

GAO

Report to the Ranking Minority Member,  
Committee on Commerce, House of  
Representatives

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June 1998

# CLIMATE CHANGE

## Information on the U.S. Initiative on Joint Implementation



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**Resources, Community, and  
Economic Development Division**

B-279654

June 29, 1998

The Honorable John D. Dingell  
Ranking Minority Member  
Committee on Commerce  
House of Representatives

Dear Mr. Dingell:

Increasing emissions of carbon dioxide, methane, and other heat-trapping greenhouse gases generated by human activity are believed to contribute to global climate change. Accordingly, the United States, France, Japan, and 35 other industrialized nations negotiated an agreement—in Kyoto, Japan, in December 1997—that would limit their overall greenhouse gas emissions by 2012.<sup>1</sup> Although the details have not yet been worked out, the nations that are parties to this agreement may be allowed to work with other nations to achieve emissions reductions in a cost-effective manner. A concept being considered would allow a developed country to meet at least part of its obligation to reduce greenhouse gas emissions by receiving credit for investing in a project that reduces emissions in another country.

To evaluate different approaches to implementing this concept, in 1994 the United States established a pilot program, known as the U.S. Initiative on Joint Implementation. This program encourages investments by U.S. entities (largely private sector firms) in projects to reduce greenhouse gas emissions outside the United States. Under the Initiative, U.S. entities, in cooperation with non-U.S. partners, develop project proposals and submit them to the Initiative for review and evaluation to determine which projects will be accepted into the program. The decision about whether to accept a particular project into the program is made by the Initiative's Evaluation Panel, comprising senior policy-level executives of eight federal agencies.<sup>2</sup> In recent years, several other countries have also established pilot programs similar to the U.S. Initiative.

Because of your concern about the costs of reducing U.S. greenhouse gas emissions, you asked us to examine selected aspects of the U.S. pilot

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<sup>1</sup>This agreement, reached at the Third Conference of the Parties to the United Nations Framework Convention on Climate Change after more than 2 years of international negotiations, is known as the Kyoto Protocol. The Protocol is open for signature from March 16, 1998, until March 15, 1999. The Protocol must be signed by the President and ratified by the Senate before its provisions are binding for the United States. As of June 1998, the President had not signed the Protocol.

<sup>2</sup>Specifically, these agencies are the departments of Agriculture, Commerce, Energy, State, the Interior, and the Treasury, as well as the Agency for International Development and the Environmental Protection Agency.

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program on joint implementation. Specifically, you asked that we provide information on (1) the criteria used to accept proposed projects, (2) the number and types of projects accepted, (3) the status of the seven projects accepted in the first round of proposals in February 1995, and (4) the estimated benefits of pilot projects in terms of emissions reductions.

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## Results in Brief

The Initiative's Evaluation Panel uses nine criteria to evaluate proposed projects for acceptance into the program. Among the criteria are acceptance by the host country, a reduction in greenhouse gases that would result from the proposed project and that would not have occurred otherwise, and a mechanism to verify the project's results. The U.S. program generally has more criteria than similar programs administered by certain other countries. Also, the U.S. criteria are stricter in some respects, for example, by requiring that benefits be maintained over time.

Through March 1998, Initiative officials had reviewed proposals for 97 different projects and accepted 32 of them. Of the 32 accepted projects, 17 involve reducing greenhouse gas emissions, for example, by constructing and operating a hydroelectric plant that will provide electricity previously produced by burning fossil fuels. The other 15 involve capturing greenhouse gases already emitted, for example, by planting forests or maintaining forests that would have otherwise been harvested.<sup>3</sup> Also, 31 of the 32 projects are intended to reduce emissions of or capture carbon dioxide; the other project is intended to reduce methane emissions.

Of the seven projects accepted into the Initiative as a result of the first round of evaluations in February 1995, five are in the process of being implemented. This means that land has been acquired or facilities have been built, and the projects are in the process of reducing or capturing greenhouse gas emissions. For example, in one case, a facility built in the Czech Republic to generate electricity by burning natural gas rather than coal began operations in September 1996. According to Initiative officials, as of March 1998, the remaining two projects—one that would reduce greenhouse gas emissions and one that would capture these emissions from the atmosphere—had not progressed because their developers had not been able to obtain financing.

The projects' developers estimate that, over a period of up to 60 years, the 32 approved projects, if fully funded and implemented, will result in net

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<sup>3</sup>When forests are cleared for agriculture or development, most of the carbon in the burned or decomposing trees escapes to the atmosphere. However, when new forests are planted, the growing trees capture carbon dioxide (for use in photosynthesis), removing it from the atmosphere.

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emissions reductions of about 200 million metric tons of carbon dioxide and 1.3 million metric tons of methane. Initiative staff do not verify or attest to the reliability of the “net greenhouse gas benefits” estimated by the projects’ developers. In part, this is because standard methods for estimating projects’ emissions reduction benefits specific to the U.S. Initiative have not been developed. The Environmental Protection Agency (EPA) has funded studies to develop standard methods for calculating projects’ benefits. According to EPA officials, these studies should be completed by the end of fiscal year 1998.

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## Background

Many billions of tons of carbon in the form of carbon dioxide, a major greenhouse gas, are exchanged naturally each year between the atmosphere, the oceans, and vegetation on the land. Greenhouse gas levels in the atmosphere are determined by the difference between processes that generate greenhouse gases (sources) and processes that destroy or remove them (sinks). Oceans and forests are the primary natural sinks. Humans have affected greenhouse gas levels (primarily carbon dioxide) by introducing new sources—primarily by burning fossil fuels such as coal, oil, and natural gas—and by interfering with natural sinks—primarily by deforestation. Scientists have estimated, for example, that as a result of human activity, the level of carbon dioxide emissions in the atmosphere has risen by almost 30 percent since industrialization began about 250 years ago.<sup>4</sup> Among the nations of the world, the United States contributes the largest amount of carbon dioxide emissions from human activity.

