

**IMPLEMENTING ARRANGEMENT
BETWEEN
THE UNITED STATES OF AMERICA
AND
THE FEDERATIVE REPUBLIC OF BRAZIL
FOR COOPERATION IN THE AREA OF ENERGY TECHNOLOGY**

The Government of the United States of America and the Government of the Federative Republic of Brazil; hereinafter referred to as the Parties;

Having a mutual interest in exchanging information, experience and points of view regarding the development and analysis of energy information, energy regulation, energy planning, development of strategies to establish and promote market-based systems in renewable energy and energy efficiency technologies, and fossil energy technologies;

Recognizing the contribution of renewable energy and energy efficiency technologies and fossil energy technologies to increasing energy diversity, addressing environmental concerns, enhancing energy security; and

Desiring to cooperate in promoting rural electrification and sustainable development, and expanding opportunities for international trade in renewable energy and energy efficiency technologies between the United States and Brazil:

HEREBY AGREE AS FOLLOWS:

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ARTICLE I

SCOPE AND OBJECTIVE

- A. This Implementing Arrangement is subject to the terms and conditions of the Agreement Relating to Cooperation in Science and Technology between the United States of America and the Federative Republic of Brazil, signed on February 6, 1984, and was renewed by the Amendment and Extension Protocol signed on March 21, 1994, hereinafter referred to as the Umbrella Agreement.
- B. The objective of this Implementing Arrangement is to establish a Parties in the field of energy technology on the basis of reciprocity and mutual benefit.
- C. For the purposes of this Implementing Arrangement the Department of Energy of the United States of America (DOE) and the Ministry of Mines and Energy of the Federative Republic of Brazil (MME) are the Executing Bodies.

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ARTICLE II

AREAS OF COOPERATION

Cooperation under this Implementing Arrangement may be undertaken in the following areas, including the areas detailed in the Annexes I, II, and III:

- A. Efficient and advanced energy technologies;
- B. Coal and advanced power systems;
- C. Environmental technologies;
- D. Renewable energy technologies;
- E. Energy information, planning and regulations;
- F. Basic energy research; and
- G. Such other areas as may be mutually agreed by the Executing Bodies in writing.

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ARTICLE III
FORMS OF COOPERATION

Cooperation under this Implementing Arrangement may include:

- A. Exchanges of information and data on scientific and technical activities, developments, practices, methods and results;
- B. Exchange of scientists, engineers and other specialists for agreed periods of time for participation in experiments, analysis, design and other research and development activities at research centers, laboratories, engineering offices and other facilities and enterprises of the Executing Bodies, or their agents;
- C. Short-term visits by staff or assignments of staff;
- D. Organization of, and participation in, seminars, workshops and other meetings;
- E. Exchange of and provision of samples, materials, instruments and components for experiments, testing, and evaluation;

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- F. Execution of joint studies, projects or experiments, including joint design, construction and operational activities; and
- G. Other forms of cooperation as mutually agreed by the Executing Bodies in writing.

ARTICLE IV

MANAGEMENT

- A. DOE and MME will each name one Coordinator to supervise activities under this Implementing Arrangement. The Coordinators shall approve and monitor all activities carried out under this Implementing Arrangement and shall assess opportunities for expanding cooperation.
- B. The Coordinators may establish subcommittees to facilitate the implementation of projects initiated under this Implementing Arrangement.
- C. The Coordinators shall meet periodically, alternately in the United States and Brazil, to evaluate all aspects of cooperation carried out under this Implementing Arrangement.

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ARTICLE V

ADDITIONAL ORGANIZATIONS

Each Executing Body shall encourage and facilitate the development of direct contacts and cooperation between governmental agencies and other public and private institutions in their respective countries to advance the objectives of this Implementing Arrangement.

ARTICLE VI

PROJECT DOCUMENTS

To undertake a cooperative activity as described in Article III(F), the Executing Bodies shall conclude a Project Document. Each such Project Document shall include detailed provisions for carrying out the specific form of cooperative activity and shall cover such matters as technical scope, management, assignment of staff and exchange of equipment, total costs, cost sharing, and schedule as appropriate.

