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TECHNICAL REPORT

# Outcome Evaluation of U.S. Department of State Support for the Global Methane Initiative

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## Summary

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Methane is a greenhouse gas (GHG) that has more than 20 times the warming power of carbon dioxide (CO<sub>2</sub>) but remains in the atmosphere for a shorter amount of time.<sup>1</sup> Methane emissions are released during the course of a wide range of activities: the production and transport of coal, natural gas, and oil; raising livestock and other agricultural practices; and the decay of organic waste in municipal solid waste landfills and some wastewater treatment systems. In 2004, 14 countries came together under the leadership of the United States to launch the Methane to Markets Partnership. The program was relaunched in 2010 as the Global Methane Initiative (GMI). GMI promotes cost-effective, near-term methane recovery internationally through partnerships between developed and developing countries, with participation from private sector, development banks, and other governmental and nongovernmental organizations. GMI is part of the U.S. strategy to address GHG emissions and their impact on climate change.

As one of the two primary U.S. agencies participating in GMI, the U.S. Department of State (DoS)—specifically, its Bureau of Oceans and International Environmental and Scientific Affairs (OES) and Office of Global Change (EGC)—requested a study to “document and evaluate programmatic activities and outcomes relative to the contributions of OES/EGC funding from fiscal years 2006 through 2010.” OES/EGC requested an evaluation that described the value added of DoS contributions to the program, including a discussion of the countries and programmatic themes that were supported as a result of OES/EGC funding. They also requested that the evaluation apply a mixed-methods approach, using both quantitative and qualitative information, to document and illustrate program outcomes, including information from in-country site visits. DoS commissioned the RAND Corporation to conduct this assessment.

### **U.S. Government Support for GMI and the Role of DoS**

GMI is a voluntary program that facilitates partnerships between member countries and private organizations, and the U.S. government (USG) provides financial and technical assistance to support the program and its goals. GMI’s aims are to reduce methane emissions by raising global awareness about methane challenges and solutions, reducing institutional barriers, promoting learning, and facilitating knowledge-sharing. GMI is focused on reducing meth-

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<sup>1</sup> Based on its 100-year global warming potential.

ane emissions across four sectors: agriculture, coal mines, landfills, and oil and gas systems.<sup>2</sup> USG funding supports activities across these four sectors, including feasibility studies, training workshops, demonstration projects, conferences, knowledge-sharing and dissemination opportunities, and efforts to facilitate technology transfer.

USG-supported activities promote methane reduction both directly and indirectly. For example, methane recovery demonstration projects reduce emissions directly, and those reductions can be measured. GMI works to facilitate emissions reductions indirectly, too. For example, some communities or organizations are unaware of the potential impact of methane reduction projects or do not know how to obtain the necessary financial and government assistance to initiate such a project. USG-supported educational efforts often take the form of meetings, conferences, training sessions, and workshops. These types of activities help participants share knowledge, build technical capacity, and promote other indirect outcomes that contribute to reductions in methane emissions.

GMI is led by a steering committee and four technical subcommittees (one for each sector), which include representatives from GMI partner countries. Both DoS and the U.S. Environmental Protection Agency (EPA) sit on the GMI Steering Committee, of which EPA serves as the chair. The committee provides overall direction to GMI. As a U.S. representative on the Steering Committee, DoS works with the other members to ensure that efforts undertaken by GMI are the best way to advance the program's goals and objectives. DoS also brings the U.S. foreign policy perspective to bear when guiding GMI's programmatic activities and strategic direction. GMI's Administrative Support Group (ASG) is hosted by EPA and serves as the secretariat, the main organizing and coordinating body. DoS assists the ASG with diplomatic interactions with partner countries and in identifying and engaging new potential partner countries.

## Evaluation Approach

We evaluated DoS contributions to GMI using a mixed-methods approach that combined quantitative and qualitative data to characterize the DoS resources provided to GMI in fiscal years (FYs) 2006–2010, to identify the activities that GMI conducted with DoS support, and to assess the resulting achievements. Our focus was on DoS value added—the additional benefits of the department's financial and nonfinancial contributions above and beyond other USG and non-USG support.

To assess value added, DoS contributions must be examined in the context of the overall program, since GMI is an integrated effort of DoS, EPA, and other stakeholders. We attempted to capture DoS contributions to GMI in two ways. First, we considered its share of the total financial support provided by the USG. We argue that DoS ought to be credited with at least the share of outputs and outcomes proportionate to its financial contribution. Second, we identified specific or unique contributions that DoS has made to the program, such as foreign policy guidance or flexible travel support, which other USG funders have been less able to provide.

