



**USAID**  
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**OFFICE OF INSPECTOR GENERAL**

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**AUDIT OF USAID/INDIA'S  
GREENHOUSE GAS POLLUTION  
PREVENTION PROJECT**

AUDIT REPORT NO. 5-386-08-005-P  
June 18, 2008

Manila, Philippines



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FROM THE AMERICAN PEOPLE

*Office of Inspector General*

June 18, 2008

**MEMORANDUM**

**TO:** USAID/India Director, George Deikun

**FROM:** Regional Inspector General/Manila, Catherine M. Trujillo /s/

**SUBJECT:** Audit of USAID/India's Greenhouse Gas Pollution Prevention Project (Audit Report No. 5-386-08-005-P)

This memorandum transmits our final report on the subject audit. In finalizing the report, we carefully considered your comments and have included your comments in Appendix II.

The report includes four recommendations for USAID/India action. In response to the draft report, the mission concurred with recommendations nos. 1, 2, and 3. The mission provided documentation demonstrating that these three recommendations have been addressed; therefore, final action is reached for these three recommendations upon issuance of this report. We revised draft recommendation no. 4 to consider the mission's comments to our draft report. The mission agreed to the revised recommendation, therefore final action has also been reached on this recommendation.

I appreciate the cooperation and courtesy extended to my staff throughout the audit.

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# SUMMARY OF RESULTS

USAID/India designed the Greenhouse Gas Pollution Prevention Project (greenhouse gas project) to reduce the volume of greenhouse gases emissions per unit of electricity generated. In 1995, USAID signed a project grant agreement with the Government of India to implement the 7-year, \$19 million project, which has since increased to \$40 million with an expected end date of 2010. The overall objective of the project was to reduce the amount of carbon dioxide<sup>1</sup> emissions. The greenhouse gas project comprised three main components: (1) efficient coal conversion to increase efficiency in coal-fired power plants, (2) alternative bagasse<sup>2</sup> cogeneration for encouraging the use of biomass as fuel in the sugar industry, and (3) the climate change supplement to build upon the success of the efficient coal conversion component (see page 3).

To implement part of the climate change supplement, USAID/India signed a participating agency service agreement with the U.S. Department of Energy's National Energy Technology Laboratory (the Energy laboratory) to acquire technical assistance, training and coordination services. The agreement's efforts were focused on reducing carbon dioxide emissions per unit of power generated in India by strengthening local capacities, developing high-efficiency power generation technologies, improving efficiency and performance, and utilizing byproducts (see page 3).

The Regional Inspector General/Manila conducted this audit to determine whether the greenhouse gas project achieved intended results, and what has been the impact<sup>3</sup> (see page 5). During the implementation of the key climate change supplement component, the mission consistently achieved its planned targets and the project contributed to reducing carbon dioxide gas emissions by 77.72 million tons during this time period, as shown in appendix III (see page 20).

Furthermore, the project contributed to building local capacity, institutionalizing new techniques and practices, and improving the performance and efficiency of India's power sector. As a result, India's power sector operated more efficiently, and the project prevented millions of tons of greenhouse gas from polluting India's environment thus contributing to a cleaner environment (see page 6).

Despite the project's achievements, the mission could strengthen its management and oversight of the project. First, the mission did not provide advance approval of contracts as required by the participating agreement with the Energy laboratory. Second, despite being detailed in the participating agreement, the reporting requirements were not strictly observed. Third, the performance indicator for the project was not direct or objective. Finally, the mission had not conducted annual reviews or a midterm evaluation of the greenhouse gas project (see pages 8 to 14).

The audit report includes four recommendations to assist USAID/India in improving its

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<sup>1</sup> Carbon dioxide is one type of greenhouse gas and enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees, and wood products.

<sup>2</sup> Bagasse cogeneration is the use of the waste product from crushed sugarcane stalks to generate both electricity and useful heat.

<sup>3</sup> Although the main focus of the audit was on the ongoing activity under the climate change supplement, the audit team also considered the mission's management of the overall project.

management and oversight of the greenhouse gas project (see pages 9, 11, 12, and 14). The mission concurred with the recommendations included in the final report.

# BACKGROUND

India is the world's fifth-largest and second-fastest growing producer of greenhouse gases. The largest single contributor to greenhouse gases is the country's power sector, which uses old equipment, inefficient technologies, poor maintenance practices, and low-quality coal. India's coal-fired power stations emit more greenhouse gas than similar power stations in the United States.

Obstacles to the adoption of specific technologies that would minimize pollution in India included a lack of information about available options, lack of incentives to adopt such options, and the absence of demonstration projects applicable to Indian conditions. The country also faced a wide shortfall in the supply of reliable electric power, as demand for which continued to grow much faster than the supply. Thus, the power sector had a tremendous need to improve efficiency and introduce systems to reduce greenhouse gases.

