U.S. Government's International Methane Emission Reduction Activities: 2015 Accomplishments

Annual Highlights from U.S.-Supported Methane Mitigation and Recovery around the World

The U.S. government plays an important role in reducing international methane emissions and promoting methane recovery and use projects around the world. This report summarizes U.S. government agencies' Fiscal Year 2015 (FY2015) contributions and highlights 2015 activities.

Since 2004, the United States has led efforts to mitigate methane emissions and/or recover and use methane as a clean energy source through the Global Methane Initiative (GMI), formerly the Methane to Markets Partnership. In 2012, the United States and five national governments convened with the United Nations Environment Programme (UNEP) to create the Climate and Clean Air Coalition (CCAC) to reduce short-lived climate pollutants (SLCPs), including methane. GMI's technical experience and expertise was instrumental in designing and implementing CCAC initiatives to reduce methane from the agriculture, municipal solid waste (MSW), and oil and gas sectors that complement GMI's successes in these sectors. GMI and CCAC have continued to seek opportunities to leverage synergies and more closely align methane activities and resources, as CCAC has now grown to more than 100 partners.

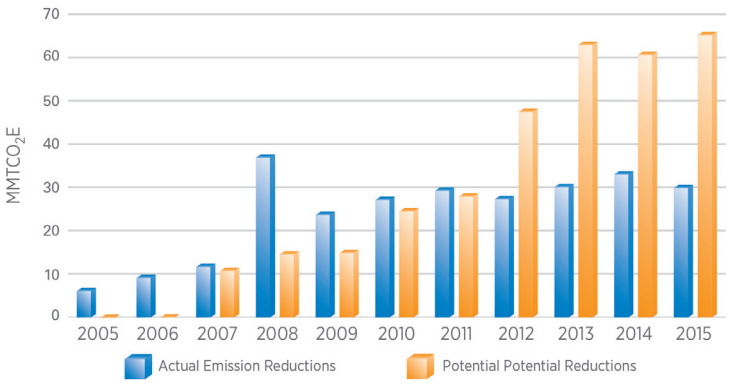
This report provides summaries of the U.S. government's methane emission reduction accomplishments throughout the world, and also features sector-specific activity highlights in GMI and CCAC Partner Countries. For the first time, this report reflects accomplishments across the U.S. government to address methane under the auspices of both GMI and CCAC.

Highlights

Every year, the U.S. government provides an overview of its international methane emission reductions efforts. 2015 highlights include:

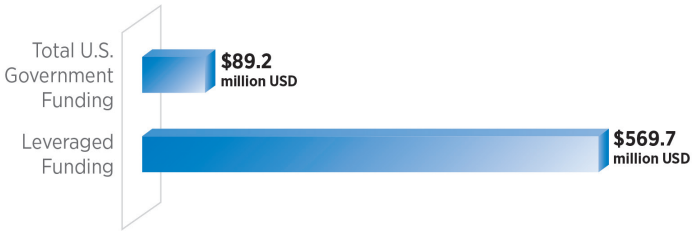
- **Emission Reduction Projects.** With assistance from several agencies—particularly the U.S. Environmental Protection Agency (EPA) and U.S. State Department—the U.S. government is supporting approximately 1,000 ongoing methane emission reduction projects around the world. In 2015, these projects avoided actual methane emissions of approximately 30 $MMTCO_2E$ (see Figure 1). The United States also identified projects with "potential" emissions reductions that could be realized if implemented.

Figure 1. Annual Methane Emission Reductions from U.S.-supported Projects, 2005-2015



- **Cumulative U.S. Government Support.** U.S. government funding for international methane emission reduction activities from FY 2005 through FY 2015 totaled more than $89 million. This has helped leverage nearly $570 million in funding from other sources, such as the World Bank (see Figure 2).

Figure 2. U.S. Government Funding and Leveraged Funding, FY 2005–FY 2015



- **Stakeholders Impact.** In 2015, the U.S. government supported approximately 100 international methane emission reduction activities including assessments, capacity building, and information sharing in more than a dozen Partner Countries in Africa, Asia, Europe, and North and South America (see Figures 3 and 4).

Successful Methane Mitigation Auction

The Pilot Auction Facility for Methane and Climate Change Mitigation (PAF), an innovative climate financing mechanism established by the World Bank, seeks to stimulate investment in methane emission reduction projects. The PAF held its first auction—focused on the agriculture (animal waste), landfill, and wastewater sectors—in July 2015. Twenty-eight bidders from 17 countries participated in the inaugural auction, with 12 companies "winning" the purchase of tradeable put options on carbon credits for nearly 9 million tons of emissions reductions. Following the first auction's success, the second auction was held in May 2016 with the first redemption period in late 2016.