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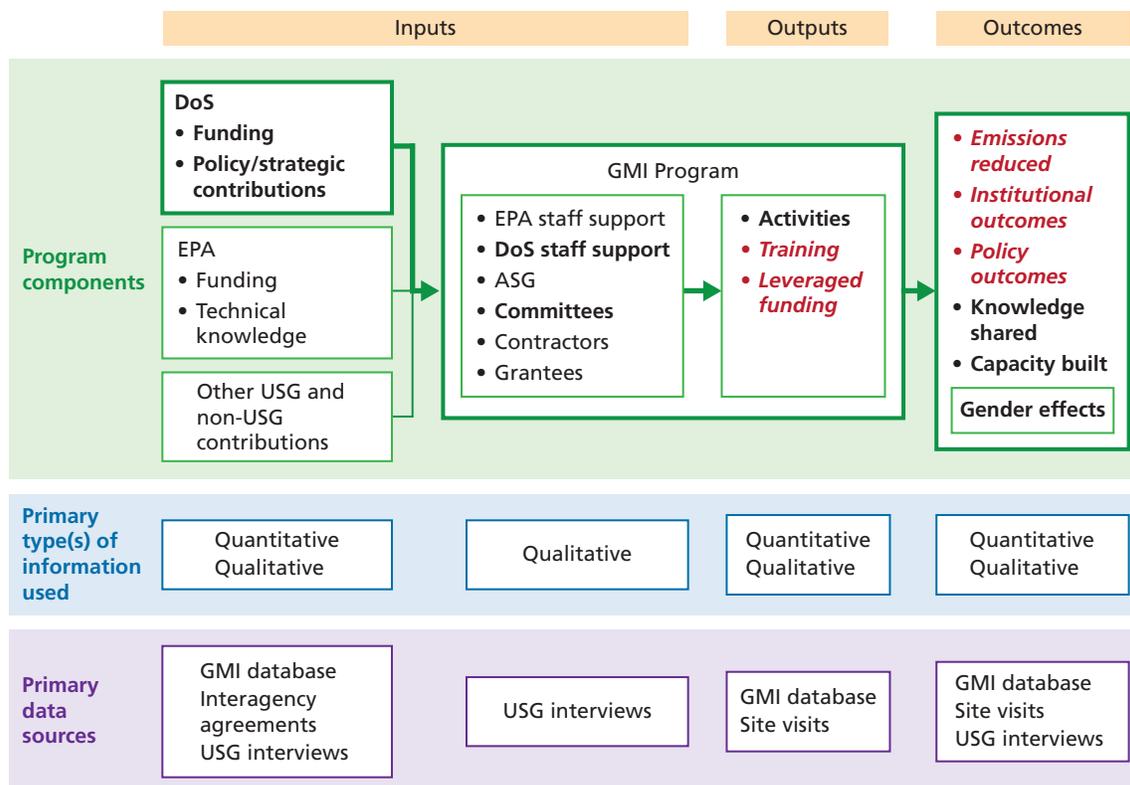
<sup>2</sup> In 2011, GMI added a wastewater systems sector, but because wastewater activities were part of the landfills sector during the study period, in this report we restrict our focus to the four original sectors.

We first examined the GMI program as a whole. We reviewed the financial and technical resources that the USG has contributed to the program (the inputs), the activities that have been undertaken on behalf of the program (the outputs), and results of those activities (the outcomes). We focused specifically on DoS contributions, including funding and strategic guidance. Because it is difficult to measure some outcomes, especially indirect outcomes, we used both quantitative and qualitative data to assess the activities and outcomes tied to OES/EGC funding and the value added of that support. We analyzed the available quantitative information and supplemented it with qualitative information from interviews and site visits.

Figure S.1 shows a simplified diagram of the key evaluation features in the context of the basic GMI program structure. Our evaluation focused on GMI inputs, outputs, and outcomes (shown at the top of the figure), which are related to specific program components (shown in the second panel). We drew on both qualitative and quantitative data (the third panel in the figure) to assess funding and strategic support (inputs), activities (outputs), and emissions reductions, institutional changes, and policy effects (outcomes). The final panel shows the primary sources of data on which we drew to assess each program component. The bolded boxes and text indicate the main focus of our evaluation, which was to assess DoS contributions to GMI, although these contributions are an integral part of the overall program. The red text indicates the core evaluation metrics, which we describe next.