In a July 1997 report to the United Nations Framework Convention on Climate Change, the United States estimated that its carbon dioxide emissions from human activity in 1995 were about 5.2 billion metric tons. The United States also estimated that U.S. emissions of methane, another major greenhouse gas, from human activity were about 31 million metric tons (which is equivalent to about 650 million metric tons of carbon dioxide in global warming potential over a 100-year period).<sup>5</sup> The emissions of these two greenhouse gases represent more than 95 percent of the total U.S. greenhouse gas emissions reported. The report also stated

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<sup>4</sup>Climate Change 1995, *The Science of Climate Change*, from a summary approved by Working Group I in November 1995 for the Second Assessment Report of the Intergovernmental Panel of Climate Change.

<sup>5</sup>Greenhouse gases have varied effects on the atmosphere as measured by their global warming potentials over a specified period of time. These global warming potentials are applied to emissions to arrive at a common measure for the greenhouse gases; the measure can be expressed in either million metric tons of carbon dioxide or carbon equivalent. Carbon dioxide units can be converted into carbon units by dividing by 3.67.

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that the 1995 emissions levels for carbon dioxide had increased approximately 6 percent and for methane, approximately 4 percent above 1990 levels.

Recognizing the potential for cost-effective greenhouse gas emissions reductions in other countries, the United States developed ground rules for a joint implementation program, formally known as the U.S. Initiative on Joint Implementation.<sup>6</sup> Published in final form in June 1994, these ground rules established a pilot program, which is intended to evaluate possible approaches to joint implementation, including developing methods to measure and verify the projects' achievements and helping to serve as a model for international consideration of joint implementation.<sup>7</sup> Although participants in the pilot program do not receive formal credit for the emissions reductions achieved as a result of the pilot projects, they may receive public recognition for their efforts to combat climate change. Other motivating factors for some participants, according to Initiative officials and other studies of the joint implementation concept, include establishing operations or markets for their products in the host countries and anticipation that their pilot projects will be eligible for credit after the year 2000, when the United Nations' pilot ends.<sup>8</sup>

An interagency Initiative Evaluation Panel, cochaired by senior executives of the Department of Energy (DOE) and EPA, accepts projects into the program and is authorized to certify their net emissions reductions. The Evaluation Panel is supported by an interagency Secretariat, which manages the program's day-to-day operations, including the implementation of the application and review procedures for project proposals. In 1997, the Secretariat was staffed by eight employees on detail from DOE and EPA. Five of these employees spent less than full-time on the Initiative's activities. In addition to these employees, however, the Secretariat relies on the expertise and contributions from staff in the other

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<sup>6</sup>This program is frequently referred to by its acronym USJI. For increased readability, we use the term "Initiative."

<sup>7</sup>In 1995, the United States and other countries that signed the United Nations Framework Convention on Climate Change also established a pilot program within the United Nations called Activities Implemented Jointly. Under this program, participating countries may report to the United Nations on joint implementation projects that they have sponsored. The pilot program is to be evaluated no later than the end of 1999.

<sup>8</sup>These studies include Assessing the Constraints and Opportunities for Private-Sector Participation in Activities Implemented Jointly: Two Case Studies From the U.S. Initiative for Joint Implementation, September 1997, by M. Powell, R. Lile, and M. Toman, Resources for the Future, and Joint Implementation and Its Alternatives: Choosing Systems to Distribute Global Emissions Abatement and Finance, April 1997, by E. Parson and K. Fisher-Vanden, Center for Science and International Affairs, John F. Kennedy School of Government, Harvard University.

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federal agencies that support the Initiative. The Initiative's budget was \$3.8 million in fiscal year 1996 and \$2.6 million in fiscal year 1997.

Under the Kyoto Protocol, negotiated in December 1997, the United States would be required to reduce its emissions of six greenhouse gases—namely, carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulphur hexafluoride—7 percent below its 1990 emissions level by 2012. The Kyoto Protocol also includes provisions for market-based approaches to reduce emissions of greenhouse gases. Such approaches include emissions trading, joint implementation, and the “clean development mechanism.”<sup>9</sup> The philosophy behind these approaches is that the cost of reducing or capturing emissions varies among countries and that it is more efficient to seek the reductions where the cost is the least.

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## Nine Criteria Are Used to Judge Project Proposals

Through the first six rounds of submissions, Initiative officials have used nine criteria and considered four other factors to determine which proposals to accept. The criteria primarily involve ways of measuring the project's effect in reducing emissions and steps for verifying these reductions. One of the criteria also requires the project's participants to provide annual reports to the Evaluation Panel on the emissions reduced or captured (sequestered) by the project. The other four factors considered involve determining whether the actions of U.S. participants and the host country support the objectives of United Nations Framework Convention on Climate Change and the potential positive and negative effects of the project on greenhouse gas emissions outside the project's boundaries and apart from its effect on greenhouse gas emissions. The Initiative uses more criteria than do certain other countries with similar programs, and the U.S. criteria are more strict in some respects.

When the pilot program was being developed, an interagency task force led by the State Department established criteria for determining which proposed projects would be accepted into the program. The criteria were developed to help ensure that proposed projects meet the development goals of the host country, while providing greenhouse gas benefits beyond those that would have occurred in the absence of the project. Moreover,

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<sup>9</sup>Prior to the Kyoto Protocol, joint implementation was the terminology generally used for the concept that would allow a developed country to meet at least part of its obligation for reducing greenhouse gas emissions by receiving credit for investing in projects that reduce emissions in another country. The Kyoto Protocol, however, makes a distinction on the basis of whether the investment is in a developing or developed country: Investments in developing countries are included under the Protocol's clean development mechanism provisions and investments in other developed countries are included under its joint implementation provisions.

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the criteria are intended to help ensure that the projects result in real, measurable net emissions reductions.

An initial set of nine criteria was proposed in a Federal Register notice on December 17, 1993. Twelve organizations and individuals submitted comments on the proposed criteria. On the basis of these comments, the criteria were revised, and the final criteria were published in the Federal Register on June 1, 1994. These criteria now have been used for evaluating the six rounds of proposals considered through March 1998.

