countries to develop or refine their methane action plans
- Identifying and seeking ways to better collaborate with its Partner Countries; the private sector; and multilateral organizations such as the World Bank, the Inter-American Development Bank, and the United Nations to ensure that we are leveraging our resources as effectively as possible.

The United States is proud of the Initiative’s collective achievements, which demonstrate that developed and developing countries—along with the private sector—can effectively work together to address global climate change. In the coming year, the United States will work with GMI Partners and Project Network members to encourage continued engagement and expanded commitment to the Initiative, with the purpose of enabling greater methane mitigation efforts while advancing clean energy development and stronger economies around the world.

Additional Information:

For information about the EPA’s GMI project grants please use the following link.

<http://epa.gov/globalmethane/grants.htm>

For information on EPA’s domestic methane program accomplishments see: [Energy STAR and Other Climate Protection Partnerships – 2011 Annual Report](#)

For a more complete description of the United States’ GMI activities and achievements from 2005 through the present see the following annual accomplishment reports.

- 2011: <http://www.epa.gov/globalmethane/accompreport.htm>
- 2010: <http://www.epa.gov/globalmethane/accompreport-10.htm>
- 2009: <http://www.epa.gov/globalmethane/accompreport-09.htm>
- 2008: <http://www.epa.gov/globalmethane/accompreport-08.htm>
- 2007: <http://www.epa.gov/globalmethane/accompreport-07.htm>
- 2006: <http://www.epa.gov/globalmethane/accompreport-06.htm>