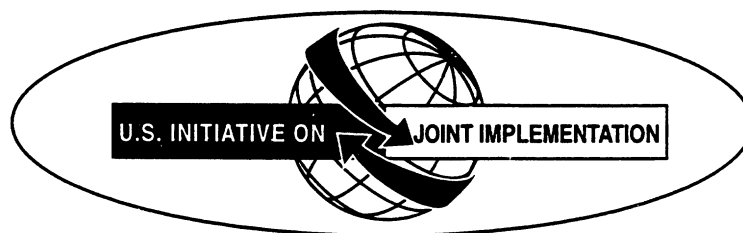
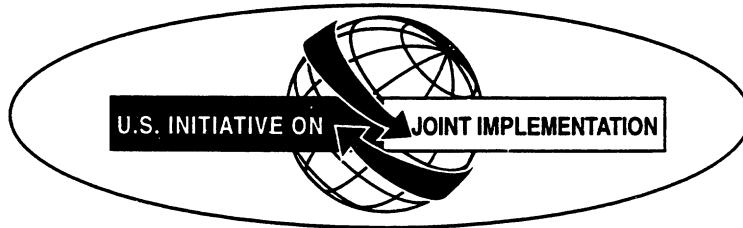


**Activities Implemented Jointly:
Sixth Report to the
Secretariat of the United Nations
Framework Convention on
Climate Change**



**Accomplishments and Descriptions
of Projects Accepted Under the
U.S. Initiative on Joint Implementation**

Volume 1



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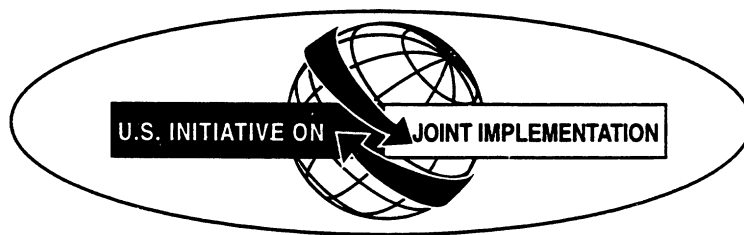
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**Activities Implemented Jointly:
Sixth Report to the
Secretariat of the United Nations
Framework Convention on
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**Accomplishments and Descriptions
of Projects Accepted Under the
U.S. Initiative on Joint Implementation
Volume 1**

To help inform international discussion on the issue of joint implementation under Article 4.2 of the UN Framework Convention on Climate Change (UNFCCC), the United States submits this sixth report on the accomplishments of the U.S. Initiative on Joint Implementation (USIJI) to the Secretariat of the UNFCCC. This report follows the recommendations of the Conference of the Parties on activities implemented jointly as set forth in Decision 5/CP.1 of the UNFCCC/CP/1995/7/Add.1, and as elaborated on in the “Report of the Subsidiary Body for Scientific and Technological Advice (SBSTA) on the work of its Fifth Session, Bonn, 25-28 February 1997” [FCCC/SBSTA/ 1997/4].

Mention of trade names or commercial products does not constitute endorsement or recommendation of use.

Acknowledgments

This report was produced under the direction of Richard H. Moore of the U.S. Initiative on Joint Implementation (USIJI). The USIJI would like to thank those who contributed to the writing of this report. In particular, appreciation is extended to Margaret Axelson, Jill Farris, Kay Hass, Brad Hollomon, Rita Pool, and Debora Schulz of the Pacific Northwest National Laboratory. The USIJI appreciates the efforts made by the project developers in completing the UNFCCC Reporting Format and providing annual updates. We also appreciate the time and effort spent by the Host Country National Focal Points in reviewing these project reports and providing concurrence as necessary.

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* Project documents are numbered individually.

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Equatorial Guinea
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Guatemala
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Honduras
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Guguletu Eco-Homes Project

Sri Lanka

SELCO-Rural Solar Electrification Project

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Energy Center for Uganda

The Solar Light for the Churches of Africa: Solar Electrification for Uganda Project

Part Three: USIJI National Program Report Uniform Reporting Format: National Program
on Activities Implemented Jointly

Under the Pilot Phase 1

Appendix-Abbreviations/Acronyms A.1

**Part One:
Overview of
USIJI Program Reporting**

Foreword

The U.S. Initiative on Joint Implementation (USIJI) has accepted 52 projects out of more than 200 proposals submitted during the past seven years. Since its formal launch in 1993, USIJI has provided a framework, which has facilitated linkages among project developers, investors, technical experts, and host countries. It has also served as a testing ground for new approaches to energy efficiency, land management, and power generation, and to quantifying the greenhouse gas benefits of projects.

Geographically and sectorally diverse, these projects further international understanding of project-based greenhouse gas mitigation activities in three key areas:

- Design and implementation of these activities;
- Development of methodologies and procedures for measuring, monitoring, verifying, and reporting project activities; and
- Identification of institutional and programmatic capacity needs in host countries.

Substantial progress has been made in these areas, and as a pilot initiative, USIJI has demonstrated the potential viability and value of project-based activities as mechanisms for reducing and offsetting greenhouse gas emissions.

I. Introduction

Initiated in 1993 as part of the U.S. Climate Change Action Plan, the U.S. Initiative on Joint Implementation (USIJI) supports the development and implementation of voluntary projects between U.S. and non-U.S. partners that reduce, avoid, or sequester greenhouse gas (GHG) emissions. Final groundrules for the USIJI Program,^(a) published in the *Federal Register* in 1994, describe the purpose of the pilot program, outline the timeline for evaluation and reassessment of the program, define eligibility criteria for domestic and non-U.S. participants, define criteria for acceptance of projects into the USIJI portfolio, and establish an Evaluation Panel to review USIJI projects.

Projects accepted into the USIJI Program are evaluated against nine criteria and four other areas of consideration. The criteria require that each project accepted into the USIJI Program demonstrate that it:

- has the acceptance of the host country government;
- will reduce or sequester net greenhouse gas emissions;
- was initiated as a result of the USIJI Program;
- provides data and methodological information sufficient to establish emissions baselines with and without the project;
- provides for tracking and verifying the emissions reduced or sequestered by the project;
- identifies associated environmental and developmental impacts; and
- provides assurance that benefits gained will not be lost over time.

These criteria are intended to identify those projects that support the development goals of the host country while providing greenhouse gas benefits beyond those that would occur in the absence of the joint implementation activity. The criteria have been formulated to ensure that projects accepted into the program will produce real, measurable net emissions reductions. Net emission reductions achieved as a result of USIJI projects must be measured, monitored, verified, and reported.

The USIJI Program is directed by an Interagency Working group, chaired by the Department of State, which has the primary responsibility for policy development. The USIJI Evaluation Panel is co-chaired by the Environmental Protection Agency and the U.S. Department of Energy, and includes representatives from the Agency for International Development and the Departments of Agriculture, Commerce,

(a) The Groundrules and Project Criteria for USIJI are presented in Section IV of Part One of this report.

Interior, State, and Treasury. The USIJI Secretariat supports the day-to-day operations of the USIJI Program. Technical experts are drawn from a variety of organizations to assist the Secretariat in the proposal review process and to provide technical assistance to project developers.

The USIJI Secretariat offers a variety of technical services to support both the development and implementation of USIJI projects. These services include technical guidance documents, databases, an Internet site, and public recognition to help project participants increase the visibility of their participation in the program.

The USIJI Program is pleased to participate in the Activities Implemented Jointly (AIJ) pilot phase of Joint Implementation under the United Nations Framework Convention on Climate Change (UNFCCC). We hope this report is informative for the UNFCCC Secretariat, Parties to the Convention, and other interested organizations and individuals.

II. Summary of USIJI Projects

As of September 1, 2001, the USIJI Program completed 13 rounds of proposal evaluations and accepted 52 projects from 26 countries. Seven proposals were accepted in Round 1 (announced in February 1995), eight in Round 2 (announced in December 1995), ten in Round 3 (announced in December 1996), one in Round 4 (announced in July 1997), two in Round 5 (announced in October 1997), four in Round 6 (announced in March 1998), one in Round 7 (announced in July 1998), one in Round 8 (announced in November 1998), four in Round 9 (announced in March 1999), five in a combined Round 10 and 11 (announced in October 1999), three projects in Round 12 (May 2000), and 8 projects in Round 13 (announced in October 2000), two USIJI projects in Costa Rica from the first two rounds—Project BIODEVERSIFIX and the protected area component of Project CARFIX—were subsequently incorporated into another project, the Territorial and Financial Consolidation of Costa Rican National Parks and Biological Reserves. Therefore, the USIJI project portfolio currently includes 52 projects in the following countries: Argentina (3), Belize (2), Bolivia (3), Chile (3), Colombia (1), Costa Rica (7), Czech Republic (1), Djibouti (1), Ecuador (1), El Salvador (1), Equatorial Guinea (1), Guatemala (3), Honduras (3), India (1), Indonesia (1), Mali (1), Mauritius (1), Mexico (4), Nicaragua (1), Panama (1), Peru (1), Philippines (1), the Russian Federation (6), South Africa (1), Sri Lanka (1), and Uganda (2). Eight new projects have been added since last year's report to the Secretariat. These projects are located in Argentina (1), Chile (1), Djibouti (1), Equatorial Guinea (1), Mali (1), Mauritius (1), and Uganda (2).