To address these issues, in 1995, USAID/India signed a project grant agreement with the Government of India to implement the Greenhouse Gas Pollution Prevention Project (greenhouse gas project). USAID/India designed the greenhouse gas project to reduce India's emissions of greenhouse gases by introducing, demonstrating, and promoting the use of innovative methods and advanced efficient generation techniques for coal-fired power plants and sugar mills. Chiefly, the goal was to reduce the volume of greenhouse gas emissions per unit of electricity generated while increasing efficiency in the thermal power sector and switching to biomass fuels in sugar mills. Initially, the greenhouse gas project was a 7-year, \$19 million project, but with additional funding and extensions, it became a \$40 million project and is expected to end in 2010.

The greenhouse gas project included three major components: (1) efficient coal conversion to increase efficiency in coal-fired power plants, (2) alternative bagasse cogeneration<sup>4</sup> for year-round generation of power using biomass as fuel in the sugar industry, and (3) the climate change supplement launched in September 1999 to build upon the success of the efficient coal conversion component. The first two components of the project aimed to increase awareness, available information, and practical examples of the applicability of state-of-the-art pollution prevention and to provide efficient fuel conversion and combustion and industrial cogeneration technologies in an Indian setting. The third component intended to expand local institutional capacity to increase and sustain the efficiency of existing power plants, promote development of advanced power generation techniques, and support adoption of large-volume coal combustion byproduct utilization.

In May 2000, USAID/India and the U.S. Department of Energy's National Energy Technology Laboratory (the Energy laboratory) signed a participating agency service agreement to implement part of the greenhouse gas project's climate change supplement component. Specifically, the Energy laboratory was to provide technical assistance, training, and coordination to introduce and implement efficient power generation techniques in India's National Thermal Power Corporation<sup>5</sup> and other

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<sup>4</sup> Bagasse cogeneration is the use of the waste product from crushed sugarcane stalks to generate both electricity and useful heat.

<sup>5</sup> The National Thermal Power Corporation is the largest power utility in India and the sixth largest thermal power generator in the world.

identified utilities in India. The primary objective of the Energy laboratory's involvement was to assist in the reduction of carbon dioxide<sup>6</sup> emissions per unit of power generated in India. The participating agreement outlined the following specific activities to achieve this objective.

- Support the Center for Power Efficiency and Environmental Protection (CENPEEP)<sup>7</sup> and select state electricity boards to rapidly accelerate heat rate efficiency optimization in all existing coal-fired power plants.
- Support the Government of India's goal to install new power plants based on advanced power generation capacity.
- Increase awareness, available information, and practical examples of actions that promote climate change mitigation and power sector capacity expansion so that the country's power sector is more efficient and emits less greenhouse gas.

USAID/India's Office of Environment, Energy and Enterprise managed the greenhouse gas project. As of September 30, 2007, the mission had obligated \$38.5 million and disbursed \$35 million for the implementation of the project. Mission records showed that the Energy laboratory had obligated \$9.7 million and disbursed \$8.6 million as of December 31, 2007, to implement the activities in the participating agreement.



Office of Inspector General photograph of the Vindhyachal Super Thermal Power Station in Madhya Pradesh, India, where greenhouse gas project activities were implemented (February 2008).

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<sup>6</sup> Carbon dioxide is one type of greenhouse gas and enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees, and wood products.

<sup>7</sup> CENPEEP was established by India's National Thermal Power Corporation with the assistance of USAID/India to provide technical assistance and training for staff in the corporation's network and other selected utilities.

## **AUDIT OBJECTIVE**

As part of the Office of Inspector General's fiscal year (FY) 2008 annual audit plan, the Regional Inspector General/Manila conducted this audit to answer the following question:

Did USAID/India's Greenhouse Gas Pollution Prevention Project achieve intended results, and what has been the impact?

Appendix I contains a discussion of the audit's scope and methodology.



# AUDIT FINDINGS

USAID/India's Greenhouse Gas Pollution Prevention Project (greenhouse gas project) consistently achieved its planned targets during the implementation of the key climate change supplement component.<sup>8</sup> Specifically, the project contributed to reducing 77.72 million tons of carbon dioxide gas emissions during the time period, 2000-07, as shown in the table in appendix III. As a result, India's power sector is operating more efficiently and has prevented the release of million of tons of carbon dioxide gas emissions, thus contributing to a cleaner environment. The greenhouse gas project also contributed to building local capacity, institutionalizing new techniques and practices, and improving the performance and efficiency of India's power sector.<sup>9</sup>

The introduction of new technologies and best practices promoting the use of clean energy contributed to these results. For example, under the alternative bagasse cogeneration component, the project set up advanced facilities using sugarcane waste as fuel for power generation. Using this renewable resource instead of coal or oil helped to reduce pollution and cut energy costs. Under the other components, other technologies and best practices introduced were cycle heat rate evaluations, fuel-air ratio optimizations, and simplified tests for performance evaluations of individual equipment.