To assess outcomes, we focused on a set of five evaluation metrics (shown in red text in Figure S.1). We drew on two sources to define the core evaluation metrics. First, we consid-

**Figure S.1**  
**Evaluation Framework**



ered GMI's contributions to the four OES/EGC performance indicators, as outlined in the evaluation solicitation: policy outcomes, training, institutional capacity, and emissions reductions. We added to that set the metrics that the USG identifies as central to assessing its GMI support: emissions reductions, leveraged funding, and training. Because there was overlap between these sets of metrics, we consolidated them into five categories:

1. emissions reductions
2. leveraged funding
3. training
4. institutional outcomes
5. policy outcomes.

We also assessed the gender dimensions of these outcomes, where applicable and feasible, as requested in the solicitation. We summarized the metrics emissions reductions, leveraged funding, and training using EPA data. We were able to assess policy outcomes to a limited extent based on data and information gathered during site visits in three countries and from our interviews. Information to evaluate institutional outcomes, however, was almost nonexistent.

We organized the evaluation around the quantitative and qualitative data we compiled and collected, which provided complementary yet distinct insights into DoS contributions to GMI. For quantitative data, we compiled information on the amount of OES/EGC funding that was provided to GMI compared to total USG expenditures on the program for FYs 2006–2010. We also pulled data from EPA's GMI database—a system for tracking GMI activities and associated funding—on all GMI activities and outcomes funded by DoS (as part of USG contributions to GMI), by year, sector, and country.<sup>3</sup> For qualitative data, we examined program documentation, reviewed programmatic guidance in DoS funding documents, conducted interviews with relevant program officers in DoS and EPA, and carried out three country site visits. This approach allowed us to draw on complementary data sources to assess DoS contributions in terms of the aggregate share of GMI activities funded, their associated outcomes, and the specific administrative and programmatic contributions from DoS.

## Findings

During the course of this evaluation, we found evidence that GMI has contributed to reducing emissions of methane. Of the approximately 2,000 activities initiated between FYs 2006 and 2010 in EPA's GMI database, 542 have reportedly contributed to reductions in emissions totaling 203 million metric tons of CO<sub>2</sub> equivalent (MMT<sub>CO<sub>2</sub>e</sub>), equal to approximately one-third of total U.S. methane emissions in 2010. Although many factors contribute to emissions reductions, the scale of the decline in emissions reported by GMI is large. The actions of the international community also provide evidence that GMI is viewed as a useful effort. The number of countries that are members of GMI increased from 14 in 2004 to 41 in 2011, suggesting that there is substantial interest in the approach the program takes to addressing global climate change.

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<sup>3</sup> EPA refers to this database internally as the Customer Relationship Management database, or CRM.

DoS has played a major role in providing USG support for GMI, especially in areas where DoS has stronger expertise than EPA, such as diplomacy and foreign policy guidance. DoS financial contributions to GMI have been substantial, accounting for slightly more than half of all USG funding for the program. The activities supported by DoS contributions—along with EPA’s appropriations and other USG financial support—have contributed to approximately 150 MMTCO<sub>2</sub>e in methane emissions reductions of the 203 MMTCO<sub>2</sub>e reported by GMI, although we acknowledge that some of these data are difficult to verify.

Funding provided by DoS in conjunction with funding and technical assistance from EPA supported as many as 2,000 GMI-related activities, from training to reduce methane emissions from municipal waste facilities to pilot projects to reduce the leakage of natural gas from pipelines and coal mines. Without the funding—and the greater flexibility that DoS has than EPA to make some types of expenditures for program support—GMI’s ability to pursue these activities and bring about the associated reductions in GHG emissions would have been greatly curtailed.

### **Quantitative Findings**

Between FY 2006 and FY 2010, total USG funding for GMI was approximately \$54 million; EPA and DoS were the primary funders. DoS monetary contributions were approximately \$27 million, or 52 percent of total GMI funding. USG funds were used to support GMI activities around the globe, ranging from large-scale conferences and expositions to small-scale projects to reduce agricultural methane in developing countries. These activities resulted in both direct outcomes (e.g., reduced emissions) and indirect outcomes (e.g., improved technical capacity), although we can quantify the latter only through levels of output, such as people trained. EPA’s GMI database captures approximately 2,000 GMI-related activities between 2005 and 2011 and directly associates USG funding with 1,095 of those activities.<sup>4</sup> According to EPA, many of the remaining 900 activities were also supported by DoS and EPA funding, but the funding information is missing or incomplete. Activities may have also been funded by GMI partners, Project Network members, or other stakeholders.