Most of the nine criteria relate to identifying and measuring a project's benefits. For example, one criterion asks whether the proposal provides enough information to determine the level of current and future emissions both with and without the project. A second asks whether the proposal contains adequate provisions for tracking the emissions reduced or sequestered. A third asks whether the proposal provides adequate assurance that the benefits will not be lost or reversed over time. Other criteria relate to such matters as acceptance by the host country and annual reporting, including the greenhouse gas benefits as they are attained. Among the other four factors considered, one is whether the project has potential positive or negative effects on the host country's employment and public health. (All nine criteria and four other considerations used in the project evaluation process are paraphrased in app. I.)

The U.S. Initiative generally uses more criteria than did certain other countries with similar programs, and the criteria are stricter, in some respects, than the criteria used in other countries' programs, according to our analysis of a 1996 report prepared for the Agency for International Development.<sup>10</sup> This report described the criteria of the U.S. Initiative and similar programs in Australia, Canada, Germany, Japan, and the Netherlands. Our analysis of this information showed that the number of criteria used by the U.S. Initiative (nine) was equal to the number used by the Netherlands and larger than the number used by the other four countries (four to seven each). In addition, the U.S. criteria were stricter in some respects. For example, only the U.S. Initiative had requirements for maintaining benefits over time and for external verification of benefits. Conversely, two other countries—Germany and the Netherlands—had a criterion related to stimulating the use of modern technology or renewable energy.

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<sup>10</sup>Implementing JI/ALJ: A Guide for Establishing Joint Implementation Programs, Center for Sustainable Development in the Americas (Nov. 1996).



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In a July 1996 report to the Secretariat of the United Nations Framework Convention on Climate Change, the Initiative said that its Evaluation Panel, which is responsible for accepting or rejecting project proposals for inclusion in its program, considers not only how a project measures against all criteria, but also how the project contributes to the pilot program. The report stated that while failure on any single criterion could keep a project from being approved, the panel may find relatively poor performance on one criterion to be outweighed by excellent performance on another. The report further stated that because the criteria were also being tested for their appropriateness, the Evaluation Panel did not use a single rigid approach to applying the criteria but remained flexible in their interpretation and application to each project.

In our review of Initiative files, we found that 18 of the 32 projects accepted during the first six rounds had been accepted even though internal documentation indicated that the proposals were judged as not clearly meeting one or more of the nine criteria. For example, reviewers raised questions about a project involving the development and operation of a wind electricity-generating plant. The project review documentation noted that because the project had been under discussion since 1992, a year before the U.S. pilot program was announced, it was not clear that the project was initiated either in response to or in reasonable anticipation of the pilot program—one of the nine criteria for a project's acceptance. The documentation also indicated that the project's developers believed that acceptance of the project into the Initiative would better enable them to obtain the necessary funding for the project. The Evaluation Panel accepted this project. An Initiative official said that individual technical reviewers sometimes interpreted the criteria differently and came to different conclusions. In such cases, the Initiative's Secretariat labels these findings as "less than clear compliance" and requests that the Evaluation Panel make this judgment on a case-by-case basis. According to the Secretariat, when the Evaluation Panel accepts such projects, it believes that the criteria were adequately met.<sup>11</sup>

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## About One-Third of the Proposed Projects Have Been Accepted

Of the 97 proposed projects submitted during six evaluation rounds, 32 projects have been accepted into the program. Of the accepted projects, 17 are designed to reduce emissions, and 15 are designed to sequester emissions. All but one of the projects are aimed at reducing or

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<sup>11</sup>According to an Initiative official, the criteria that have been the most difficult to interpret consistently are those related to "additionality," which is discussed later in this report.

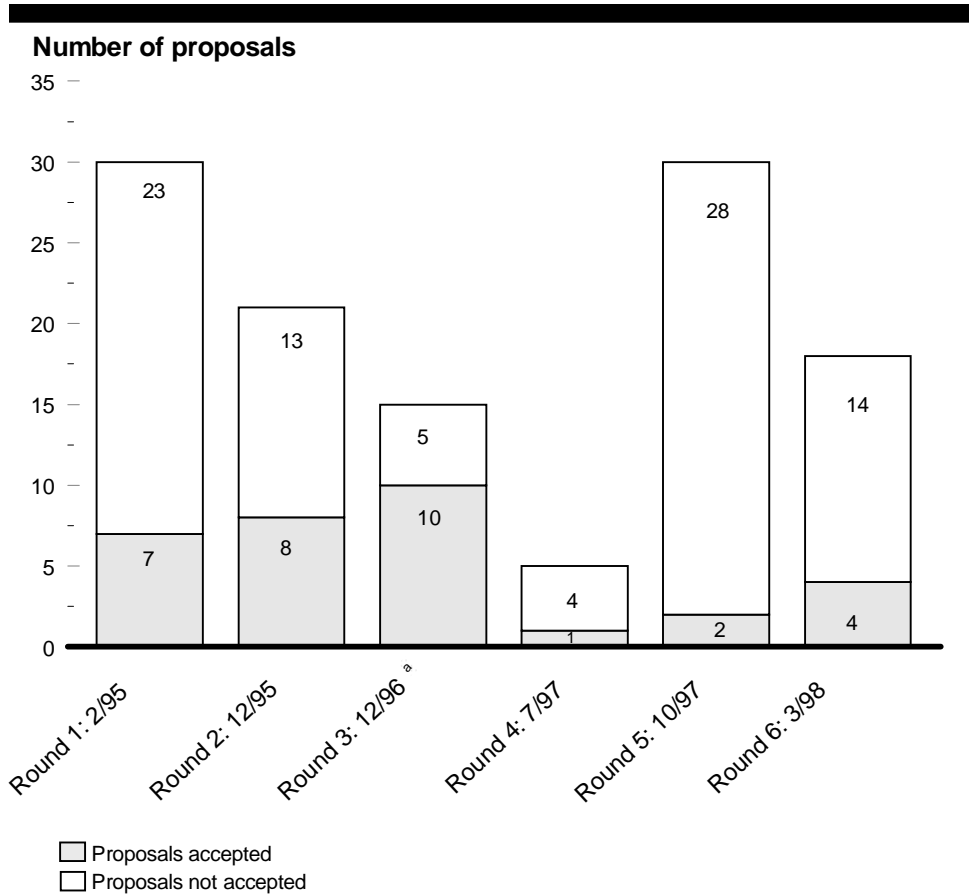
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sequestering carbon dioxide emissions, while the other project is aimed at reducing methane emissions.