As the USIJI Program has grown, it has continued to diversify in terms of both the number of participating host countries and the type of project activities. Notably, six new projects have been added in Africa within the past year. The 52 USIJI projects span four principal sectors: land-use change and forestry, energy, waste, and agriculture. Within each sector, many types of project activities are used to achieve greenhouse gas benefits. In the land-use change and forestry sector, project activities range from forest preservation, forest regeneration, afforestation, and silviculture to agroforestry, sustainable timber harvesting and the manufacture of durable wood products. In the energy sector, project activities include fuel switching, energy efficiency improvements, cogeneration, capture of fugitive emissions, and alternative energy generation. The two multi-sector projects involve the conversion of biomass waste to energy. The agriculture project involves crop management for the accumulation of soil carbon.

Although carbon dioxide (CO₂) is the primary greenhouse gas addressed in most USIJI projects, two projects exclusively target methane (CH₄) emissions, and one reports both CO₂ and nitrous oxide (N₂O) emission benefits. Over a period of approximately 60 years, according to self-reporting from project developers, the 52 USIJI projects are anticipated to generate greenhouse gas benefits totaling at least 259.8 million metric tons of CO₂,^(a) 5.7 million metric tons of CH₄, and 4,608 metric tons of N₂O. These benefits are equivalent to 350.5 million metric tons of CO₂, which are expected to accrue over project lifetimes that vary from 10 to 60 years if fully funded and implemented.

(a) This estimate of total greenhouse gas benefits is based on the lower limits of the ranges of estimated greenhouse gas benefits where such ranges are presented.

The USIJI projects involve a broad range of participants and are funded through a variety of mechanisms. The project participants include government ministries and agencies, non-governmental organizations, private-sector companies, universities, research institutes, and financing organizations. The sources of project funding include the anticipated sale of carbon offsets; revenues generated directly by project activities (e.g., the sale of timber, other biomass resources, and energy); investment capital from private-sector companies; loans provided by commercial banks and multilateral organizations such as the International Finance Corporation; government incentives; endowments; and grants.

All 52 USIJI projects have been formally accepted by the government of their host country, a requirement for their acceptance into the USIJI Program. In each case, host country acceptance has been documented in a letter from the designated national authority of the host country. Of the 52 projects, 26 are classified as “in progress,” indicating that activities associated with project implementation have begun on site. This designation could mean, for example, that although project implementation activities (e.g., construction and planting) have begun, greenhouse gas benefits have not yet necessarily begun to accrue. The 23 remaining projects have not yet initiated on-site activities, and therefore are classified as “mutually agreed.” In several cases, difficulties in obtaining funding and/or overcoming logistical or technical obstacles have delayed project implementation. Finally, three projects are listed as “inactive,” meaning they had difficulties in implementing their project. USIJI will continue to report inactive status for purposes of project research and evaluation.

A summary of the 52 USIJI projects is presented in Table 1.

Table 1. Summary of USIJI Projects

Title of Project	Type of Activity	Stage of Activity ⁽¹⁾	Remarks Project Life ⁽²⁾	GHG Benefits (Metric Tons) ⁽³⁾			
				CO ₂	CH ₄	N ₂ O	Other
<i>Argentina</i>							
CAPEX, SA Electric Generation Project	Energy: conversion from simple cycle to combined cycle	In progress	30 years	22,879,680			
Landfill Gas Management in Greater Buenos Aires	Energy: conversion of methane to carbon dioxide	Mutually agreed	20 years	-12,223,760 ⁽⁷⁾	4,445,000		
The Rio Bermejo Carbon Sequestration Project	Land-use change and forestry	Mutually agreed	30 years	93,500			
<i>Belize</i>							
BEL/Maya Biomass Power Generation Project	Energy: alternative energy generation (biomass)	Mutually agreed	31 years	3,418,444			4,860 (NO _x)
Rio Bravo Carbon Sequestration Pilot Project (includes Phase 1 and 2)	Land-use change and forestry: forest preservation, sustainable harvesting, reduced impact logging, silviculture, fire management, and manufacture of durable wood products	In progress	42 years	7,624,833			

Table 1. (cont'd)

Title of Project	Type of Activity	Stage of Activity ⁽¹⁾	Remarks Project Life ⁽²⁾	GHG Benefits (Metric Tons) ⁽³⁾			
				CO ₂	CH ₄	N ₂ O	Other
<i>Bolivia</i>							
Noel Kempff Mercado Climate Action Project	Land-use change and forestry: forest preservation, reforestation, park expansion, and sustainable forest product enterprise development	In progress	30 years	53,916,679		4,608	
Rural Solar Electrification in Bolivia: Pilot Phase	Energy: alternative energy generation (solar)	Inactive	20 years + 3 months	0			
The Taquesi River Hydroelectric Power Project	Energy: alternative energy generation (hydropower)	In progress	35 years	10,020,432			
<i>Chile</i>							
The Rio Condor Carbon Sequestration Project	Land use change and forestry	In progress	60 years	15,469,278			
The SIF Carbon Sequestration Project	Land use change and forestry	Mutually Agreed	51	3,977,307			
Wind Energy Project	Energy: alternative energy generation (wind)	Mutually agreed	21 years	3,043,131			
<i>Colombia</i>							
La Sierra Electricity Efficiency in Colombia	Energy: power generation	In progress	15 years	3,217,184			

Table 1. (cont'd)

Title of Project	Type of Activity	Stage of Activity ⁽¹⁾	Remarks Project Life ⁽²⁾	GHG Benefits (Metric Tons) ⁽³⁾			
				CO ₂	CH ₄	N ₂ O	Other
<i>Costa Rica</i>							
Aeroenergía S.A. Wind Facility	Energy: alternative energy generation (wind)	In progress	21 years + 1 month (with possible extension)	36,194			
Doña Julia Hydroelectric Project	Energy: alternative energy generation (hydroelectric)	In progress	15 years (with possible 5 year extensions)	210,566			
ECOLAND: Piedras Blancas National Park	Land-use change and forestry: forest preservation and natural regeneration	In progress	16 years	1,342,733			
Klinki Forestry Project	Land-use change and forestry: afforestation, reforestation, and silviculture	In progress	46 years	7,216,000			
Plantas Eólicas S.R.L. Wind Facility	Energy: alternative energy generation (wind)	In progress	21 years + 5 months	222,537			
Territorial and Financial Consolidation of Costa Rican National Parks and Biological Reserves ⁽⁴⁾	Land-use change and forestry: forest preservation; and construction of a facility for public education, entertainment, and ecotourism	In progress	25 years	57,467,270			

Table 1. (cont'd)

Title of Project	Type of Activity	Stage of Activity ⁽¹⁾	Remarks Project Life ⁽²⁾	GHG Benefits (Metric Tons) ⁽³⁾			
				CO ₂	CH ₄	N ₂ O	Other
<i>Costa Rica (cont'd)</i>							
Tierras Morenas Windfarm Project	Energy: alternative energy generation (wind)	Mutually agreed	20 years	57,203			
<i>Czech Republic</i>							
City of Decin: Fuel-Switching for District Heating	Energy: fuel-switching, energy efficiency improvements, and cogeneration	In progress	26 years + 8 months	607,150			
<i>Djibouti</i>							
The Assal Geothermal Power Project	Energy: alternative energy generation (geothermal)	Mutually agreed	30+ years	4,448,977			
<i>Ecuador</i>							
Bilsa Biological Reserve	Land-use change and forestry: forest preservation	Mutually agreed	30 years	1,170,108			
<i>El Salvador</i>							
Cemento de El Salvador, S.A. de C.V.	Energy: energy efficiency	In progress	12 years	6,730,102			
<i>Equatorial Guinea</i>							
Environmentally Responsible Gas Processing Bioko Island	Energy: alternative energy generation (flared gas)	In progress	25 years	25,545,000	2,183,600		
<i>Guatemala</i>							
Matanzas Hydroelectric Project	Energy: hydroelectric	In progress	17 years	1,156,194			

Table 1. (cont'd)