The greenhouse gas project experienced positive results within India's power plants as well. Through the project, the National Thermal Power Corporation plants were successful in building local capacity and institutionalizing new techniques and practices, thereby improving the performance and efficiency of India's power sector. In addition, through the technical assistance provided by this project, performance of the power plants was optimized, managers and engineers were trained in cost-saving clean energy practices, and in-house capacities were built to promote and provide solutions to other power entities in India.

Training contributed significantly to the success of this project. The power plants benefited from 20 visits from U.S. technical teams, who conducted more than 200 demonstrations and workshops. Moreover, Indian engineers received more than 7,700 man-training days in subjects such as boiler performance optimization, condenser helium leak detection, and steam turbine measurements. Additionally, more than 70 technical workshops, including large international meetings and conferences, were carried out to transfer knowledge and advanced technology from U.S. experts. As a result of these workshops, demonstrations, and trainings, the National Thermal Power Corporation developed guidelines on critical areas such as heat rate improvement and practices for overhauling power plant equipment and established a uniform system of efficiency monitoring and performance testing in its existing network of thermal power plants.

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<sup>8</sup> Although the main focus of the audit was on the ongoing activity under the climate change supplement, we also considered the mission's management of the overall project.

<sup>9</sup> The mission also reported that as of September 30, 2007, the project contributed to a total reduction of 106 million tons of carbon dioxide gas emissions since the project started in 1995.

This training provided the officials of the power plants with information and techniques to incorporate more efficient practices and procedures for detecting and preventing carbon dioxide emissions. According to a general manager at one of the power plants, the focus used to be on how much energy the power plant could generate rather than on ways to be more efficient. As a result of the project, the managers and staff are more knowledgeable, efficient, and equipped to monitor, track, and improve on plant efficiencies. For example, efficiency targets are developed in every department of the plant, and relevant tests are carried out on a periodic basis to ensure that the targets are met, and adjustments are made where necessary.

Testing equipment introduced by the greenhouse gas project played a major role in increasing the power plants' efficiency and in eliminating carbon dioxide emissions. Examples of the types of new equipment introduced were gas analyzers, helium leak detectors, dirty-air Pitot probes, and three-hole Pitots for cooling water measurements.



Office of Inspector General photographs of testing instruments procured by India's power plants as a result of recommendations from the greenhouse gas project (February 2008).

The greenhouse gas project also contributed directly to capacity building. The power plants that benefited from the technical assistance and training shared their knowledge by replicating the project's demonstrations and workshops with other power entities in India, which not only multiplied the mission's impact but also increased the awareness of efficiency on a larger scale than planned.

Furthermore, as a part of the greenhouse gas project, the Center for Power Efficiency and Environmental Protection (CENPEEP) was set up to consolidate and disseminate the information acquired during the various workshops and demonstrations. Through technical assistance and training provided by the project, CENPEEP became a formidable developer and distributor of advanced efficient technologies that improved management practices in India's power industry. For example, CENPEEP initiated a comprehensive performance optimization program and implemented tasks such as power plant efficiency improvements, predictive maintenance and overhauling practices, environment monitoring and control, and fly ash utilization projects. CENPEEP also replicated the project's technical assistance and training element and presented 125 workshops, 14,000 man-training days, and 319 hands-on demonstrations to the corporation's power plants and other power entities in the country.<sup>10</sup>

<sup>10</sup> The audit team performed limited testing of the information obtained from CENPEEP.

Despite the mission's notable achievements in implementing this project, certain aspects of its management of the participating agency service agreement with the Energy laboratory should be improved. First, the mission should adhere to the agreement requirements of approving the Energy laboratory's awarded contracts. Second, the mission should work directly with the Energy laboratory to ensure that reporting requirements are correctly followed. Third, the mission should revisit the appropriateness of the greenhouse gas project performance indicator to ensure that it accurately defines the project's accomplishments. Last, as required, the mission should carry out an independent evaluation of the greenhouse gas project. These issues are discussed in more detail below.

## **USAID/India Did Not Approve Contracts as Required**

Summary: According to the standard provisions contained in USAID/India's participating agreement with the U. S. Department of Energy's National Energy Technology Laboratory (the Energy laboratory), USAID's agreement officer must give advance authorization under the following circumstances: (1) when the Energy laboratory intends to award a contract for services in support of the agreement and (2) when the Energy laboratory's contractors award a subcontract. The mission did not approve the Energy laboratory's contracts awarded to implement activities under its participating agreement or the subcontracts issued by the Energy laboratory's contractor. This occurred because of the lack of understanding of the standard provisions in the agreement and the relationship between USAID and the Energy laboratory under the participating agreement. As a result, USAID/India could not ensure that contracts were negotiated properly or that contractors were suitable to perform the work.