Through the six rounds, a total of 119 proposals have been submitted, 22 of which have been submitted twice. Thus, 97 separate proposals have been submitted. Thirty applications were submitted in the first round. Thereafter, the number of applications declined steadily to five applications in the fourth round. Although the number of applications rebounded to 30 in round five, it declined again to 18 in the most recent round. Secretariat staff suggested some possible explanations for the variations in the number of project proposals submitted in the various rounds. The staff suggested that the two largest rounds (rounds one and five), which occurred immediately prior to the First and Third Conferences of the Parties to the United Nations Framework Convention on Climate Change, were the result of project developers' expectations that international crediting of joint implementation projects might be negotiated at those sessions. The staff also suggested that the smallest number of proposals came in round four because it was the first round occurring after the Initiative increased the number of rounds conducted a year from one to three and the resulting short period of time between rounds three and four (about 4 months). According to the Secretariat's Director, in response to project developers' expressed desires for a quicker turnaround process, the Initiative increased the frequency of its evaluation rounds by streamlining its application procedures.

A total of 32 proposals have been accepted into the Initiative, including at least one proposal in each round. The proportion of proposals accepted increased from 23 percent in round one to 67 percent in round three. However, this proportion declined to 20 percent in round four and 7 percent in round five. Secretariat officials said that they had not attempted to determine a reason for this decline, but they pointed out that many of the proposals submitted for round five were found not to be complete. Our analysis showed that the project reviewers found 19 of the 30 round-five proposals, or more than 60 percent, did not contain sufficient information to permit a complete evaluation. The proportion accepted in round six was about 22 percent. (See fig. 1.)

Figure 1: Proposed and Accepted Projects, by Round



<sup>a</sup>Round three (12/96) includes three projects accepted in 2/97 and 3/97.

Of the 32 approved projects, 31 focus on carbon dioxide, while the other project focuses on methane. Seventeen of the approved projects are designed to reduce emissions. For example, a project in Costa Rica involves the construction and operation of a privately owned and operated hydroelectric plant. The electricity generated by this plant will displace electricity that would have otherwise been generated by burning fossil fuels, thus reducing carbon dioxide emissions. The project that focuses on reducing methane emissions is located in the Russian Federation and will capture natural gas that is now escaping from a transmission and distribution system by sealing valves at two compressor stations.

The other 15 approved projects are designed to capture carbon dioxide that is already in the atmosphere. For example, one project will preserve a tropical forest in Costa Rica by purchasing over 6,000 acres of privately owned land. Because, according to the project proposal, this forest land likely would have been either harvested or converted for agricultural use within the next 15 years, the greenhouse gas benefits for this project will accrue from preserving the existing trees.

The 32 approved projects are located in 12 countries. Of these, the largest number, 16 (50 percent), are located in Central America. Another seven projects (22 percent) are located in Central and Eastern Europe, including the Russian Federation. The other nine projects (28 percent) are located in North America, specifically, Mexico (four projects); South America (three projects); and Asia (two projects).

**Table 1: Location and Type of Approved Projects**

<b>Location</b>	<b>Total projects</b>	<b>Reduce emissions</b>	<b>Sequester emissions</b>
Central America	16	9	7
Central and Eastern Europe	7	5	2
North America	4	1	3
South America	3	1	2
Asia	2	1	1
<b>Total</b>	<b>32</b>	<b>17</b>	<b>15</b>

A wide range of U.S. organizations are participating in the Initiative. These include private industry, environmental nongovernmental organizations, universities, and federal agencies. Private industry includes electric utility, oil, and other companies that have developed techniques to reduce greenhouse gas emissions. The nongovernmental organizations include the Center for Clean Air Policy, the National Fish and Wildlife Foundation, and The Nature Conservancy. The nongovernmental organizations provide funding in some cases, but more often they act as project facilitators.

**Of the First Seven Projects Approved, Five Are in the Process of Being Implemented**

Of the seven projects approved in the first round in February 1995, five have been or are being implemented, and two have not yet started. Each of these projects has at least one U.S. participant; one project has seven.

Five of the seven projects approved in the first round are reducing or sequestering emissions, according to information collected by the

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Initiative's staff in March 1998. Of these five, two projects are intended to reduce emissions. In both of these cases, the facilities have been built and are now in operation. For example, a project in the Czech Republic involving several energy efficiency improvements at a district heating facility, including the conversion of a coal-burning plant to natural gas, was completed and became operational in September 1996. The other three projects are intended to sequester emissions. For these projects, one or more of the following processes have been completed: Land has been purchased; surveys have been completed; and trees have been planted. For example, at one sequestration project in Costa Rica, land included in the project proposal and identified as being in danger of deforestation has been purchased and conveyed to Costa Rica's national park service.

The remaining two projects have not been implemented because of an inability to obtain financing, according to information provided to Initiative staff by these projects' representatives in March 1998. These two projects include one intended to sequester emissions and one intended to reduce emissions. For one of these projects, a sequestration project located in Costa Rica, the host-country partners reported that they had not been successful in obtaining financing for either this project or another sequestration project approved in the Initiative's second evaluation round. However, the partners said that the affected forest area covered by these two projects would be absorbed into two other joint implementation projects, one a U.S. Initiative project accepted in the fourth evaluation round in July 1997 and the other a Norwegian pilot joint implementation project. The partners further said that for this reason they planned to report that the two projects for which they have not obtained financing should not continue to be listed as separate projects. According to Initiative staff, the developer of the other project that has not progressed is continuing efforts to obtain financing. This project is located in Honduras and is intended to reduce carbon dioxide emissions by providing for solar-based electrification in rural areas. The status as of March 1998 for each project accepted during the first evaluation round is shown in table 2.