Title of Project	Type of Activity	Stage of Activity ⁽¹⁾	Remarks Project Life ⁽²⁾	GHG Benefits (Metric Tons) ⁽³⁾			
				CO ₂	CH ₄	N ₂ O	Other
<i>Guatemala (cont'd)</i>							
Rio Hondo II Hydroelectric Project	Energy: renewable energy generation	Inactive	20 years	0			
Santa Teresa Hydroelectric Project	Energy: hydroelectric	Mutually agreed	15 years	1,241,130			
<i>Honduras</i>							
Bio-Gen Biomass Power Generation Project, Phase I	Energy, waste: alternative energy generation (wood waste)	In progress	21 years	2,373,940			
Bio-Gen Biomass Power Generation Project, Phase II	Energy, waste: alternative energy generation (wood waste)	In progress	21 years	2,373,940			
Solar-Based Rural Electrification	Energy: alternative energy generation (solar)	In progress	24 years	34,398			
<i>India</i>							
The Bagepalli Project: Community-Based Fruit Tree Orchards for CO ₂ Sequestration	Land use change and forestry	Mutually agreed	40 years	436,640			
<i>Indonesia</i>							
Reduced Impact Logging for Carbon Sequestration in East Kalimantan ⁽⁵⁾	Land-use change and forestry: reduced impact logging	Mutually agreed	40 years	134,379			

Table 1. (cont'd)

Title of Project	Type of Activity	Stage of Activity ⁽¹⁾	Remarks Project Life ⁽²⁾	GHG Benefits (Metric Tons) ⁽³⁾			
				CO ₂	CH ₄	N ₂ O	Other
<i>Mali</i>							
Energy Center for Mali	Climate change/renewable	In progress	20 years	354	3		
<i>Mauritius</i>							
Solar Electric Generation for the Island of Rodrigues	Energy: alternative energy generation (solar)	Mutually agreed	35 years	16,400			
<i>Mexico</i>							
APS/CFE Renewable Energy Mini Grid Project	Energy: alternative energy generation (hybrid power system: solar, wind, and diesel)	In Progress	30 years + 7 months	7,415			
Community Silviculture in the Sierra Norte of Oaxaca	Land-use change and forestry: agroforestry, plantation establishment, silviculture, fire management, reduced impact logging, and increased wood-use efficiency	Mutually agreed	30 years	3,065,333			
Project <i>Salicornia</i> : Halophyte Cultivation in Sonora	Agriculture: <i>Salicornia</i> cultivation and crop management, and technical analysis of soil carbon accumulation and commercial feasibility of <i>Salicornia</i> cultivation	In progress	59 years + 7 months	3,255			

Table 1. (cont'd)

Title of Project	Type of Activity	Stage of Activity ⁽¹⁾	Remarks Project Life ⁽²⁾	GHG Benefits (Metric Tons) ⁽³⁾			
				CO ₂	CH ₄	N ₂ O	Other
<i>Mexico (cont'd)</i>							
Scolec Té: Carbon Sequestration and Sustainable Forest Management in Chiapas	Land-use change and forestry: agroforestry, reforestation, sustainable harvesting, silviculture	In progress	30 years	55,000-1,210,000 ⁽⁶⁾			
<i>Nicaragua</i>							
El Hoyo-Monte Galan Geothermal Project	Energy: alternative energy generation (geothermal)	Mutually agreed	35 years	14,119,469			
<i>Panama</i>							
Commercial Reforestation in the Chiriquí Province	Land-use change and forestry: reforestation	Inactive	25 years	0			
<i>Peru</i>							
The Central Selva Climate Action Project	Land-use change and forestry	Mutually agreed	30 years	13,338,736			
<i>Philippines</i>							
Energy Efficient Street Lighting Project in the Philippines	Energy: energy efficiency improvements	Mutually agreed	25 years	36,300			
<i>Russian Federation</i>							
District Heating Renovation in Lytkarino	Energy: energy efficiency improvements	Mutually agreed	10 years	485,670			

Table 1. (cont'd)

Title of Project	Type of Activity	Stage of Activity ⁽¹⁾	Remarks Project Life ⁽²⁾	GHG Benefits (Metric Tons) ⁽³⁾			
				CO ₂	CH ₄	N ₂ O	Other
<i>Russian Federation (cont'd)</i>							
Improving District Heating Efficiency in Metallurgichesky District of Cheliabinsk	Energy: energy efficiency improvements	Mutually agreed	10 years	828,269			
Reforestation in Vologda	Land-use change and forestry: assisted natural regeneration	Inactive	60 years	0			
RUSAFOR–Saratov Afforestation Project	Land-use change and forestry: afforestation and reforestation	In progress	40 years (Sites I & II); 60 years (Sites III & IV)	292,699			
RUSAGAS: Fugitive Gas Capture Project	Energy: capture of fugitive methane emissions	In progress	27 years + 7 months		1,263,500		
Zelenograd District Heating System Improvements	Energy: energy efficiency improvements	Mutually agreed	30 years	1,575,840			
<i>South Africa</i>							
Guguletu Eco-Homes Project	Energy: energy efficiency improvements	Mutually agreed	50 years	13,162			
<i>Sri Lanka</i>							
SELCO-Sri Lanka Rural Solar Electrification Project	Energy: alternative energy generation (solar)	Mutually agreed	29 years	5,684,448			

Table 1. (cont'd)

Title of Project	Type of Activity	Stage of Activity ⁽¹⁾	Remarks Project Life ⁽²⁾	GHG Benefits (Metric Tons) ⁽³⁾			
				CO ₂	CH ₄	N ₂ O	Other
<i>Uganda</i>							
Energy Center for Uganda	Energy: efficiency/renewable energy	Mutually agreed	20 years	62,707	447		
The Solar Light for the Churches of Africa: Solar Electrification for Uganda Project	Energy: alternative (solar)	In progress	20 years	52,600			
TOTAL				259,874,826 to 261,029,826 ⁽⁶⁾	5,708,500	4,608	4,860 (NO _x)
<p>(1) The following definitions are used for these categories: <i>Mutually agreed</i> = accepted USIJI proposal; activity is agreed between all Parties involved (designated national authorities), but project activities have not begun on site <i>In progress</i> = any stage of activity between “mutually agreed” and “completed” <i>Completed</i> = project is finished/terminated <i>Inactive</i> = Due to difficulties during implementation, this project has been placed in inactive status. USIJI will continue to report inactive status for purposes of project research and evaluation, but benefits are counted as 0 for these projects.</p> <p>(2) Project life refers to the estimated functional lifetime of the project, not necessarily the period over which greenhouse gas reductions are estimated to occur.</p> <p>(3) Reduction estimates are made by project developers. Estimates are in metric tons, full molecular weight basis. The USIJI Program does not accept these estimates <i>per se</i>, but will be monitoring and verifying emissions reductions as they are attained.</p> <p>(4) Since the U.S. government submitted the second report on Activities Implemented Jointly to the Secretariat of the United Nations Framework Convention on Climate Change in July 1997, two USIJI projects in Costa Rica from the first two proposal rounds—Project BIODIVERSIFIX and the protected area component of Project CARFIX—have been incorporated into the fourth-round USIJI project in Costa Rica, the Territorial and Financial Consolidation of Costa Rican National Parks and Biological Reserves. Therefore, these two projects are no longer reported as separate projects.</p> <p>(5) Reduced Impact Logging, or RIL, is being used by COPEC as a service mark for their particular program.</p> <p>(6) Actual reductions achieved are dependent on project specific funding and/or project deployment.</p> <p>(7) Negative CO₂ benefit reflects increased emissions resulting from combustion of CH₄.</p>							

III. USIJI Project Abstracts

The following text presents abstracts of the 52 USIJI projects. A detailed annual report for each of these projects is contained in Part Two: USIJI Project Reports (contained in Volume 2).

ARGENTINA

CAPEX, SA Electric Generation Project

Project Lifetime: 30 years

Total Estimated Greenhouse Gas Benefits: 22,879,680 metric tons of CO₂

The project is a single-cycle to combined-cycle conversion at a natural gas-fueled electric generation facility located in Neuquén, Argentina. The current CAPEX, SA powerplant, rated at 370 megawatts, consists of five Westinghouse 251 B11 gas turbines and one Westinghouse 701 D gas turbine, along with a 132 kV substation and associated transmission lines. As a low-cost generator, it is among the first to be dispatched within the grid and has a high rate of utilization.

The project has installed a system to recover heat from the exhaust of each of the turbines and raise steam that will power a single 185-megawatt steam turbine. This increases the rated power output to 555 megawatts, with no increase in fuel use, and to lower the cost of operation per kilowatt hour, thereby displacing 185 megawatts of less efficient generation elsewhere on the grid.

In addition, the developer also has begun reforestation at the site and plans to continue to reforest 100 hectares per year; however, no greenhouse gas benefits due to reforestation are claimed. This project became operational in January 2000.

Landfill Gas Management in Greater Buenos Aires

Project Lifetime: 20 years

Total Estimated Greenhouse Gas Benefits: 4,445,000 metric tons of CH₄, less increased emissions of 12,223,760 metric tons of CO₂ for an estimated net reduction of 81,121,240 metric tons of CO₂ equivalent.