According to the standard provisions contained in USAID/India's participating agreement with the Energy laboratory, USAID's agreement officer must give advance authorization under the following circumstances: (1) when the Energy laboratory intends to award a contract for services in support of the agreement and (2) when the Energy laboratory's contractors award a subcontract.

The Energy laboratory was to comply with the first requirement by identifying its contracting requirements in the participating agreement schedule prior to USAID/India's award. If the Energy laboratory decided to contract subsequent to its agreement with USAID/India then it should have obtained USAID/India's agreement officer's approval of any contract prior to execution. In this latter case, the Energy laboratory was required to provide a statement of work describing the contracted services and a justification demonstrating why contracting for the services was appropriate as opposed to having the Energy laboratory provide the technical assistance from its own in-house direct-hire staff. The Energy laboratory was to comply with the second requirement by ensuring that its contracts included provisions requiring the prior approval for subcontracting by USAID/India's agreement officer.

The mission did not approve the Energy laboratory's contracts or subcontracts awarded to implement activities under its participating agreement. As well, the Energy laboratory did not include in its awarded contracts the requirement for USAID/India's agreement officer to approve subcontract awards.

For example, the Energy laboratory awarded a contract in September 2004 to Research and Development Solutions, LLC (the contractor). The scope of work outlined within the mission's participating agreement with the Energy laboratory was carried out for the most part under this contract through task orders issued to the contractor. The Energy laboratory awarded this contract on a competitive basis to acquire technical support services for the entire Department of Energy and issued task orders totaling \$3.4 million specifically to support the Energy laboratory's agreement with the mission in implementing activities under the greenhouse gas project. The Energy laboratory did not seek approval for the task awards issued to the contractor. Additionally, the Energy laboratory awarded a number of direct contracts to acquire technical support and expert services for implementing the greenhouse gas project for which it did not seek prior approval from the mission's agreement officer. Specifically, since December 2003, the Energy laboratory awarded six direct contracts totaling approximately \$638,000 in support of the greenhouse gas project.

With regard to approval of subcontracts, the Energy laboratory's contractor awarded approximately 26 subcontracts totaling \$2.1 million in support of the greenhouse gas project since 2004. The mission's agreement officer did not approve these subcontracts.

The reason was that there was a lack of understanding of the standard provisions and the relationship between USAID and the Energy laboratory under a participating agreement. According to mission officials, they were unaware of the participating agreement's standard provisions requiring the Energy laboratory to seek advance approval for contracting. Further, the Energy laboratory did not include these approval provisions in the contract terms with its contractor, who also did not require USAID/India's approval of subcontract awards. Additionally, according to the mission and the Energy laboratory officials, each viewed the other as partners—hence, neither saw the Energy laboratory as an implementer under the mission's authority. Both agencies treated the relationship as working side by side toward a common goal, each as an extension of the other. This, coupled with the fact that both agencies were subject to the same procurement rules and regulations and had similar procurement systems, led both agencies to take the position that the Energy laboratory could contract for services as it deemed necessary without the mission's approval.

As a result of not complying with the standard provisions of the agreement, \$3.4 million of the total \$9.7 million awarded to the Energy laboratory under the participating agreement was contracted for without USAID's prior approval. Without approving the contracts issued by the Energy laboratory, the mission was not in compliance with the standard provisions outlined in the participating agreement. As well, without knowing the planned contracting prior to signing the participating agreement, the mission did not have adequate assurance that the Energy laboratory would be performing a substantial amount of the work, which is the justification for a participating agreement. Furthermore, the mission did not have the opportunity to ensure that the contracts included the requirement that prior approval is given by the mission for subcontracting.

To ensure that mission personnel have a better understanding of how to manage a participating agency service agreement this audit makes the following recommendation:

*Recommendation No. 1: We recommend that USAID/India provide training to its staff on managing a participating agency service agreement,*

*particularly focusing on the roles, responsibilities, and authority of each agency.*

## **Reporting Requirements Were Not Followed**

Summary: Contrary to the reporting requirements in the participating agreement, the Energy laboratory did not submit monthly progress reports or a midterm report to the mission. Therefore to monitor the program, the mission relied on the Energy laboratory's contractor to submit monthly progress reports. According to mission officials, this occurred because the reporting requirements outlined in the participating agreement did not align with the current working arrangement with the Energy laboratory. However, without regular reporting by the Energy laboratory, the mission could not be assured that the work was being carried out as planned or that appropriate progress was being made on the project.