The 2,003 activities undertaken by GMI between 2006 and 2011 were relatively consistent in terms of sector served, project type, and region. GMI funding from all donors is co-mingled; thus, the GMI database did not allow us to ascribe specific funding amounts to specific activities. Consequently, we ascribed DoS value added to GMI activities and associated quantitative outcomes (emissions reduced) based on the 52 percent of total funding that DoS provided in support of GMI.

According to the GMI database, between 2006 and 2011 more than 15,000 people participated in GMI activities. We have categorized this participation by type of activities to focus on those that were designed specifically to promote learning or capacity-building. This subset of activities included approximately 45 percent of all recorded participants, with approximately 6,900 people reported to have attended a GMI-affiliated training session or workshop during our study period. Nearly all of these training sessions or workshops were funded at least in part by DoS and EPA. Of the 203 MMTCO<sub>2</sub>e in methane emissions reductions recorded by GMI, the 532 USG-supported activities accounted for 146 MMTCO<sub>2</sub>e, equal to about a quarter of all methane emissions from the United States in 2010.

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<sup>4</sup> In our study, we included data for 2011 because DoS FY 2010 funding supported activities in calendar year 2011.

Some GMI activities do not directly lead to emissions reductions: They are designed to build local capacity and transfer knowledge, which can lead to the spread of technologies and changes in business and other practices that could result in emissions reductions. If we restrict the number of activities we credit for reducing emissions to only those that were designed to lead directly to emissions reductions, then 540 (of 1,271, or 42 percent) of these activities directly contributed to reduced emissions.

## **Qualitative Findings**

### ***Site Visits***

The RAND team's site visits captured more detailed qualitative evidence of DoS contributions to GMI, albeit for a limited set of countries and activities. During our site visits to India, Mexico, and the Philippines, we interviewed 32 individuals involved with approximately 30 distinct activities and visited six field sites. The goal of the country site visits was to understand how GMI activities were executed locally, to assess the nature of relationships among several stakeholders, and to gather richer information than that available from the GMI database about the activities conducted and their effects. The site visits were particularly useful in providing insights into the outcomes of GMI-funded activities that did not directly result in emissions reductions. The site visits also provided an opportunity to collect data from respondents to validate recorded program data.

Most respondents working in the four GMI sectors reported that USG-funded activities in support of GMI had helped educate industry and government leaders about the potential benefits of reducing methane emissions and about the potential to use methane collected from these activities as a fuel. In India, respondents working in both the landfill and coal sectors mentioned that GMI had resulted in increased initiatives to reduce methane emissions. In the Philippines, capacity-building activities, such as training, helped institutionalize methane-reducing practices, and the country's involvement with GMI has encouraged several agencies to establish a national equivalent, the Philippine Methane Initiative, whose aim is to develop a nationwide strategic plan for methane recovery and capture across the Philippines.

Stakeholders from both the private and public sectors stated that they benefited from capacity-building activities, such as study tours, conferences, and workshops, which gave them opportunities to learn about new technologies and network with leading international participants in their fields. These outcomes are hard to quantify and thus missing in the GMI database, but they were frequently cited by respondents during our site visits. These programs provided respondents with exposure to ideas and approaches that they otherwise would not have encountered.

The majority of our interviewees reported finding cross-sector activities beneficial, and they hoped that there would be an increase in such activities in the future. Comparing results across the three country case studies, we found that sectors that are fragmented and involve several organizations (e.g., agriculture) have a greater need for networking support than other, more consolidated sectors (e.g., oil and national gas, often run by one national agency). Fragmented sectors may benefit from additional funding or a local GMI representative who is able to coordinate activities among private, public, and community partners—a strength we observed in the Philippines. Participants also felt that industries characterized by small private firms would benefit from more demonstration projects.