The Landfill Gas Management project in Greater Buenos Aires involves the development of gas collection and combustion systems at landfills owned and operated by Coordinación Ecológica Area Metropolitana, Sociedad del Estado (CEAMSE), a regional government agency. CEAMSE will install and operate a system of wells, pipes, blowers, and flares to recover and burn landfill gas (LFG) from the landfills it currently owns or will own in the future. CEAMSE is responsible for municipal solid waste (MSW) disposal in Greater Buenos Aires and the surrounding metropolitan area in Buenos Aires Province. The project estimates that if 70 percent of the gas generated by the 5 million metric tons of waste deposited annually in the CEAMSE landfills is collected and combusted, the project could result in an emission reductions of 222,250 metric tons of CH₄, or 4 million metric tons CO₂ equivalent per year. Further reductions could be achieved through beneficial use of the gas.

The Rio Bermejo Carbon Sequestration Project

Project Lifetime: 30 years

Total Estimated Greenhouse Gas Benefits: 15,933,500 metric tons of CO₂ equivalent.

The Rio Bermejo Carbon Sequestration Project is a sustainable forest management and protection project located in degraded montane forest and agricultural lands in northern Argentina. The project will combine tree plantations in agricultural lands (2,000 ha), enrichment planting and sustainable management in degraded logged forests (28,000 ha), conversion of selectively logged forest to improved forest management (34,000 ha), and preservation of a mature forest to increase carbon sequestration (5,000 ha). The major goals of the project are to sequester carbon to help reduce greenhouse gas emissions, protect biodiversity, and offer local communities sustainable economic alternatives.

BELIZE

BEL/Maya Biomass Power Generation Project

Project Lifetime: 31 years

Total Estimated Greenhouse Gas Benefits: 3,418,444 metric tons of CO₂

The BEL/Maya Biomass Power Generation Project involves the construction and operation of an 18-megawatt biomass waste-to-energy plant to be located adjacent to the Belize Sugar Industries (BSI) sugar mill in Orange Walk, Belize. The plant will generate electrical power for sale to Belize Electricity Limited (BEL) and orange processors, and produce steam and electricity for in-house use and future sugar refining at BSI. The plant will be fueled by bagasse, orange processing wastes, and wood wastes from sawmills and other nearby sources. By displacing diesel oil-fired power generation with waste biomass fuel, the project is expected to reduce utility CO₂ emissions.

Rio Bravo Carbon Sequestration Pilot Project

Project Lifetime: 42 years

Total Estimated Greenhouse Gas Benefits: 7,624,833 metric tons of CO₂

The Rio Bravo Carbon Sequestration Pilot Project is a forestry project located in northwest Belize, adjacent to the Rio Bravo Conservation and Management Area (RBCMA). The project combines land acquisition and a sustainable forestry program to achieve greenhouse gas benefits from forest growth (i.e., carbon sequestration) that would not have occurred in the absence of project activities. The objective of the project is to demonstrate an optimal balance between cost-effective carbon sequestration, economically sustainable forest yield, and environmental protection.

BOLIVIA

Noel Kempff Mercado Climate Action Project

Project Lifetime: 30 years

Total Estimated Greenhouse Gas Benefits: 53,919,679 metric tons of CO₂ and 4,608 metric tons of N₂O for an estimated 55,345,159 metric tons of CO₂ equivalent

The Noel Kempff Mercado Climate Action Project is a forest protection and sustainable management project located in eastern Bolivia. The project has expanded the existing Noel Kempff Mercado National Park, and will reduce future emissions within both the existing Park and Park expansion area, by eliminating legal and illegal logging activities (Component A). The project also will sequester carbon over time through the long-term protection and regeneration of the Park expansion area's already logged mahogany, oak, cedar, and palm forests, and through a mix of income-generating activities designed to support long-term preservation (Component B). Finally, greenhouse gas mitigation will also result from leakage prevention activities (Component C). Although greenhouse gas emission reductions and carbon sequestration are anticipated to occur within both the existing Park and the Park expansion area, the project will only claim greenhouse gas benefits associated with activities within the Park expansion area.

Rural Solar Electrification in Bolivia: Pilot Phase (This Project is Inactive)

Project Lifetime: 20 years, 3 months

Total Estimated Greenhouse Gas Benefits: 0 metric tons of CO₂

The Rural Solar Electrification in Bolivia (Pilot Phase) Project will finance and install photovoltaic (PV) units of 48-55 watts in 400 households in the Oruro and Cuquisaca Departments of Bolivia, which are not serviced by the national electricity grid system. The PV units will be used for residential lighting, and will displace diesel-wick lanterns. The project's greenhouse gas benefits accrue from the avoided emissions of CO₂ that would be generated by diesel combustion in the absence of the project.

The Taquesi River Hydroelectric Power Project

Project Lifetime: 35 years

Total Estimated Greenhouse Gas Benefits: 10,020,432 metric tons of CO₂

The project consists of run-of-river hydroelectric facilities, approximately 85 megawatts in the aggregate, along the Taquesi and Unduavi Rivers in the Republic of Bolivia, South America. The proposed project involves reduction of emissions of CO₂ through the displacement of electrical energy produced by single-cycle combustion turbines. The project will supply electrical energy to the La Paz area from run-of-river hydropower facilities and thereby reduce emissions of CO₂ from the alternate electrical energy source. This project is located near the small communities of La Chojlla and Yanacachi, located approximately 40 kilometers east from La Paz, in South Yungas area of Bolivia.

CHILE

The Río Cónдор Carbon Sequestration Project

Project Lifetime: 60 years

Total Estimated Greenhouse Gas Benefits: 15,469,278 metric tons of CO₂

The Río Cónдор Carbon Sequestration Project is reducing carbon emissions from a 272,880-hectare forest management project in Tierra del Fuego, Chile. The land is owned and managed by Forestal Savia Ltda., a Chilean company. CFix, L.L.C., a Washington State Limited Liability Company, is managing the carbon offset opportunity in partnership with Fundación Chile, a Chilean non-profit organization focused on technology transfer, new business development and sustainable development in Chile.

The project will achieve additional carbon storage by preserving old growth forests that would have been converted into young, managed stands in the baseline scenario. Sustainable forest management will continue on the lands not protected by the project.

The SIF Carbon Sequestration Project

Project Lifetime: 51 years

Total Estimated Greenhouse Gas Benefits: 1,412,700 metric tons of CO₂ equivalent

The SIF Carbon Sequestration Project will bring about the afforestation and sustainable management of approximately 7,000 hectares in regions VII and VIII of Chile. The project expects to sequester up to 385,280 metric tons of additional CO₂ during the life of the Project by expanding the total area of carbon sinks in the country. The project will result in a net addition of approximately 55 metric tons of carbon storage per hectare on lands included in the Project. The project seeks to generate cultivation alternatives for small and medium farmers by converting approximately 7,000 hectares of marginal agricultural land to forest plantations. The structure of the project minimizes the forestry risks to farmers by efficiently managing the planted hectares. The average plot size per farmer is expected to be 60-100 hectares. This shift in land-use will provide additional annual income to small and medium farmers, providing liquidity while allowing them to maintain their property rights.

Wind Energy Project

Project Lifetime: 21 years

Total Estimated Greenhouse Gas Benefits: 3,043,131 metric tons of CO₂

The Wind Energy Project in northern Chile involves a 37.5-megawatt wind energy installation. The project expects to include the installation of 50 wind turbines each capable of generating 750 kilowatts of energy. The facility will be constructed near the city of Calama in the desert region of Antofagasta. The preliminary project estimate indicates that the project would offset approximately 3,000,000 metric tons of CO₂ over a 20-year period by displacing coal-fired power generation within the Great Northern Interconnected System (SING). The International Institute for Energy Conservation (IIEC) and the Corporación Nacional del Cobre de Chile (CODELCO) are jointly developing the project to demonstrate a renewable energy resource.

COLOMBIA

La Sierra Electricity Efficiency in Colombia

Project Lifetime: 15 years

Total Estimated Greenhouse Gas Benefits: 3,217,184 metric tons of CO₂

Located in the Medellín valley, the project sponsor, the local utility Empresas Públicas de Medellín (EPM), serves a population of 1.7 million and represents the country's busiest commercial center. This project expands an existing 300-megawatt natural gas open cycle thermoelectric power plant by 181.35 megawatts, using waste steam and a combine cycle technology. The increased output will result from improved efficiency and will entail no new CO₂ emissions at the site located in the state of Antioquia. The added production of 953 gigawatt hours per year, increasing over 5 years to 1,271 gigawatt hours per year, will offset power generation at other Colombian powerplants and thereby reduce CO₂ emissions.