USAID/India's participating agreement with the Energy laboratory required it to submit a number of reports on a periodic basis to keep the mission informed of its progress in implementing the activities in the agreement. Specifically, the Energy laboratory was required to submit monthly progress reports describing the status of the previous and upcoming activities and a midterm report halfway through the project to recommend potential improvements.

The Energy laboratory did not fully comply with the reporting requirements stipulated in the participating agreement with USAID/India.

An underlying reason why the Energy laboratory did not comply with the reporting requirements was that the mission did not enforce the requirements. For example, according to mission officials, the Energy laboratory did not submit the midterm report because the mission determined this report to be redundant with other reports that the Energy laboratory was submitting. With regard to the monthly progress reports, the Energy laboratory complied with this requirement through December 2005. After this date, the Energy laboratory stopped submitting the monthly reports, and the mission did not enforce the reporting requirements. Instead, the mission relied on the Energy laboratory's contractor to provide the recurring monthly progress reports. The mission officials did not see any issue with obtaining the monthly progress reports directly from the Energy laboratory's contractor, since the contractor was implementing most of the work under the mission's participating agreement with the Energy laboratory and formal reporting was done between the Energy laboratory and its contractor.

The mission's decision not to hold the Energy laboratory accountable for reporting its progress and instead to rely extensively on the Energy laboratory's contractor for information is not in accordance with USAID's policy for managing participating agency service agreements. USAID's policy, Automated Directives System 306, clearly outlines the cognizant technical officer's responsibility for overseeing technical matters with the participating agency. For example, the Energy laboratory's monthly progress reporting should provide critical progress information for the mission to monitor the Energy laboratory's progress. Furthermore, agency guidance states that USAID should deal with the participating agency rather than its contractors, unless USAID and the participating agency explicitly agree otherwise. In line with this general principle, USAID should not deal directly with the participating agency's contractor or direct the contractor's work.

Mission officials recognized that the Energy laboratory was not complying with the terms of the participating agreement. However, the mission did not amend the agreement because the project was expected to end soon, and officials believed that they were fully aware of the project's progress through other means of communication with the Energy laboratory. Further, mission officials stated that the reporting requirements as outlined in the agreement were more appropriate for a more traditional agreement than the agreement they had with the Energy laboratory and that the requirements did not align with the agencies' current working arrangement.

Nonetheless, it is not the responsibility of the Energy laboratory's contractor to submit reports to the mission nor does the mission have the authority to direct the contractor's work. Second, while the Energy laboratory's main contractor is performing a majority of the work, the Energy laboratory had other contractors implementing the greenhouse gas project whose progress was not captured in the monthly progress reports from the Energy laboratory's main contractor. Furthermore, the Energy laboratory is the primary responsible party for implementing the greenhouse gas project activities under the participating agreement and communicating its progress to the mission. It is imperative the mission stays fully engaged with the Energy laboratory to ensure that appropriate progress is made and delays or problems can be immediately addressed. Therefore, this audit makes the following recommendation:

*Recommendation No. 2: We recommend that USAID/India reevaluate the reporting requirements in the participating agency service agreement with the U.S. Department of Energy's National Energy Technology Laboratory and modify the agreement to establish an appropriate and agreeable reporting structure.*

## **Performance Indicator Should Be Direct and Objective**

Summary: According to agency policy, performance indicators should be direct and objective. Specifically, the indicators should closely track the results they are intended to measure and should be unambiguous about what is being measured. According to the guidance, the indicator should be unidimensional (should only measure one aspect at a time). The current performance indicator for the greenhouse gas project is neither direct nor objective. It also implies that the mission is measuring multiple greenhouse gases. This occurred because the mission incorporated a term that it considered consistent with the name of the project and more recognizable. As a result, the mission may be overstating the achievements of the program and potentially misleading an uninformed reader.

According to agency guidance, Automated Directives System 203, operating units and strategic objective teams should select performance indicators for the performance management plan that are most appropriate for the result being measured. To assist the operating units in selecting appropriate indicators, the guidance identifies seven criteria that operating units can use. One criterion is that the indicator should be direct, which means that it should closely track the results it is intended to measure. Another criterion is that the indicator should be objective, which means that it should be unambiguous about what is being measured and should only measure one aspect at a time.

The performance indicator for the greenhouse gas project is neither direct nor objective. The mission's performance indicator is defined as "tonnes of greenhouse gases reduced from either point or non-point sources from the energy sector or other sectors," which does not clearly identify the results the project is measuring. Therefore, it is ambiguous as to what it is actually measuring.