**Table 2: Status of the Seven Projects Accepted in February 1995**

<b>Project</b>	<b>Country</b>	<b>Objective</b>	<b>Status, as of March 1998</b>
<b>Projects to reduce emissions</b>			
City of Decin fuel switching for district heating	Czech Republic	Reduce emissions by switching from coal to natural gas	Facility became operational in September 1996.
Plantas Eolicas S.A. wind facility	Costa Rica	Reduce emissions by substituting wind power for fossil fuel combustion	Facility became operational in June 1996.
Solar-based rural electrification	Honduras	Reduce emissions by using photovoltaic-powered electric lights in rural areas, instead of kerosene lamps	Developer has not been successful in obtaining financing.
<b>Projects to sequester gases</b>			
Ecoland: Piedras Blancas National Park	Costa Rica	Sequester carbon by preventing deforestation	Land purchases completed.
Rusafor: Saratov afforestation project	Russian Federation	Sequester carbon by planting trees on marginal agricultural land and in burned pine forest	All sites have been cleared and reforested.
Carfix: Sustainable forest management	Costa Rica	Sequester carbon by reforestation, sustainable management of natural forest, and forest regeneration	Project has not been successful in obtaining financing. Developers plan to absorb a portion of this project into two recently accepted pilot projects.
Rio Bravo Carbon Sequestration Pilot Project	Belize	Sequester carbon by preventing deforestation and implementing a sustainable forest management program	Experiments on mahogany regeneration and reduced-impact logging conducted. A fire control regimen implemented.

The seven projects accepted during the first round of evaluations had between one and seven U.S. participants. For example, the sustainable forest management project in Costa Rica had one U.S. participant, Wachovia Timberland Investment Management; the U.S. Initiative project that will absorb much of this project also has a single U.S. partner, Earth Council Foundation—U.S. Conversely, the Rio Bravo Carbon Sequestration Pilot Project in Belize has seven U.S. participants, including The Nature Conservancy, Wisconsin Electric Power Company, and Detroit Edison Corporation.

## Methodologies for Verifying Project Benefits Are Being Developed

Standard methodologies that can be used either to estimate a project's greenhouse gas benefits or to certify a project's net emissions benefits are being developed. Based on information provided by the projects' developers, the total estimated greenhouse gas benefits for the 32 projects accepted into the Initiative as of March 1998 is equivalent to about 235 million metric tons of carbon dioxide over a period of up to 60 years. Although the Initiative reviews the methods, data, and assumptions project

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developers use to estimate net greenhouse gas benefits, it does not attest to the validity of those estimates. The Initiative does have responsibility, however, for monitoring and verifying emissions reductions as they are attained. As of the latest reporting date (July 1997), only one of the 25 projects accepted into the Initiative had reported emissions reduction benefits. According to the Initiative staff, it has not yet verified these reported emissions reductions partially because no standard methods for determining greenhouse gas benefits specific to joint implementation projects have been developed. EPA, as part of its role in providing support to the Secretariat, is funding studies of several issues related to determining emissions benefits. One objective of EPA-funded research is to develop standard methodologies.

The 32 projects accepted into the Initiative are projected to yield benefits over time periods as short as 3 years (for one wind power generation project and one forest preservation project) and as long as 60 years (for two reforestation projects). Based on the project developers' estimates, these 32 projects will reduce greenhouse gases by more than 200 million metric tons of carbon dioxide and 1.3 million metric tons of methane (1.3 million metric tons of methane is equivalent, in terms of global warming potential, to about 31 million metric tons of carbon dioxide). Of the total net greenhouse gas benefits, equivalent to approximately 235 million metric tons of carbon dioxide, about 65 million tons, or 28 percent, is attributed to emissions reduction projects, while the remaining 170 million tons, or 72 percent, is attributed to sequestration projects. For example, one project in Nicaragua involves constructing and operating a flash-steam power generation facility, using the country's abundant geothermal resources, that will emit only small amounts of carbon dioxide. According to the latest project report, this facility will displace an equivalent-size facility using fossil fuels and is expected to reduce carbon dioxide emissions by about 14 million metric tons over about 38 years. Similarly, a sequestration project in Ecuador that involves purchasing about 5,000 acres of tropical forest will be incorporated into a newly created reserve. According to the project's developers, by preventing the conversion of these lands, expected to occur over the next 3 years, to marginal cropland and cattle pasture, the project will result in net greenhouse gas benefits of more than 1 million tons of carbon dioxide. Although the Initiative reviews, as part of the proposal review process, the methods, data, and assumptions that the project developers used to develop their estimates, it does not attest to their validity.

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As of the last reporting period (July 1997), only one accepted project—a project that combines land acquisition and a sustainable forestry program to achieve emissions reductions through forest growth—had reported greenhouse gas benefits. The emissions reductions reported for this project were 807,468 metric tons of carbon dioxide a year for calendar years 1995 and 1996. The project developers for another four implemented projects reported to the Initiative staff in March 1998 that their projects were in operation and achieving greenhouse gas benefits but pointed out that the benefit data they provided at that time were estimates because either detailed monitoring results were not available or the monitoring results had not been verified. According to the Initiative's deputy director, these reductions are likely to be reported in the 1998 annual report.

Although the Initiative's ground rules state that the Evaluation Panel is responsible for certifying the greenhouse gas benefits estimated for the projects, the Initiative staff said that it does not currently verify reported emissions reductions. The staff acknowledged that it has neither provided standard monitoring guidance to projects nor reviewed the monitoring plans for most projects, but recognizes that its efforts in these areas need to be strengthened. The staff attributed its limited progress in these areas to the small number of projects that are now either funded or implemented and the absence of standard methods for determining greenhouse gas benefits specific to joint implementation projects. The staff also said that it was waiting on the EPA-sponsored research that will provide guidelines for the development of monitoring plans and verification methods to be completed before certifying reported emissions reductions.

EPA is funding research to develop standard methods for quantifying emissions benefits. Recently completed studies focused on implementing uniform reporting formats for the pilot projects (compatible with a reporting form used by the United Nations Framework Convention on Climate Change for its pilot program) and refining ways to measure greenhouse gas emissions from projects. Currently under way is a study to examine various aspects of project baselines (to estimate what would have happened if the pilot project had not been implemented) and emissions additionality (to help ensure that project benefits are in addition to what would otherwise have happened). In the context of the pilot program, additionality refers to project acceptance criteria that are designed to ensure that the financing of a proposed project would not have occurred otherwise, called financial additionality, and that the associated reduction



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in emissions would likewise not have occurred, called emissions additionality.