COSTA RICA

Aeroenergía S.A. Wind Facility

Project Lifetime: 21 years, 1 month

Total Estimated Greenhouse Gas Benefits: 36,194 metric tons of CO₂

The Aeroenergía S.A. Wind Facility Project is a privately owned and operated 6.4 megawatt wind facility consisting of nine 750-kilowatt wind turbines. The project is located near the town of Tejona in the Guanacaste province of Costa Rica. Electricity generated by the plant is sold to the Costa Rican Institute of Electricity to meet a portion of Costa Rica's energy demand. Because this generation displaces electricity that otherwise would have been generated by existing thermal plants, it reduces greenhouse gas emissions from fossil fuel combustion. This project is operational as of August 1998.

Doña Julia Hydroelectric Project

Project Lifetime: 15 years

Total Estimated Greenhouse Gas Benefits: 210,566 metric tons of CO₂

The Doña Julia Hydroelectric Project involves the construction and operation of a privately owned and operated 16-megawatt hydroelectric plant that is expected to produce an estimated 83 gigawatt hours to 87.8 gigawatt hours of electricity per year, using the waters from the Puerto Viejo River and Quebradon Creek. The project will displace electricity and greenhouse gas emissions currently produced by thermal fossil fuel-burning facilities. The project facility became operational in December 1998. Electricity generated by the project facility is being sold to the Costa Rican Institute of Electricity.

ECOLAND: Piedras Blancas National Park

Project Lifetime: 16 years

Total Estimated Greenhouse Gas Benefits: 1,342,733 metric tons of CO₂

The ECOLAND Project will preserve tropical forest through the purchase of approximately 2,500 privately owned hectares in the Piedras Blancas National Park (formerly named the Esquinas National Park) in southwestern Costa Rica. The purchased land has been conveyed to the Costa Rican Park Service for permanent protection. Greenhouse gas benefits accrue from conservation of existing carbon stocks on the park land that would have otherwise been deforested.

Klinki Forestry Project

Project Lifetime: 46 years

Total Estimated Greenhouse Gas Benefits: 7,216,000 metric tons of CO₂

The Klinki Forestry Project will convert pastures and marginal farmland to commercial tree plantations by promoting the planting of 6,000 hectares of private farms with mixtures of selected fast-growing tree species in a matrix, with the Klinki tree as a major component. The trees will be harvested periodically for use in long-lived lumber products (such as utility poles) or left standing. The project will include small, medium, and large farms, educational pilot projects, and investor farms. Farmers will be given incentives for plantings in return for the rights to the sequestered carbon. The objective of the project is to develop a demonstration of the involvement of the farmer in carbon sequestration as an economic activity using the latest tree farming technology while providing greenhouse gas, wood production, and conservation benefits. This project was initiated in June 1997 and is being implemented gradually.

Plantas Eólicas S.R.L. Wind Facility

Project Lifetime: 21 years, 5 months

Total Estimated Greenhouse Gas Benefits: 222,537 metric tons of CO₂

The Plantas Eólicas S.R.L. Wind Facility Project involves the construction and operation of a privately owned and operated 20-megawatt wind facility near the town of Tejona in the Guanacaste province of Costa Rica. The facility has been in operation since June 1996. Electricity generated by the plant is being sold to the Costa Rican Institute of Electricity to meet a portion of Costa Rica's energy demand. Because this generation displaces electricity that would have otherwise been generated by existing thermal plants, it reduces greenhouse gas emissions from fossil fuel combustion.

Territorial and Financial Consolidation of Costa Rican National Parks and Biological Reserves

Project Lifetime: 25 years

Total Estimated Greenhouse Gas Benefits: 57,467,270 metric tons of CO₂

The Territorial and Financial Consolidation of Costa Rican National Parks and Biological Reserves Project will transfer to the Costa Rican Ministry of Environment and Energy primary forest, secondary forest, and pasture lands that have been declared National Parks or Biological Reserves but have not been registered in the National Property Registry as part of the Forest Patrimony of the State. Until the registration process has been completed, these lands will remain under the management of their current owners and will be vulnerable to deforestation. The greenhouse gas benefits of the project accrue from the preservation of carbon stocks in the primary forest and from biomass growth (i.e., carbon sequestration) in the secondary forest and pasture. The project will also involve the construction of an Earth Center: a multidisciplinary development combining residential, commerce, and work activities to provide public education and entertainment and to promote ecotourism. Two previous USIJI projects, Project BIODIVERSIFIX and the protected area component of Project CARFIX: Sustainable Forest Management, have been incorporated into this project and are no longer reported as separate USIJI projects.

Tierras Morenas Windfarm Project

Project Lifetime: 20 years

Total Estimated Greenhouse Gas Benefits: 57,203 metric tons of CO₂

The Tierras Morenas Windfarm Project is a privately owned and operated 24-megawatt wind facility near the town of Tierras Morenas in the Guanacaste province of Costa Rica. Electricity generated by the plant is sold to the Costa Rican Institute of Electricity (ICE) to meet a portion of Costa Rica's energy demand. Because this generation displaces some electricity that would have otherwise been generated by existing thermal plants, it will reduce greenhouse gas emissions from fossil fuel combustion. The facility was completed and became operational in August 1999, and is expected to produce an estimated 76 gigawatt hours of electricity per year.

CZECH REPUBLIC

City of Decin: Fuel-Switching for District Heating

Project Lifetime: 26 years, 8 months

Total Estimated Greenhouse Gas Benefits: 607,150 metric tons of CO₂

The City of Decin: Fuel Switching for District Heating Project involves fuel-switching, cogeneration, and efficiency improvements at the Bynov District Heating Plant, located in Decin in the Czech Republic. The project has converted the plant from a coal (lignite) burning facility to a natural gas-fired plant, which provides both heat and potable hot water to local apartment blocks. A cogeneration facility for the production of steam and electricity has also been built, and improvements have been made to the distribution network to enhance the system's energy efficiency. On-site greenhouse gas emission reductions occur as a result of the fuel switch from lignite to natural gas and energy efficiency

improvements. Off-site greenhouse gas emission reductions occur because the new Bynov plant is a cogeneration facility with the ability to produce both electricity and heat, and thus, reduces electricity consumption from the national utility (CEZ) grid.

DJIBOUTI

The Assal Geothermal Power Project, Republic of Djibouti

Project Lifetime: 30 years

Total Estimated Greenhouse Gas Benefits: 4,448,977 metric tons of CO₂

The project entails drilling and completion of a wellfield that will deliver geothermal fluids at medium to high temperatures and pressures to a 30 MW (net) capacity power plant for conversion of the heat energy to electricity. The power generating facility will provide base load power to be purchased by Électricité de Djibouti for distribution to the Djibouti market, thereby displacing diesel and gas-fueled generation and avoiding the associated CO₂ emissions amounting to 153,414 metric tons per year. Additional capacity will be added as needed to meet market demand.

A 90 to 100 kilometer 132 kV transmission line from the Assal power plant to the City of Djibouti is presently not part of the project, although there has been some discussion that it may be in the future.

ECUADOR

Bilsa Biological Reserve

Project Lifetime: 30 years

Total Estimated Greenhouse Gas Benefits: 607,150 metric tons of CO₂

The Bilsa Biological Reserve Project in Ecuador will preserve 2,000 hectares of tropical rainforest through the purchase and incorporation of these lands into the newly created Bilsa Biological Reserve in the Montañas de Mache in the Esmeraldas province of Ecuador. By preventing the conversion of these lands to marginal cropland and cattle pasture, the project will avoid emissions of CO₂.

EL SALVADOR

Cemento de El Salvador, S.A. de C.V.

Project Lifetime: 12 years

Total Estimated Greenhouse Gas Benefits: 6,730,102 metric tons of CO₂

The Cemento de El Salvador, S.A. (CESSA) de C.V. project involves the installation of a new kiln at CESSA's facility, which is located in Metapán, Santa Ana, El Salvador. The installation of the new dry kiln replaces a wet kiln, which has been shut down. The old kiln used a wet process, which emitted about 1.14 metric tons of CO₂ per metric ton of clinker, while the new dry kiln emits 0.95 metric tons of CO₂ per metric ton of clinker. This reduction in CO₂ emissions is a result of the decrease in fuel oil consumption by the new dry kiln technology. The new kiln has a capacity of 2,200 metric tons per year

and was designed by F. L. Smidth. This system includes five stages, pre-calcination and tertiary air. This project became operational in September 1997

EQUATORIAL GUINEA

Environmentally Responsible Gas Processing Bioko Island

Project Lifetime: 25 years

Total Estimated Greenhouse Gas Benefits: 25,545,000 metric tons of CO₂

The Atlantic Methanol Production Company is constructing a methanol production facility adjacent to an existing gas processing facility on the northern coast of Bioko Island, Equatorial Guinea. Residue gas (dry methane) has been flared at the exit of the gas processing facility initially at a rate of approximately 88 million cubic feet per day (mmcf/d) to the current volume of approximately 125 mmcf/d. This flared gas will be converted by the new plant into methanol, which will be exported for sale on the international market.