The term "greenhouse gases" as stated in the performance indicator implies that the project is tracking multiple greenhouse gases. Gases that trap heat in the atmosphere are often called greenhouse gases. Some greenhouse gases such as carbon dioxide occur naturally and are emitted to the atmosphere through natural processes and human activities. Other greenhouse gases (e.g., fluorinated gases) are created and emitted solely through human activities. The principal greenhouse gases that enter the atmosphere because of human activities are carbon dioxide, methane, nitrous oxide, and fluorinated gases.

Although official project documents state that the project is designed to reduce the volume of emissions of greenhouse gases, the primary objective has been to mitigate only carbon dioxide emissions. For example, the two primary components of the project, efficient coal conservation and alternative bagasse cogeneration, were designed to reduce carbon dioxide emissions at power plants and sugar mills in India. According to the mission officials, Indian coal, used to generate electricity, does not contain a significant amount of the other gases, such as nitrous oxide, that make up greenhouse gases. Thus, the focus of the project's activities had only been on measuring the change in carbon dioxide from year to year.

According to mission officials, this occurred because in early FY 2007, in an effort to standardize reporting for USAID missions worldwide, USAID implemented foreign assistance reforms that included a new standard program structure with a list of standard indicators. Because none of the proposed standard indicators captured the results that the mission was trying to achieve with the greenhouse gas project, the mission was instructed to customize its own indicator. As a result, the mission decided on the indicator "tonnes of greenhouse gases reduced from either point or non-point sources from the energy sector or other sectors" because this indicator was in line with the name of the project. In addition, the term greenhouse gas was more recognizable than carbon dioxide.

Because the mission did not use a direct and objective performance indicator, there is a possibility that it could overstate the achievements of the project and potentially mislead an uninformed reader. Since the project's inception, the mission has tracked and reported the results of the greenhouse gas project using indicators such as the "number of tons of carbon dioxide avoided" and "carbon dioxide equivalents of greenhouse gas emissions avoided." These indicators clearly reflected the results of the project.

As a result, this audit makes the following:

*Recommendation No. 3: We recommend that USAID/India evaluate the appropriateness of the current performance indicator for the Greenhouse Gas Pollution Prevention Project and revise it to clearly identify the results that the project is intended to measure.*

## Evaluation of the Greenhouse Gas Project Needed

Summary: The project grant agreement between USAID/India and the Government of India required annual reviews as well as in-depth midterm and final evaluations during the life of the Greenhouse Gas Pollution Prevention Project. However, USAID/India did not conduct annual reviews or an in-depth midterm evaluation of the greenhouse gas project; nor does the mission intend to conduct a final evaluation of the project. Mission officials stated that while independent annual reviews had not been conducted, the project was reviewed during annual bilateral meetings with the Indian government that met the intent of the agreement. Mission officials also stated that independent evaluations were planned but were not carried out because of budget cuts, a shift in priorities, and anticipated ending of the project. Without conducting periodic reviews or evaluations, the mission lost a valuable tool to help demonstrate the successes or failures of the project and limited the ability to immediately eliminate impediments to the project's success.

According to the project grant agreement between USAID/India and the Government of India, there would be annual reviews as well as, in-depth midterm and final evaluations of the Greenhouse Gas Pollution Prevention Project. The midterm evaluation was to include the following:

- a) An evaluation of progress toward attainment of the objectives of the project
- b) Identification and evaluation of problem areas or constraints that may inhibit such attainment
- c) Assessment of how such information may be used to help overcome such problems or constraints
- d) An evaluation, to the degree feasible, of the overall development impact of the project

USAID/India had not conducted an annual review or an in-depth midterm evaluation of the project since its inception. The greenhouse gas project began in 1995 and is currently expected to end in 2010 making it a 15-year project. Additionally, this project is USAID/India's largest climate change program, with funding of \$40 million. The mission has cited a number of achievements as a result of this project. Nonetheless, there has not been an independent review or evaluation to assess the project's progress, achievements, or development impact.

Mission officials stated that although there were no independent annual reviews of the project, the project was reviewed during the annual bilateral meetings with the Government of India. The mission officials stated that these meetings were attended by high-level officials from USAID, the Government of India, and National Thermal Power Corporation and included an in-depth discussion of the implementation of all the projects, including the greenhouse gas project, under the bilateral agreement with the Government of India. Mission officials claimed that these discussions were centered on the project's accomplishments, shortcomings, and anticipated future direction and ultimately met the intent of the agreement regarding an annual review. Moreover, the mission contends that the program was reviewed internally each year during its portfolio review process in preparation for the mission's annual reporting.

Regarding the midterm evaluation, mission officials agreed that there had not been a



midterm evaluation of the project and stated that while independent evaluations were planned in previous fiscal years, they were not carried out for various reasons. For example, in FYs 2005 and 2006, the planned evaluations of the greenhouse gas project were not done because the project was running out of money and a management decision was made to use the funds for providing technical assistance to the Government of India.