Some phases of the research have been completed and are undergoing review, while other phases are continuing. According to EPA officials, standard methods for estimating emissions reduction benefits would help to move the program from its current pilot phase to a fully implemented program with credible reductions. The officials were not able to say how long the development of the standard methods might take, but current studies being funded by EPA are to be completed during this fiscal year. An EPA official also said that the agency is currently funding research on methodologies for monitoring and plans to fund research on methodologies for verification in the future. (App. II provides additional information about efforts to develop standard methods.)

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## Agency Comments

We provided a draft of this report to the Director of the Joint Implementation Secretariat and the Administrator of EPA for review and comment. The Secretariat's Director said that the report is generally a balanced assessment of the Initiative, with a useful analysis of the projects and the consideration of those projects by the Initiative's Secretariat and Evaluation Panel. (The Secretariat's comments and our responses appear in app. III.) The Director also suggested technical corrections to the draft report, which were incorporated as appropriate. EPA's Office of Economy and Environment, within its Office of Policy, Planning and Evaluation, also suggested technical corrections, which were incorporated as appropriate.

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To accomplish our objectives, we interviewed officials of the Initiative's Secretariat, EPA, and the Department of State. At the Secretariat offices, we obtained and reviewed information pertaining to the Initiative's project evaluation process, including policy memorandums, technical review summaries of project proposals, and decision memorandums prepared to assist the Evaluation Panel with its decision-making process. At EPA, we obtained and reviewed information related to its efforts to develop standard methods for measuring greenhouse gas emissions and for estimating projects' emissions reduction benefits. At the Department of State, we obtained information on the development of the ground rules for the U.S. pilot program and public comments on notices published in the Federal Register. We limited our work on the third objective (relating to the status of approved projects) to those approved in the first round because they had had the longest period of time to be developed. This

information was obtained by reviewing the latest annual reports prepared by the participants in the accepted projects. The Secretariat staff assisted us in obtaining information from the project participants when information contained in the reports was not clear. We did not independently verify the information provided by the Secretariat.

We also reviewed available documents about the joint implementation concept, the U.S. Initiative, and the United Nations' pilot program. We conducted our review from September 1997 through June 1998 in accordance with generally accepted government auditing standards.

As arranged with your office, unless you publicly announce the report's contents earlier, we plan no further distribution of this report for 15 days. At that time, we will send copies to the appropriate congressional committees, the Director of the Secretariat, and the Administrator of EPA. We will also make copies available to others upon request.

Major contributors to this report were David Marwick; Stacy L. Morgan; William H. Roach, Jr.; and Robert D. Wurster. If you have any questions or need additional information, please call me at (202) 512-6111.

Sincerely yours,

A handwritten signature in black ink, appearing to read "P. F. Guerrero". The signature is stylized with a large, looped initial "P" and a long, sweeping horizontal line at the end.

Peter F. Guerrero  
Director, Environmental  
Protection Issues

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## Abbreviations

DOE	Department of Energy
EPA	Environmental Protection Agency
GAO	General Accounting Office
USJI	U.S. Initiative on Joint Implementation

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# Criteria and Other Considerations Used in Reviewing and Evaluating Proposed Projects

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These criteria and other considerations were published in the June 1, 1994, Federal Register (Vol. 59, No. 104, pp. 28445-28446). They are paraphrased below.

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## Criteria

1. Is the project acceptable to the government of the host country?
2. Does it involve specific measures to reduce or sequester greenhouse gas emissions initiated as a result of the U.S. Initiative on Joint Implementation or in reasonable anticipation of the Initiative?
3. Does it provide data and methodological information sufficient to establish a baseline of current and future greenhouse gas emissions, both with and without the project?
4. Will it reduce or sequester greenhouse gas emissions beyond those without the project, and, if the project is federally funded, is it or will it be undertaken with funds in excess of those available for such activities?
5. Does it contain adequate provisions for tracking the greenhouse gas emissions reduced or sequestered as a result of the project and, on a periodic basis, for modifying such estimates and comparing actual results with original projections?
6. Does it contain adequate provisions for external verification of the greenhouse gas emissions reduced or sequestered by the project?
7. Does it identify any associated non-greenhouse-gas environmental impacts and benefits?
8. Does it provide adequate assurance that the greenhouse gas emissions reduced or sequestered will not be lost or reversed over time?
9. Does it provide for annual reports to the Evaluation Panel on the emissions reduced or sequestered and on the share of such emissions attributed to each domestic and foreign participant, pursuant to the terms of the voluntary agreement among the project's participants?

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## Other Considerations

1. Does the project have a potential to lead to changes in greenhouse gas emissions outside the project's boundaries?

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**Appendix I  
Criteria and Other Considerations Used in  
Reviewing and Evaluating Proposed  
Projects**

- 
2. Apart from the project's effect on greenhouse gas emissions, does the project have any potential positive and negative effects on factors such as local employment and public health?
  3. Are U.S. participants who are emitting greenhouse gases within the United States taking measures to reduce or sequester those emissions?
  4. Does the host country have efforts under way to (1) ratify the United Nations Framework Convention on Climate Change, (2) develop a national inventory and/or baseline of greenhouse gas emissions and sinks, and (3) reduce its emissions and enhance its sinks of greenhouse gases?

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# Research on Evaluating Benefits From Joint Implementation Pilot Projects

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The awarding of credit for joint implementation projects' results is a basic distinction between the current pilot program and a fully developed program. Under a fully developed program, investors in an approved project could receive credit for that project's results—greenhouse gas emissions reduced or sequestered—and thus offset their own greenhouse gas emissions.

To help ensure that credits are awarded only when warranted, standard methods are being developed for estimating a project's emissions reduction benefits and for measuring greenhouse gas emissions. Tracking a project's side effects (e.g., its impact on the local economy) is also important.