The projected greenhouse gas reductions that result from the flared gas being manufactured into a useful product are 2.85 million metric tons of carbon dioxide equivalents per year for each year of the project. The project will monitor gas coming into the plant and methanol being produced. From this data, GHG emissions associated with the operation can be subtracted from the calculated GHG reductions. This project began in May 2001.

GUATEMALA

Matanzas Hydroelectric Project

Project Lifetime: 17 years

Total Estimated Greenhouse Gas Benefits: 1,156,194 metric tons of CO₂

This project will construct a 14-megawatt medium-head hydroelectric project with two power plants that will generate electricity by renewable resource (water), thereby displacing combustion of fossil fuels that would otherwise be used to generate electricity. Most of the power generated by the two sites will be sold to the Guatemalan national electric utility, Instituto Nacional de Electricidad (INDE). The average annual combined production is estimated at 82.4 gigawatt hours per year. Plant size and water flow rates indicate that the hydro facility on the Chilasco River will be operational 72% of the time; the hydro facility on the Matanzas River will be operational 64% of the time.

Rio Hondo II Hydroelectric Project (This Project is Inactive)

Project Lifetime: 20 years

Total Estimated Greenhouse Gas Benefits: 0 metric tons of CO₂

Rio Hondo II entails construction of a dam on the Rio Colorado and a 50-megawatt peaking hydroelectric power plant that is expected to generate 142 gigawatt hours annually to the grid, offsetting 141 thousand metric tons of CO₂ per year, or 2.3 million metric tons over the project's planned 20-year lifetime. Rio Hondo II will be located in the sub-basin of the Rio Colorado, on the Sierra de las Minas range approximately 140 km to the east of Guatemala City in the Department of Zacapa.

Santa Teresa Hydroelectric Project

Project Lifetime: 15 years

Total Estimated Greenhouse Gas Benefits: 1,241,130 metric tons of CO₂

The Santa Teresa Hydroelectric project plans to construct a hydroelectric dam, which will generate electricity by a non-greenhouse gas generating renewable resource, water. Greenhouse gas emissions will be reduced by displacing the combustion of fossil fuels that are currently used in generating electricity with the hydroelectric power generated. This project will construct a 15-megawatt, medium head hydroelectric dam. This will be constructed on the Rio Polochic and will be constructed within the boundaries of three farms (Fincas San Enrique, El Carmen, and Chentum near Tucura, Alta Verapez) which are owned by AgroPolochic. The average annual production is estimated at 75 gigawatt hours/year.

HONDURAS

Bio-Gen Biomass Power Generation Project, Phase I

Project Lifetime: 21 years

Total Estimated Greenhouse Gas Benefits: 2,373,940 metric tons of CO₂

The Bio-Gen Biomass Power Generation Project (Phase I) involves construction and operation of a privately owned and operated 15 megawatt biomass waste-to-energy plant in Guaimaca, Honduras. The plant will utilize wood wastes generated from forest products processing in the region. The wastes, which include sawmill and logging residues, are currently burned under uncontrolled conditions or disposed of in rivers or other low-lying areas. Power produced by the plant will be sold to the national utility, Empresa Nacional de Energía Eléctrica, and will displace electricity and associated greenhouse gas emissions that would have been produced by fossil-fuel burning facilities.

Bio-Gen Biomass Power Generation Project, Phase II

Project Lifetime: 21 years

Total Estimated Greenhouse Gas Benefits: 2,373,940 metric tons of CO₂

The Bio-Gen Biomass Power Generation Project (Phase II) involves construction and operation of a privately owned and operated 15 megawatt biomass waste-to-energy plant in Sava, Honduras. The plant will utilize wood wastes generated from forest product processing and palm oil production in the region.

The wastes, which include sawmill, logging, and palm tree plantation residues, are currently burned under uncontrolled conditions, disposed of in rivers or other low-lying areas, or left to decay in place. Power produced by the plant will be sold to the national utility, Empresa Nacional de Energía Eléctrica, and will displace electricity and associated greenhouse gas emissions that would have been produced by fossil fuel-burning facilities.

Solar-Based Rural Electrification in Honduras

Project Lifetime: 24 years

Total Estimated Greenhouse Gas Benefits: 34,398 metric tons of CO₂

The Solar-Based Rural Electrification project will provide solar-based electrification to between 2,000 and 7,000 rural Honduran households not served by the electrical grid system. This technology will replace kerosene lamps with photovoltaic (PV)-powered electric lights and, thus, eliminate CO₂ emissions from kerosene combustion. In addition, charging batteries with stand-alone PV modules will displace the practice of charging batteries on grid electricity. Approximately 3,000 PV systems have been installed in Honduran homes. Avoidance of future use of grid electricity constitutes another possible means of mitigating climate change.

INDIA

The Bagepalli Project: Community-Based Fruit Tree Orchards for CO₂ Sequestration

Project Lifetime: 40 years

Total Estimated Greenhouse Gas Benefits: 436,640 metric tons of CO₂

This Community Based Fruit Tree Orchards for CO₂ Sequestration project is a voluntary greenhouse gas mitigation activity that plans to afforest/reforest degraded agricultural lands with decentralized small-scale mango and tamarind fruit tree orchards, bordered with teak trees. Mango, tamarind, and teak are among the heartiest and most productive trees crops of south India. The project will be implemented by the local people on small parcels (less than 1 hectare) of their private land totaling approximately 2500 sites. The goal of the project is to sequester CO₂, while improving the local environment and socio-economic condition of the communities in the region.

INDONESIA

Reduced Impact Logging for Carbon Sequestration in East Kalimantan

Project Lifetime: 40 years

Total Estimated Greenhouse Gas Benefits: 134,379 metric tons of CO₂

This project will implement Reduced-Impact Logging (RIL)^(a) techniques to reduce net greenhouse gas emissions associated with logging practices in East Kalimantan on the island of Borneo in Indonesia. The

(a) Reduced Impact Logging, or RIL, is being used by COPEC as a service mark for their particular program.

project involves the development of guidelines and procedures for implementing RIL techniques, on-site training in directional felling, and the implementation of RIL techniques on a total of 600 hectares of forested land. Of the total project area, 300 hectares are located in the Kiani Lestari forest concession, and 300 hectares in the Bulungan Forest Reserve of the Inhutani II concession.

MALI

Energy Center for Mali

Project Lifetime: 20 years

Total Estimated Greenhouse Gas Benefits: 354 metric tons of CO₂ and 3 metric tons of CH₄

This project seeks to design and implement energy centers that will serve as a first step in the introduction of energy efficient and environmentally friendly technologies and support services in peri-urban and rural African communities. These centers will serve several functions, including demonstration of appropriate, sustainable household energy technologies. PV systems will be used to replace kerosene for lighting and a significant amount of diesel fuel used for operating generators for battery charging and the operation of small machines and equipment. Liquid Propane Gas will be used to replace the kerosene, wood, and charcoal used for cooking, and passive solar systems will be used to replace the wood, charcoal, and kerosene used for water heating. The greenhouse gas benefit estimate assumes emissions associated with a typical household for 20 years.

MAURITIUS

Solar Electric Generation for the Island of Rodrigues

Project Lifetime: 35 years

Total Estimated Greenhouse Gas Benefits: 16,400 metric tons of CO₂

The proposed project involves installing a 2,600 square-meter solar array (300 kilowatts) to displace diesel generation on the Island of Rodrigues, approximately 400 kilometers east of Mauritius. By displacing 665,676 kWh of output from a 2,500 kW diesel generator, the island's main source of power, the project will reduce greenhouse gas emissions by an estimated 470 metric tons of CO₂ per year. Total emissions reductions over the 35-year project life will be 16,400 metric tons of CO₂.

MEXICO

APS/CFE Renewable Energy Mini Grid Project

Project Lifetime: 30 years, 7 months

Total Estimated Greenhouse Gas Benefits: 7415 metric tons of CO₂

The APS/CFE Renewable Energy Mini Grid Project involves the development of a hybrid power supply system, utilizing solar, wind, and diesel capacity, to replace a 205-kW diesel generator in the town of San Juanico, Baja California Sur State), Mexico. The project was developed by two utilities in the United States—the Arizona Public Service Company and the Niagara Mohawk Power Corporation and the Comisión Federal de Electricidad, the national utility of Mexico. Electricity generated by the hybrid system extended electrical service from the previous 3 hours per day to 24 hours per day, and displaces electricity generated purely by diesel combustion and the associated greenhouse gas emissions.