### ***Programmatic and Strategic Support***

In addition to its monetary contributions, DoS provides programmatic and strategic guidance to GMI. DoS was heavily involved in the creation of GMI and continues to play an ongoing role through its participation in the Steering Committee and ASG. During GMI's formation, DoS contributed its skills in drafting multilateral agreements, especially when crafting the chartering documents, and engaged its core competence in diplomacy and building consent to create the partnership. DoS also engages in outreach to non-partner countries that it feels would be effective additions to GMI. DoS is able to use its knowledge and expertise to identify the appropriate ministers and to pursue the approaches that are likely to appeal to specific countries. DoS is also able to apply its diplomatic skills and international relations expertise when providing strategic and programmatic guidance to GMI.

Based on statements from DoS and EPA staff, without DoS financial and strategic support, GMI would be a very different and much smaller program than it is today. In our assessment, without DoS support, GMI's scope would probably have been reduced by more than half, because there are fixed costs associated with administering the program. In addition, DoS provides strategic and foreign policy guidance that falls outside EPA's technical expertise, a unique contribution given GMI's international structure. This contribution was mentioned by both EPA and DoS staff.

## **Recommendations**

Based on our understanding of how GMI operates, the evolving role of DoS in GMI, and the data collection and management systems EPA maintains to track, assess, and report program accomplishments, we drew up some recommendations for ways to enhance DoS contributions and value added to GMI. We also identified opportunities to improve GMI data collection, especially to support future program evaluation.

### **Soliciting Feedback from Project Participants**

In our interviews, we found that local stakeholders were aware of problems in implementing projects but felt that they lacked avenues through which to convey these observations to the USG. DoS should consider supporting a process to expand the channels through which stakeholders can provide information to program leaders that will help improve GMI.

### **Assessing the Evaluation Metrics**

Metrics such as *emissions reduced* are relatively easy to measure and closely align with GMI's goals. Other metrics, such as *capacity built*, also closely align with GMI's goals but are more difficult to measure. In contrast, some of the metrics concerning impacts related to gender do not necessarily align well, based on our conversations with a range of GMI stakeholders. Because measurement often drives program focus, relatively weak alignment between metrics and program objectives can potentially distort performance. Overly narrow metrics, with corresponding annual targets, may result in funding being driven toward projects that "count," such as training programs for women, rather than on efforts focused on education, knowledge transfer, or partnership-building, which may have a greater effect on the long-term goal of reducing methane emissions. Overly broad metrics may reward "quantity" rather than "qual-

ity.” EPA and DoS should consider developing appropriately tailored evaluation metrics as the program moves forward.

### **Leveraged Funding**

Leveraged funding is an important potential benefit of DoS support for GMI. DoS funding can encourage other public- and private-sector entities to contribute additional funding to efforts to reduce methane emissions. But leveraged funding is challenging to measure. Current information on leveraged funding in the GMI database appears to conflate funding that “leverages” U.S. funds (“augments or builds upon an activity or effort funded by the U.S.,” as stated in EPA’s leveraged funding methodology) and funding from any source other than the USG that supports methane reductions (EPA, 2011a). We recommend that EPA and DoS develop standards for how leveraged funding is identified, what constitutes leveraged funding, and how much of the funding is designated as leveraged. This would lend additional credibility to reports on leveraged funding.

### **DoS Should Maintain a Supporting Role**

DoS has provided substantial funding to support GMI, and it has also made important strategic contributions. However, DoS has put relatively few restrictions on how its funding should be allocated (e.g., across sectors or regions), and it allows EPA to play a lead role in managing USG support for GMI. We view this flexibility as beneficial. We recommend that DoS continue to provide high-level guidance and support while allowing EPA to drive the process of identifying technical opportunities and guiding USG funding allocations to the maximum extent feasible.

### **Opportunities for Future Program Evaluation**

Based on our assessment of DoS support for GMI, we identified three activities that could supplement a long-term evaluation strategy and provide near-term insights into GMI’s effectiveness, potentially at a relatively low cost:

- Conduct targeted surveys of individuals participating in GMI activities to assess
  - the types of benefits that GMI stakeholders perceive to be most valuable
  - the types and extent of information that stakeholders gain through participating in GMI activities.
- Assess both successful and unsuccessful grant applications—those just above and just below the cutoff line. This exercise could identify the topics for which USG support is pivotal versus topics for which there are potentially other available funding sources, allowing EPA and DoS to better target their resources.
- Construct a logic model, a necessary step to facilitate a process evaluation of GMI, that examines whether the program’s activities and outputs are in line with its mission and are helping GMI achieve its goals.