In support of the pilot program, the Environmental Protection Agency's (EPA) Office of Policy is sponsoring studies of these issues, and it currently has a contract and an interagency agreement for further studies. EPA officials said that they expect these studies to help ensure that emissions reductions are properly identified and reported; to gain international approval of the joint implementation concept, including the clean development mechanism provisions of the Kyoto Protocol; and to move the joint implementation concept from its current pilot phase into full implementation.

One key issue currently being studied is estimating a project's emissions reduction benefits. In the context of joint implementation, "additionality" is the term used to describe the project acceptance criteria that are designed to ensure that the proposed project's financing and abatement of greenhouse gas emissions would not have occurred otherwise.<sup>1</sup> Additionality, however, has meaning only relative to an alternative reference point. Determining that reference point requires project developers to construct a hypothetical baseline.

For example, as evidence of emissions additionality, project proposals must present a reference case, which presents projections of emissions levels without the project, and a project case, which estimates emissions levels with the project. In this example, the emissions additionality is the difference between the emissions levels without the project (the hypothetical baseline) and the emissions levels with the project.

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<sup>1</sup>In the context of the U.S. Initiative on Joint Implementation, financial additionality refers to project acceptance criteria that are designed to ensure that the financing of a proposed project would not have occurred otherwise, and emissions additionality refers to the project acceptance criteria that are designed to ensure that the reduction in emissions associated with the project likewise would not have occurred.



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**Appendix II**  
**Research on Evaluating Benefits From Joint**  
**Implementation Pilot Projects**

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An EPA contractor, ICF, Inc., has completed a report analyzing how the pilot program has evaluated additionality; the report is currently undergoing peer review. By the end of June 1998, the contractor is expected to review assumptions about emissions made in the reference case scenario and project case scenario for selected approved projects. In addition, the contractor is expected to develop comprehensive guidelines for developing reference case and project case scenario emissions for greenhouse gas mitigation projects. EPA officials said that they will use this study, along with the results of other studies, to determine whether a credible, fair, transparent, and consistent approach to establishing project baselines and determining project additionality can be developed.

A second key issue currently being studied relates to standardized methods for monitoring, evaluating, reporting, and verifying greenhouse gas emissions benefits. Through an interagency agreement with EPA, the Lawrence Berkeley National Laboratory in Berkeley, California, is expected to complete an assessment of these issues by the end of September 1998. Specifically, the laboratory is to develop comprehensive guidelines for monitoring and evaluating projects. These guidelines are to incorporate such principles as cost-effectiveness, transparency, simplicity, technical soundness, and internal consistency. According to the agreement, these guidelines should also be capable of being used by an independent organization for verifying a project's benefits.

Finally, the laboratory is to identify and develop methods for monitoring environmental, socioeconomic, and other benefits associated with a project. These could include the effect on local economic conditions and on air quality and other environmental indicators.

# Comments From the U.S. Initiative on Joint Implementation

Note: GAO comments supplementing those in the report text appear at the end of this appendix.



## U.S. Initiative on Joint Implementation

*Reducing Greenhouse Gas Emissions Through International Partnerships*

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June 3, 1998

Mr. Peter Guerrero  
Director, Environmental Protection Issues  
U.S. General Accounting Office  
Resources, Community, and Economic  
Development Division  
Washington, DC 20548

Dear Mr. Guerrero:

Thank you for sending me GAO's final draft report, entitled Global Warming: Information on the Joint Implementation Pilot Program (GAO/RCED-97-154, Job Code 160422). We appreciate the opportunity to provide GAO comments on this final draft report. The USIJI Secretariat and our interagency advisors have reviewed this final draft report and provided the attached comments for your information and consideration. We appreciate the opportunity to give you these interagency comments prior to issuing this report in final form. Please note that the USEPA has provided its own separate comments to you, per your separate letter to Administrator Carol Browner.

Furthermore, it appears that some of the Agency comments which were offered to GAO on April 2, 1998, were not incorporated into this draft document. Although I understand the GAO preference for certain writing styles, the attached comments are primarily provided for purposes of accuracy.

If you have any questions regarding these comments, please contact Ms. Duane Lakich of my staff at: tel (202)586-3268; fax (202)586-3485 or 86; email: [duane.lakich@hq.doe.gov](mailto:duane.lakich@hq.doe.gov).

Sincerely,

Robert K. Dixon, Ph.D.  
Director

Attachment

cc: Mr. Bill Roach, GAO

**Supporting the Principles and Objectives of the Framework Convention on Climate Change**

Phone: 202-586-3288

Fax: 202-586-3485 or 586-3486

**Appendix III  
Comments From the U.S. Initiative on Joint  
Implementation**

Overall Comments:

- In general, we view the report as a balanced assessment of the USIJI program with a useful analysis of the projects and the consideration of those projects by the USIJI Secretariat and the Evaluation Panel.
- When referring to the USIJI Secretariat and the USIJI Evaluation Panel as “the Initiative” please use USIJI (the official name of the organization) instead.
- The introduction of the report should accurately describe the Kyoto Protocol and include the Clean Development Mechanism (please see detailed comments below).
- The title of the report “Global Warming: Information on the Joint Implementation Pilot Program” should reflect the IPCC’s 1995 report in which global “warming” is more commonly referred to as global “change,” or climate change.

Specific Comments

Page 1

1st Para (edit 1st sentence): Increasing emissions of carbon dioxide, methane, and other heat-trapping greenhouse gases generated by human activity are believed to contribute to global **change**.

*Note: In the 1995 IPCC report, scientists refer to “global warming” as “global change,” and in the last five years, the US government has referred to it as “climate change.”*

1st Para (edit 3rd, 4th and 5th sentences): The sentences, “Although the details have not yet been worked out, as part of the agreement, the nations that are parties to this agreement may be allowed to work with other nations to achieve reductions in a cost-effective manner. A solution being considered.....,” can be rewritten to more accurately to reflect the current state of play and include the Clean Development Mechanism. Suggest the following rewrite:

**“Parties to the Protocol may work together to achieve reductions in a cost-effective manner through market-based mechanisms, although the details have not yet been worked out. These include the concept of joint implementation (JI) which would allow industrialized countries to meet their obligations to reduce their greenhouse gas emissions by receiving credits for investing in projects in other industrialized countries. The JI concept is also found in the Protocol’s Clean Development Mechanism which allows for credits through investment in projects in developing countries.”**

Page 2

3rd Para (edit 1st sentence): The USIJI’s Evaluation Panel uses nine criteria....  
(See overall comments regarding using “Initiative” and USIJI)

See comment 1.