Community Silviculture in the Sierra Norte of Oaxaca

Project Lifetime: 30 years

Total Estimated Greenhouse Gas Benefits: 3,065,333 metric tons of CO₂

The Community Silviculture in the Sierra Norte of Oaxaca Project will improve various aspects of existing silviculture and forest protection activities in six communities in rural southern Mexico. The project encompasses 49,027 hectares of land, of which 31,847 hectares are closed forest. The remaining land is a mix of open forest, agroforestry, permanent and shifting agriculture, degraded or grazed land, fallow, restored forest, and tree plantations. The main project activities are the rehabilitation of degraded forest through agroforestry and plantation establishment, and the prevention of further degradation of standing forest by controlling pests, disease, and fire. The project involves other actions, including improved forest management (e.g., increased growth and reduced impact logging); increased agricultural efficiency; and increased wood-use efficiency. The project's greenhouse gas benefits accrue from conservation of existing carbon stocks and increased carbon sequestration on forest and agricultural land.

Project *Salicornia*: Halophyte Cultivation in Sonora

Project Lifetime: 59 years, 7 months

Total Estimated Greenhouse Gas Benefits: 3255 metric tons of CO₂

Project *Salicornia* is Phase I of a two-phase project to cultivate a native halophyte (a salt-tolerant euphorb plant, *Salicornia bigelovii*) in a coastal desert region of northwest Mexico. Phase I is designed to research and demonstrate *Salicornia* cultivation on 30 hectares of coastal land. The estimated greenhouse gas benefits of the project result from carbon accumulation and storage in the sandy soil. If Phase II is initiated, the cultivated crop could potentially serve as a valuable source of biomass material and food (cooking oil and fresh vegetable products), and could generate income for the local population.

Scolec Té: Carbon Sequestration and Sustainable Forest Management in Chiapas

Project Lifetime: 30 years

Total Estimated Greenhouse Gas Benefits: 55,000 to 1,210,000 metric tons of CO₂

Scolec Té is a forestry and land-use project located in northeast Chiapas, Mexico. This project will assist farmers primarily in nine Mayan indigenous communities located in highland and lowland ecoregions with developing small agroforestry and forestry enterprises. The greenhouse gas benefits of the project accrue from forest growth (i.e., carbon sequestration) that would not have occurred in the absence of project activities. In addition to reducing forest degradation and conversion to agriculture and improving the sustainability of local farming systems, this project is expected to contribute to the social and economic welfare of these communities as well as the preservation of the region's rich biodiversity. This project has been operational since June 1997.

NICARAGUA

El Hoyo-Monte Galan Geothermal Project

Project Lifetime: 35 years

Total Estimated Greenhouse Gas Benefits: 14,119,649 metric tons of CO₂

The El Hoyo-Monte Galan Geothermal Project involves the construction and operation of a 75-megawatt geothermal plant that is designated to meet the demand for increased electricity supply in Nicaragua. Since this demand would otherwise be met by using diesel fuel, which is the predominant and also the most inexpensive electricity fuel source in Nicaragua, the flash-steam project reduces CO₂ emissions associated with fossil fuel combustion. The 75-megawatt unit of the geothermal project is expected to come on line in 2004. An additional 35-megawatt unit may be constructed in 2005, if a larger reservoir of geothermal resources is confirmed at the project site. The emission reduction estimates are based on displacement of a diesel-fueled unit with a geothermal unit of equal capacity.

PANAMA

Commercial Reforestation in the Chiriquí Province (This Project is Inactive)

Project Lifetime: 25 years

Total Estimated Greenhouse Gas Benefits: 0 metric tons of CO₂

The Commercial Reforestation in the Chiriquí Province will reforest 500 hectares of currently degraded lands in the Chiriquí Province in the western region of Panama. The project area will be planted with teak (*Tectona grandis*), established as a certified teak plantation, and managed in a sustainable manner as a source of high quality hardwood. The project is estimated to result in net carbon sequestration through tree growth and production of durable wood products.

PERU

The Central Selva Climate Action Project

Project Lifetime: 30 years

Total Estimated Greenhouse Gas Benefits: 13,338,736 metric tons of CO₂

The Central Selva Climate Action Project is a voluntary greenhouse gas mitigation pilot initiative that will seek to demonstrate the use and protection of carbon sinks as a credible, accountable climate change mitigation strategy. The Project will seek to reach a balance between greenhouse gas mitigation, forest protection, reforestation and sustainable agricultural production. The Central Selva Climate Action Project has three mitigation components: *Component A* – Forest Protection; *Component B* – Reforestation of Degraded Lands; *Component C* – Leakage Prevention through Agroforestry, Agricultural Technical Assistance and Community Education. Additional funds will be provided for general Project activities, including long-term monitoring and verification of Project measures, and for the Government of Peru to cover costs related to Project oversight. The Central Selva Climate Action Project will take place in the Junin and Pasco Departments of central Peru, in the Chanchamayo and Oxapampa Provinces of each department, respectively. Project activities cover an area of 109,500 hectares.

PHILIPPINES

Energy Efficient Street Lighting Project in the Philippines

Project Lifetime: 25 years

Total Estimated Greenhouse Gas Benefits: 36,300 metric tons of CO₂

The Energy-Efficient Streetlighting Project (EESP) will convert 5,219 mercury vapor streetlights in the city of Cagayan de Oro, Mindanao, the Philippines to high-pressure sodium lamps, thus decreasing electricity consumption per lamp by 45-50 percent. The retrofit project will save more than 42 million kilowatt-hours of electricity over the 25-year lifetime of the project, including decreased direct electricity consumption by the streetlights and avoided transmission and distribution (T&D) losses.

RUSSIAN FEDERATION

District Heating Renovation in Lytkarino

Project Lifetime: 10 years

Total Estimated Greenhouse Gas Benefits: 485,670 metric tons of CO₂

The District Heating Renovation in Lytkarino Project will implement energy efficiency improvements for rehabilitation and modernization of the central heating system of Lytkarino, a small city southeast of Moscow. The project will renovate the system by installing energy-saving measures and by replacing old equipment with new, energy-efficient equipment. All heat in the city is generated by natural gas-fired equipment. The increases in efficiency produce a decrease in natural gas and electricity consumption and, hence, reduce greenhouse gas emissions. The outdated and inefficient district heating systems currently operating in Russia represent a significant source of greenhouse gas emissions.

Improving District Heating Efficiency in Metallurgichesky District of Cheliabinsk

Project Lifetime: 10 years

Total Estimated Greenhouse Gas Benefits: 828,269 metric tons of CO₂

The Improving District Heating Efficiency in the Metallurgichesky District of Cheliabinsk Project will implement energy efficiency improvements for rehabilitation and modernization of the central heating system. The project will renovate the system by installing energy-saving measures and by replacing old equipment with new, energy-efficient equipment. All heat in the city is generated by natural gas-fired equipment. The increases in efficiency produce a decrease in natural gas and electricity consumption and, hence, reduce greenhouse gas emissions. The outdated and inefficient district heating systems currently operating in Russia represent a significant source of greenhouse gas emissions.

Reforestation in Vologda (This Project is Inactive)

Project Lifetime: 60 years

Total Estimated Greenhouse Gas Benefits: 0 metric tons of CO₂

This project is a reforestation project located in Vologda, about 300 miles northeast of Moscow. Two thousand hectares of collective state farmland adjacent to and within the Russky Sever National Park will be converted from hay fields back to forest. The land will be removed from hay production, and allowed to regenerate naturally, supplemented initially by planting on about 15 percent of the area. If regeneration proceeds slowly, additional planting or soil preparation will be implemented during the third year of the project. Greenhouse gas benefits accrue from forest carbon sequestration that would not have occurred in the absence of project activities.

RUSAFOR–Saratov Afforestation Project

Project Lifetime: 40 years (Sites I and II); 60 years (Sites III and IV)

Total Estimated Greenhouse Gas Benefits: 292,699 metric tons of CO₂

The Russian Federation/USA Forestry and Climate Change Project–Saratov Afforestation Project (RUSAFOR–SAP) was conceived as a Russian-American forest carbon offset joint implementation demonstration project. The purpose of the project is to evaluate the biological, operational, and institutional opportunities to manage a Russian forest plantation as a carbon sink. The project established plantations on four sites in the Russian Federation, totaling 900 hectares. The sites were composed of marginal agricultural land and previously burned forest stands. Greenhouse gas benefits accrue from avoided CO₂ emissions (due to avoided soil erosion and biomass decay), and from carbon sequestration (due to tree growth and soil carbon accumulation).

RUSAGAS: Fugitive Gas Capture Project

Project Lifetime: 27 years, 7 months

Total Estimated Greenhouse Gas Benefits: 1,263,500 metric tons of CH₄ for an estimated 26,533,500 metric tons of CO₂ equivalent

The RUSAGAS Project will reduce greenhouse gas emissions by capturing fugitive natural gas emissions at two compressor stations located in Pallasovka and Saratov, Russian Federation. The project, which has a lifetime of 27 years, is implementing a program to seal the leaking valves at the compressor stations, and thereby reduce methane (CH₄) emissions that would occur otherwise.