Regarding a final evaluation of the project, mission officials stated that this would be captured during the cognizant technical officer's final evaluation of the project as part of the closeout process. Mission officials also stated that the program would be reviewed at the end of the project and that they are doing a 25-year legacy report that would further obviate the need for a final evaluation. However, agency guidance, Automated Directives System 306 prescribes that the closeout of interagency agreements ensure that final payment has been made, terms and conditions were fully complied with, and all required reports are submitted; it does not assess the overall development impact of the project, as called for in the implementing agreement. Therefore, a closeout evaluation would not meet the intent of the final evaluation as described in the agreement. Likewise, the 25-year legacy report is not an evaluation of the program; rather, it is documenting the collaboration between the United States and India on various energy and environmental programs.

Evaluations are structured to give an entity a systematic review and assessment of the project's goals and achievements. The evaluations can focus on the project's design, implementation, and results, which could prove useful if the mission continues to fund projects in the energy sector. Specifically, an evaluation would prove useful in identifying areas where improvements are needed or where successes and gains were made that are worthy of repeating. Therefore, this audit makes the recommendation:

*Recommendation No. 4: We recommend that, if USAID/India decides to implement follow-on activities in the energy sector, it conduct a final independent evaluation of the Greenhouse Gas Pollution Prevention Project to assess the achievements and overall development impact of the project to guide the design of follow-on projects.*

# EVALUATION OF MANAGEMENT COMMENTS

USAID/India provided its response to the draft report.

In response to Recommendation No. 1, USAID/India provided training to all cognizant technical officers responsible for interagency agreements. The training focused on the respective roles and responsibilities and authorities in managing an interagency agreement. Based on the mission's response and our review of supporting information, we determined that final action has been taken on this recommendation.

In response to Recommendation No. 2, USAID/India revised the reporting structure in its participating service agreement with the Department of Energy. We reviewed the revised reporting structure and conclude that the mission will have access to adequate progress data to facilitate its monitoring of the program. Based on the mission's response and our review of supporting information, we determined that final action has been taken on this recommendation.

In response to Recommendation No. 3, USAID/India has taken action to revise the performance indicator that will accurately identify the results that the project is intended to measure. Based on the mission's response and our review of supporting information, we determined that final action has been taken on this recommendation.

In response to Recommendation No. 4, the mission requested that we revise the recommendation to require a final evaluation if it decided to stay engaged in the energy sector. After giving consideration to the mission's explanation, we concurred with the mission's suggested approach and consequently revised the recommendation. The mission concurred with the revised recommendation and agreed to conduct an independent evaluation if it decides to continue efforts in the energy sector. Therefore, we determined that final action has been taken on this recommendation.

# SCOPE AND METHODOLOGY

## Scope

The Regional Inspector General/Manila (RIG/Manila) conducted this performance audit in accordance with generally accepted Government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. The objective of this audit was to determine whether USAID/India's Greenhouse Gas Pollution Prevention Project (greenhouse gas project) achieved intended results, and what has been the impact.

The greenhouse gas project is a \$40 million project that was initiated in 1995 and is expected to end in 2010. Over the years, USAID/India has used various partners and instruments to implement this project. In May 2000, USAID/India signed a participating agency service agreement with the U.S. Department of Energy's National Energy Technology Laboratory (the Energy laboratory) to provide technical assistance, training, and coordination for the greenhouse gas project.

Our audit covered the activities implemented by the Energy laboratory from May 2000 through September 2007, activities that were key to the overall results of the project. We conducted fieldwork from January 28 through February 15, 2008 in New Delhi, India at the offices of USAID/India and the National Thermal Power Corporation; and in Noida, India at the office of the Center for Power Efficiency and Environmental Protection.

In planning and conducting this audit, the audit team reviewed and assessed the significant internal controls developed and implemented by the mission to manage and monitor the program. The assessment included internal controls related to whether the mission (1) conducted and documented site visits to evaluate the progress of the project, (2) reviewed progress and financial reports submitted by the Energy laboratory, and (3) compared reported progress to planned progress. Further, we also reviewed the mission's Federal Managers' Financial Integrity Act report for FY 2007 for internal control weaknesses related to the greenhouse gas project.

We also conducted site visits to observe the implementation of the project's activities at several of the National Thermal Power Corporation's power plants. Specifically, we visited (1) Dadri National Capital Power Plant, (2) Rihand Super Thermal Power Station, and (3) Vindhyachal Super Thermal Power Station.

As of September 2007, the mission had obligated about \$38.5 million and disbursed about \$35 million for the greenhouse gas project. Additionally, as of December 2007, mission records showed that the Energy laboratory had disbursed \$8.6 million of the \$9.7 million obligated.