See comment 2.

**Appendix III  
Comments From the U.S. Initiative on Joint  
Implementation**

Page 3

Suggest a footnote with the following:

“The USIJI staff has acknowledged that it has not provided standard monitoring guidance to projects, nor reviewed monitoring plans for most projects since most projects are just beginning to be implemented and/or funded. USIJI is a pilot program that is evolving. Monitoring of greenhouse gas emissions and verifying these reductions is work that still needs to be strengthened. The Environmental Protection Agency (EPA) has funded studies to develop standard methods for calculating project baselines and net emissions, specifically.”

Page 5

2<sup>nd</sup> Para (insert the following sentence after the 1<sup>st</sup> sentence): **Ground rules were developed in an interagency process, chaired by the State Department.**

2<sup>nd</sup> Para (edit 2<sup>nd</sup> sentence): Published in final form in June 1994, **after public comment and revision**, these ground rules established a pilot program, which is intended to evaluate possible approaches to joint implementation.

Page 6

3<sup>rd</sup> Para (edit 3<sup>rd</sup> sentence to include): “The Clean Development Mechanism” to the list of market-based approaches so that the key sentence at the end of the paragraph would read: “Such approaches include emissions trading, joint implementation **and the Clean Development Mechanism.**”

Page 10

1<sup>st</sup> Para (suggest inserting the following at the end of the first paragraph):

**USIJI staff explained that in this pilot program, especially in the early rounds, there were differences of interpretation of some of the criteria as applied to specific projects. This is part of the valuable learning process of the pilot program. The most difficult criteria in this regard relates to the concept of “additionality,” meaning the likelihood that the emissions reductions would not have occurred with out the project.**

Page 11

1<sup>st</sup> Para (suggest inserting the following at the end of the first paragraph):

**USIJI has streamlined its application procedures; the first and second rounds were conducted annually. Project developers expressed the need to have a quicker turnaround process, and for the last couple of years, USIJI evaluates proposals 3 times per year. The smallest number of proposals came in Round 4, which was the first after the change to shorter periods.**

See comment 3.

Now on p. 4.  
See comment 4.

See comment 5.

Now on p. 5.

Now on p. 7.  
See comment 6.

Now on p. 8.  
See comment 7.

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**Appendix III  
Comments From the U.S. Initiative on Joint  
Implementation**

Now on p. 9.  
See comment 8.

Now on p. 13.

Now on pp. 18 and 19.  
See comment 9.

Page 12 (Figure 1)

Suggest including a footnote indicating the change from evaluating proposals more often (i.e., 3 times per year vs annually) which accounts for changes in the number of proposals submitted.

Page 18

2<sup>nd</sup> Para (1<sup>st</sup> sentence): is repetitive (see page 17, 2<sup>nd</sup> paragraph, 5<sup>th</sup> sentence).

Page 24 (Appendix 1)

Four other considerations should accurately reflect “exact” language in USIJI guidelines, not a modified version. Please use the following language as stated in the guidelines:

- 1) The potential for the project to lead to changes in greenhouse gas emissions elsewhere.**
- 2) The potential positive and negative effects of the project apart from its effect on greenhouse gas emissions reduced or sequestered.**
- 3) Whether the US participants are emitters of greenhouse gases within the United States and, if so, whether they are taking measures to reduce or sequester such emissions.**
- 4) Whether efforts are underway within the host country to ratify or accede to the United Nations Framework Convention on Climate Change, to develop a national inventory and/or baseline of greenhouse gas emissions by sources and removals by sinks, and whether the host country is taking measures to reduce its emissions and enhance its sinks and reservoirs of greenhouse gases.**

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The following are GAO's comments on the letter from the U.S. Initiative on Joint Implementation dated June 3, 1998.

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## **GAO Comments**

1. Prior to the Kyoto Protocol, the term "joint implementation" generally was used to describe all projects that were sponsored by developed countries and that were located, and intended to reduce emissions, in another country. The Protocol established the "clean development mechanism" for projects located in developing countries and distinguished them from projects located in developed countries. The Secretariat suggested that we cite the clean development mechanism in the opening paragraph of this report. Because projects accepted into the Initiative, including those accepted in March 1998 (subsequent to the Protocol), are located in both developing countries and developed countries, in this report we use the term "joint implementation" in its more general, pre-Protocol context. However, we have differentiated between these terms (joint implementation and clean development mechanism) in footnote 9.
2. For increased readability, we have used the word Initiative rather than the acronym USJI when referring to the U.S. Initiative on Joint Implementation. This is explained in footnote 6 of this report.
3. This information appeared in the draft report provided to the Secretariat for comment and, in our judgment, belongs on page 14 of this report.
4. This information appeared in the draft report and, in our judgment, belongs on page 5 of this report.
5. This information appeared in the draft report and, in our judgment, belongs on page 6 of this report.
6. The draft report provided to the Secretariat for comment discussed the differences of interpretation of the criteria. We added footnote 11 to this report to provide additional information on the nature of the areas of "less than clear compliance" with the criteria as reported by the Secretariat in its comments.
7. The draft report discussed the increase in the number of evaluation rounds conducted each year as a reason for the small number of proposals submitted for evaluation in round 4. Based on the Secretariat's comments,

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**Appendix III  
Comments From the U.S. Initiative on Joint  
Implementation**

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we also included information on the reason for the change in the number of evaluation rounds the Initiative conducts each year.

8. The draft report provided in the text information on the frequency of the evaluation rounds conducted, and the dates of each evaluation round were provided in the table. Therefore, an additional note to the table is not necessary.

9. We determined it was not necessary to list the Initiative's criteria verbatim in the report. However, in response to the Secretariat's comments, we added an introductory statement to appendix I indicating that we have paraphrased the criteria and other considerations used by the Initiative's Evaluation Panel in evaluating proposals.

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