Zelenograd District Heating System Improvements

Project Lifetime: 30 years

Total Estimated Greenhouse Gas Benefits: 1,575,840 metric tons of CO₂

The Zelonograd District Heating System Improvements Project is an energy efficiency project in which new equipment will be installed in the district heating system of Zelenograd, Russian Federation. New controls, valves, pumps, and heat exchangers will be installed at 28 sub-stations and one boiler facility. These improvements will allow better control of the space and hot water heating supplied by the district heating system, which will reduce natural gas consumption and therefore, greenhouse gas emissions.

SOUTH AFRICA

Guguletu Eco-Homes Project

Project Lifetime: 50 years

Total Estimated Greenhouse Gas Benefits: 40,000-50,000 metric tons of CO₂

This project proposes to construct 6,000 energy-efficient Eco-Homes in the community of Guguletu, Republic of South Africa. The project represents an expansion of a pilot effort involving the US/RSA Bi-National Commission to design and build Eco-Homes to replace standard low-cost homes initially subsidized by the Reconstruction and Development Program of the previous Mandela Administration. The estimated project life is 50 years and the CO₂ benefits are estimated to range from 40,000-50,000 metric tons from reduced space heating. The project will also generate non-greenhouse gas environmental benefits by reducing local air pollution and improving indoor air quality. The project will contribute to technology transfer and capacity building by training local community members in all construction phases of Eco-Homes and to understanding the behavioral aspects of living in energy efficient homes in South Africa. A “green” loan program is being proposed to provide low-interest loans for additional energy-efficient measures.

SRI LANKA

SELCO-Sri Lanka Rural Solar Electrification Project

Project Lifetime: 29 years

Total Estimated Greenhouse Gas Benefits: 5,684,448 metric tons of CO₂

This project involves marketing solar home systems (SHS) as an alternative to the use of kerosene lamps for lighting and the use of diesel-electric charging of lead-acid batteries for powering small home appliances in Sri Lanka. Each SHS will consist of a 12-volt photovoltaic panel, a battery and charge controller, compact fluorescent lamps, and hardware. The project will expand on successful pilot efforts in Sri Lanka to provide SHS demonstration and installation services, consumer financing, and technical assistance to rural homeowners who lack access to grid electricity. The project team expects to install 812,000 SHS over a period of 10 years, and each SHS will generate greenhouse gas benefits for 20 years. The project will generate greenhouse gas benefits by displacing kerosene lamps and associated emissions of CO₂.

UGANDA

Energy Center for Uganda

Project Lifetime: 20 years

Total Estimated Greenhouse Gas Benefits: 152 metric tons of CO₂ equivalent

This project will establish the first of a possible chain of neighborhood energy and communications convenience stores in suburban and rural Ugandan communities. The location of the Energy Center has not yet been determined; however, Teso, Gulu, and Bagunda are under consideration.

The Energy Center would introduce a range of new energy and communications technologies for household and community use. These new technologies would displace wood fuel, kerosene and diesel; improve efficiency of energy used for cooking, lighting, refrigeration and battery recharging; and provide access to telecommunications, computer and information technologies. Greenhouse gas reductions for the pilot, corresponding to a single household with eight people, are expected to be approximately 152 metric tons of CO₂ equivalent over the 20-year project life.

The Solar Light for the Churches of Africa: Solar Electrification for Uganda Project

Project Lifetime: 20 years

Total Estimated Greenhouse Gas Benefits: 52,600 metric tons of CO₂

The project will provide electric light and radio to areas of rural Uganda where electric grid extension is unlikely. The goal is to electrify 5,000 churches, schools, health clinics, community centers and homes over the next two years. Each unit will be provided a solar lighting kit powered by a 60-watt roof-mounted solar module, with a battery for nighttime use.

By replacing the existing kerosene lanterns, each system will save approximately 526 kg of CO₂ per installation per year. The estimated reductions of CO₂ total approximately 52,600 metric tons over the 20-year lifetime of the project.

IV. Groundrules and Project Criteria for USIJI

Groundrules

The following describes the U.S. Initiative on Joint Implementation (USIJI), which was established as a pilot program.

Section I—Purpose

The purpose of the pilot program shall be to:

- A. Encourage the rapid development and implementation of cooperative, mutually voluntary, cost-effective projects between the U.S. and foreign partners aimed at reducing or sequestering emissions of greenhouse gases, particularly projects promoting technology cooperation with, and sustainable development in, developing countries and countries with economies in transition.
- B. Promote a broad range of cooperative, mutually voluntary projects to test and evaluate methodologies for measuring, tracking and verifying costs and benefits;
- C. Establish an empirical basis to contribute to the formulation of international criteria for joint implementation.
- D. Encourage private sector investment and innovation in the development and dissemination of technologies for reducing or sequestering emissions of greenhouse gases; and
- E. Encourage participating countries to adopt more complete climate action programs, including national inventories, baselines, policies and measures, and appropriate specific commitments.

Section II—Evaluation and Reassessment of Pilot Program

The pilot program shall be evaluated and reassessed within two years of its inception or within six months of adoption of international criteria for joint implementation by the Conference of the Parties to the United Nations Framework Convention on Climate Change, whichever is earlier.

Section III—Eligible Participants

A. Domestic

- (1) Any U.S. citizen or resident alien;
- (2) Any company, organization or entity incorporated under or recognized by the laws of the United States, or group thereof; or
- (3) Any U.S. federal, state or local government entity.

B. Foreign

- (1) Any country that has signed, ratified or acceded to the United Nations Framework Convention on Climate Change;
- (2) Any citizen or resident alien of a country identified in B(1) of this section;
- (3) Any company, organization or entity incorporated under or recognized by the laws of a country identified in B(1) of this section, or a group thereof; or
- (4) Any national, provincial, state, or local government entity of a country identified in B(1) of this section.

Section IV—Evaluation Panel

A. An Evaluation Panel is hereby established.

B. The Evaluation Panel shall consist of eight members, of whom:

- (1) One shall be an employee of the Department of Energy, who shall serve as Co-Chair;
- (2) One shall be an employee of the Environmental Protection Agency, who shall serve as Co-Chair;
- (3) One shall be an employee of the Agency for International Development;
- (4) One shall be an employee of the Department of Agriculture;
- (5) One shall be an employee of the Department of Commerce;
- (6) One shall be an employee of the Department of the Interior;
- (7) One shall be an employee of the Department of State; and

(8) One shall be an employee of the Department of the Treasury.

C. The Panel shall be responsible for:

- (1) Advising and assisting prospective U.S. and foreign participants on the technical parameters (including with respect to baselines, measuring and tracking) of projects submitted for inclusion in the USIJI;
- (2) Accepting project submissions from eligible U.S. participants and their foreign partners;
- (3) Reviewing and evaluating project submissions, including baseline projections;
- (4) Approving or rejecting project submissions for inclusion in the USIJI, based on criteria contained in Section V;
- (5) Providing written reasons for its decisions, which shall be made publicly available, within 90 days of receipt of a complete submission or resubmission;
- (6) Certifying emissions reduced or sequestered estimated to result from projects;
- (7) Developing operational modalities for the implementation of the Program; and
- (8) Preparing an annual report of its activities, including a summary of approved projects.

Section V—Criteria

A. To be included in the USIJI, the Evaluation Panel must find that a project submission:

- (1) Is acceptable to the government of the host country;
- (2) Involves specific measures to reduce or sequester greenhouse gas emissions initiated as the result of the U.S. Initiative on Joint Implementation, or in reasonable anticipation thereof;
- (3) Provides data and methodological information sufficient to establish a baseline of current and future greenhouse gas emissions:
 - (a) In the absence of the specific measures referred to in A(2) of this section; and
 - (b) As the result of the specific measures referred to in A(2) in this section;
- (4) Will reduce or sequester greenhouse gas emissions beyond those referred to in A(3)(a) in this section, and if federally funded, is or will be undertaken with funds in excess of those available for such activities in fiscal year 1993;

- (5) Contains adequate provisions for tracking the greenhouse gas emissions reduced or sequestered resulting from the project, and on a periodic basis, for modifying such estimates and for comparing actual results with those originally projected;
- (6) Contains adequate provisions for external verification of the greenhouse gas emissions reduced or sequestered by the projects;
- (7) Identifies any associated non-greenhouse gas environmental impacts/benefits;
- (8) Provides adequate assurance that greenhouse gas emissions reduced or sequestered over time will not be lost or reversed; and
- (9) Provides for annual reports to the Evaluation Panel on the emissions reduced or sequestered, and on the share of such emissions attributed to each of the participants, domestic and foreign, pursuant to the terms of voluntary agreements among project participants.

B. In determining whether to include projects under the USIJI, the Evaluation Panel shall also consider:

- (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 U.S. participants are emitters of greenhouse gases within the United States and, if so, whether they are taking measures to reduce or sequester such emissions; and
- (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 baselines 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.