The PAF received financial backing from Germany, Sweden, Switzerland, and the United States. U.S. experts also provided technical expertise in development of the auctions.

Figure 3. U.S. Expenditures by Activity, FY 2015

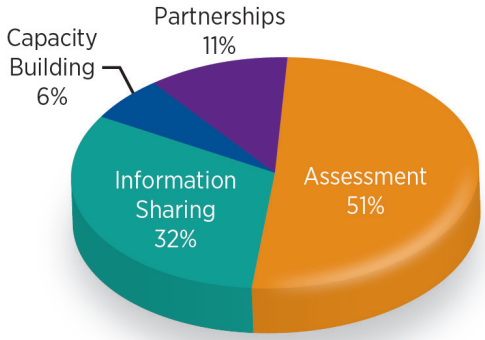
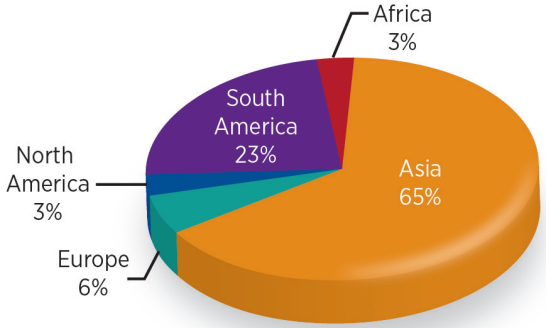


Figure 4. U.S. Expenditures by Region, FY 2015



Sector Highlights

The United States actively engaged with Partners to provide technical expertise, share information, and build capacity in key sectors.

AGRICULTURE

- Completed a *Resource Assessment for Livestock and Agro-Industrial Wastes* for ***Indonesia*** that identified agricultural sectors (e.g., palm oil and cassava processing, swine farming) with the greatest methane emission reduction potential via installation of anaerobic digestion (AD) systems.
- Updated ***Partnership-wide*** *GMI Agriculture Sector Data Entry Workbook* and created and revised an associated *User's Guide*.

Support for CCAC Agriculture Initiative

U.S. technical experts provided input critical to establishing the CCAC Agriculture Initiative, which focuses on agricultural sources of methane and black carbon broadly and complements GMI's focus on manure management activities. To that end, under the auspices of GMI and CCAC, the United States has collaborated with other partners to develop the "Manure Management Kiosk," an online information portal that provides resources and links related to manure management practices.

COAL MINES

- Engaged in technical information exchanges through workshops around the world including:
  - A coal mine methane (CMM) Best Practices workshop in ***China***, co-hosted by Guizhou International Cooperation Center for Environmental Protection.
  - A CMM technical and policy seminar in ***Colombia***, sponsored by Colombia's Ministry of Mines and Energy, the National Hydrocarbons Agency (ANH), and the National Mining Agency.
  - A technical and policy workshop focused on "Promoting CMM for Energy, Safety and the Environment" in ***Kazakhstan***, with sessions focused on CMM project development and incentives, policy and ownership issues, and assessment and development of CMM resources.
- Initiated and completed several pre-feasibility studies for CMM drainage and utilization projects that—if implemented—would yield more than one million $MTCO_2E$ in emissions reductions. These assessments involved analyses of innovative drainage technologies:
  - Mahui and Pingshang Mines (***China***)
  - Sawang Colliery (***India***)
  - Conchas Mine Complex (***Mexico***)
  - KWK "Pniówek" Coal Mine (***Poland***)
  - Kozlu Coal Mine and Amasra Hard Coal Mine (***Turkey***).

MUNICIPAL SOLID WASTE (MSW)

- Assessed biogas resources in Santiago, ***Chile***, including the Colihues-La Yesca Landfill and other biogas feedstocks such as farmers' markets and horse corrals that generate organic material eligible for composting.
- Advised the municipality of Ningbo, ***China***, on best practices for AD of organic and kitchen waste. Coordinated with the GMI Biogas Subcommittee and Chinese delegates to develop an organics management best practices training.
- In cooperation with Companhia de Limpeza Urbana (COMLURB) and the C40 Cities Climate Leadership Group, co-organized a capacity building consultation for the city of Rio de Janeiro, ***Brazil***, to improve composting practices, and provided direct assistance to the Caju composting facility.