## Methodology

To answer the audit objective, the audit team reviewed and analyzed relevant documents at the mission and project sites. This documentation included the participating agreement, performance monitoring plans, site visit reports, progress reports, and financial records as well as other supporting documentation. The team also interviewed responsible officials from the mission, the Energy laboratory and its contractor, the National Thermal Power Corporation, and the Center for Power Efficiency and Environmental Protection (CENPEEP).

To verify the accuracy of reported progress, we compared the performance data reported by its implementing partners to the data reported by the mission.

At the office of CENPEEP, we obtained documentation to verify the data (amount of carbon dioxide avoidance at the power plants) that was reported to the mission for its performance indicator.

For the project's performance indicator, we established the following materiality threshold:

- The planned result would be achieved if the target number was met.
- The planned result would be partially achieved if progress was made toward meeting the target number.
- The planned result would not be achieved if there was no progress made toward meeting the target number.

# MANAGEMENT COMMENTS



## MEMORANDUM

May 23, 2008

To: RIG/Manila – Catherine M. Trujillo

FROM: George Deikun /s/, Mission Director, USAID/ India

SUBJECT: Performance Audit of USAID/India's Greenhouse Gas Pollution Prevention Project, Audit Report No: 5-386-08-00X-P

REFERENCE: Catherine M. Trujillo/ George Deikun memo dated May 12, 2008

Mission appreciates the opportunity to comment on the draft subject audit report and is pleased to report the actions taken and planned to implement the recommendations.

**Recommendation No. 1: We recommend that USAID/ India provide training to its staff on managing a participating agency service agreement, particularly focusing on the roles, responsibilities and authority of each agency.**

Mission Response: Mission agrees with the recommendation and has taken steps to implement the recommendation. The Agreement Officer conducted training for all CTOs, at post, who are responsible for inter-agency agreements. A copy of the sign-in sheet is attached (Annex A). The training focused on the respective roles, responsibilities and authorities in managing an interagency agreement, with an emphasis on the requirement that the participating agency seek AO approval to subcontract.

**Recommendation No. 2: We recommend that USAID/ India reevaluate the reporting requirements in the participating agency service agreement with the US Department of Energy/National Energy Technology Laboratory and modify the agreement to establish an appropriate and agreeable reporting structure.**

Mission Response: Mission agrees with the recommendation and has revised the reporting structure. The participating service agreement with Department of Energy has been modified. (Annex B- Modification to the PASA).

**Recommendation No. 3: We recommend that USAID/ India evaluate the appropriateness of the current performance indicator for the Greenhouse Gas Pollution Prevention Project and revise it to clearly identify the results that the project is intended to measure.**

Mission Response: Mission agrees with the recommendation and has already taken approval from the Office of Director of U.S. Foreign Assistance (F) to revise the performance indicator (Annex C) as follows:

“Quantity of greenhouse gas emissions, measured in metric tons CO2 equivalent, reduced or sequestered as a result of USG assistance.”

This revised indicator will clearly identify the results that the project is intended to measure. For its future performance reporting, the Mission will use the above indicator in its Operational Plans.

**Recommendation No. 4: We recommend that USAID/ India carry out a final independent evaluation of the Greenhouse Gas Pollution Prevention project to assess the achievements and overall development impact of the Project.**

Mission Response: Mission does not agree with the audit finding and recommendation detailed on pages 13-14 of the draft report. We propose changes per Annex D.

Based on RIGs acceptance of the revised finding and recommendation, Mission’s response will be:

Mission accepts the recommendation and agrees to conduct a final independent evaluation of the project after it ends in September 2010 if USAID/India has to remain in the energy sector. The Mission does not consider an evaluation necessary if Mission is not engaged in this sector.

Based on the above, we look forward to your concurrence with the management decisions on the four recommendations, and your agreement that all four recommendations shall be “closed upon issuance”.

**Achievement of the Greenhouse Gas Project's Performance  
Targets  
From Fiscal Year 2000 to 2007**

**Indicator: Tonnes of greenhouse gases reduced from either point  
or non-point sources from the energy sector or other sectors  
(Measurement in million tons)**

<i>Fiscal Year</i>	<i>Target</i>	<i>Actual</i>	<i>Achievement</i>
2000	5.29	9.10	<i>Achieved</i>
2001	8.52	9.40	<i>Achieved</i>
2002	11.89	10.45	<i>Partially Achieved</i>
2003	11.00	11.27	<i>Achieved</i>
2004	11.50	12.09	<i>Achieved</i>
2005	12.30	12.29	<i>Achieved</i>
2006	12.50	12.37	<i>Achieved</i>
2007	.075	.075	<i>Achieved</i>
<b>Total</b>	<b>73.08</b>	<b>77.72</b>	

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