CCAC MSW Initiative-Related Activities

In 2015, the United States leveraged its extensive experience and technical expertise in reducing methane from the MSW sector by working with the CCAC MSW Initiative to develop tools and models. The U.S. team reviewed and provided input to the MSW Initiative's Emission Quantification Tool and OrganEcs, a cost-estimating model for managing source-separated wastes.

U.S. experts provided direct technical support and training to specific cities participating in the MSW Initiative. Efforts included:

- ***Brazil:*** **Developed and presented composting best practices curricula to help improve Rio de Janeiro's waste diversion efforts.**
- ***Ethiopia:*** **Provided landfill operations training and organized exchange with City of Denton, Texas and Solid Waste Institute for Sustainability at University of Texas - Austin.**
- ***Indonesia:*** **Trained municipal officials on financial and technical requirements for waste-to-energy procurement.**
- ***Jordan:*** **Conducted a transfer station operations/material recovery management training workshop and compiled a compendium of online best management practices references for increasing private participation in MSW services.**

OIL AND NATURAL GAS

- Engaged with officials from ***China's*** National Development and Reform Commission officials on ongoing cooperation with Chinese oil and gas companies to reduce methane emissions under the auspices of the U.S.-China Climate Change Working Group; collaborated with Chinese officials to improve default emissions factors used in China's reporting guidelines.
- In ***Indonesia***, worked with oil and gas company Pertamina regarding the outcomes of a GMI measurement study and discussed next steps. Engaged with other industry stakeholders to accelerate emission reductions.
- Coordinated the first-ever GMI Oil & Gas event in ***Saudi Arabia***, one of the world's leading producers, with sponsorship from the government of Saudi Arabia. The joint GMI/CCAC workshop and exhibition included technical presentations, including a case study on methane emission reduction efforts with Kuwait Oil Company.
- Performed methane emissions detection and measurement field studies at ***Thailand's*** PTT Exploration and Production (PTTEP) Greater Bangkok North offshore complex. Assisted PTTEP with fulfilling its obligation to report core methane emission sources as a member of the CCAC Oil and Gas Methane Partnership (see text box).
- Engaged with the ***International Petroleum Industry Environmental Conservation Association (IPIECA)*** Oil & Gas Climate Initiative, whose member companies focus on achieving greater energy efficiency and carbon intensity.

Global Oil and Gas Partnerships

Under the auspices of GMI, the United States worked closely with the United Nations Environment Programme (UNEP) to help design *CCAC's Oil and Gas Methane Partnership (OGMP)* and recruit founding Partner Companies. The OGMP is a voluntary initiative with eight Partner Companies—representing ~10 percent of the world's gas productions—that have committed to ambitious, transparent actions to reduce methane emissions. In 2015, U.S. experts supported OGMP implementation by providing critical input to the Partnership's Technical Guidance Documents, developing annual reporting forms and procedures, and participating in the OGMP Steering Group.

In 2015, GMI's Oil & Gas Subcommittee began collaboration with the ***United Nations Economic Commission for Europe (UNECE)* Committee on Sustainable Energy. U.S. technical staff joined the UNECE Group of Experts task force and coordinated collaboration with the OGMP.**

WASTEWATER

- Conducted scoping missions to ***China*** and ***Mexico*** to identify pilot projects for methane recovery from anaerobic digestion. In Mexico, conducted pre-feasibility assessments for two wastewater treatment plants in San Juan del Rio and Xalapa.

Looking Forward

In the coming years, the United States plans to leverage the continued collaboration of GMI and CCAC Partners to encourage voluntary, cost-effective methane mitigation globally.

The United States looks forward to providing technical expertise on methane mitigation to assist our international partners developing or implementing national strategies to reduce methane.

Recent Developments

In early 2016, the United States hosted the Global Methane Forum—an event focused on global collaboration to mitigate methane that was co-organized under the auspices of GMI and CCAC—in Washington, D.C. During the event, GMI Partners formally re-chartered the Initiative through 2021. The new Terms of Reference incorporate the following key changes to GMI's mission and structure:

- **Greater emphasis on GMI's role in developing policy guidance, disseminating tools, best practices, and knowledge platforms.**
- **Formal collaboration with other international initiatives dedicated to methane mitigation, especially CCAC and UNECE.**
- **Improved efficiencies by striving to hold fewer "stand-alone" meetings, including merging the work in the agriculture, MSW, and wastewater sectors into a single "Biogas" Subcommittee.**
- **Additional Steering Committee leadership opportunities by creating co-chairs.**