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ARTICLE VII

EXCHANGE OF EQUIPMENT

- A. Each Executing Body may provide equipment to the other Executing Body to be utilized in a joint activity. The sending Executing Body shall promptly supply a detailed list of the equipment to be provided, together with the relevant specifications and appropriate technical documentation related to use, maintenance, and repair of the equipment to the receiving Executing Body.
- B. Unless otherwise agreed to by the Executing Bodies in writing, the sending Executing Body shall retain title to equipment and spare parts provided to the other Executing Body, and the receiving Executing Body shall return such property to the sending Executing Body upon completion of the joint activity.
- C. Equipment provided pursuant to this Implementing Arrangement shall be brought into operation at the host establishment only by agreement of the Executing Bodies.
- D. Equipment provided pursuant to this Implementing Arrangement

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for use in joint activities shall be considered to be scientific, not having a commercial character, and each Executing Body shall make its best effort to obtain duty free entry. The receiving Executing Body shall use its best efforts to facilitate entry and exit of equipment and spare parts of the other Executing Body into, and from, its territory.

E. Unless otherwise agreed, the sending Executing Body shall be responsible, and shall pay expenses, for the transport of equipment and materials by plane or ship to an authorized port of entry of the receiving Executing Body's country convenient to the ultimate destination, and for the safekeeping of equipment and insurance en route.

F. Except when formally stated in a Project Document to the Implementing Arrangement, the host establishment shall provide the necessary premises for the equipment provided, and shall provide for utilities such as electric power, water and gas. The host establishment normally shall provide materials to be tested, in accordance with technical requirements mutually agreed upon by the Executing Bodies.

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ARTICLE VIII
PERSONNEL EXCHANGES

- A. Whenever an exchange, or assignment of personnel is contemplated, each Executing Body shall ensure the selection of adequate personnel with skills and competence necessary to conduct the activities planned under this Implementing Arrangement. Each such exchange of personnel shall be mutually agreed to in advance by an exchange of letters between the Executing Bodies, referencing this Implementing Arrangement and pertinent intellectual property provisions.
- B. Each Executing Body shall be responsible for the salaries, insurance, and allowances to be paid to its staff or its contractors.
- C. Each Executing Body shall pay for the travel and living expenses of its staff or its contractors when staying at the establishment of the host Executing Body, unless otherwise agreed.
- D. Each Executing Body shall assist the other Executing Body's staff or its contractors (and their families) to arrange

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adequate accommodations on a mutually agreeable, reciprocal basis.

- E. Each Executing Body shall assist the staff of the other Executing Body or its contractors as regards administrative formalities.
- F. The staff of each Executing Body or its contractors shall conform to the general rules of work and safety regulations in force at the host establishment.

ARTICLE IX

AVAILABLE INFORMATION

- A. The Executing Bodies shall exchange information necessary to carry out this Implementing Arrangement. All information arising under this Implementing Arrangement will be promptly exchanged between the Executing Bodies.
- B. Information transmitted by one Executing Body to the other Executing Body under this Implementing Arrangement shall be accurate to the best knowledge and belief of the

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transmitting Executing Body, but the transmitting Executing Body does not warrant the suitability of the information transmitted for any particular use or application by the receiving Executing Body or by any third party.

ARTICLE X

INTELLECTUAL PROPERTY; BUSINESS-CONFIDENTIAL INFORMATION

The protection and allocation of intellectual property and the treatment of business-confidential information created or furnished in the course of cooperative activities under this Implementing Arrangement will be governed by the provisions of Annex I of the Agreement to Amend and Extend the Agreement between the United States of America and the Federative Republic of Brazil Relating to Cooperation in Science and Technology, referred to in Article I.

ARTICLE XI

GENERAL PROVISIONS

A. Unless otherwise agreed in writing, costs resulting from

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activities under this Implementing Arrangement shall be the responsibility of the Executing Body that incurs them.

- B. Each Executing Body shall conduct the activities provided for in this Implementing Arrangement subject to its applicable laws and regulations and shall provide resources subject to the availability of appropriated funds and personnel.
- C. Each Executing Body shall use its best efforts to obtain all permits and licenses required by law to carry out this Implementing Arrangement.
- D. Any dispute concerning the interpretation of this Implementing Arrangement shall be settled by mutual agreement of the Parties.

ARTICLE XII

FINAL PROVISIONS

- A. This Implementing Arrangement shall enter into force upon signature and shall remain in force for five (5) years or so

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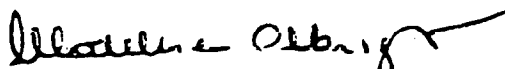
long as the Umbrella Agreement remains in force, whichever is shorter. Unless one of the Parties notifies the other Party in writing of its intention to terminate this Implementing Arrangement at least three months before its expiration, this Implementing Arrangement shall be automatically extended for another 5-year period and may be amended or extended by written agreement of the Parties so long as the Umbrella Agreement remains in force.

- B. The Executing Bodies may continue all activities initiated but not completed at the expiration or termination of this Implementing Arrangement until their completion as mutually agreed in writing by the Parties.
- C. Either Party may terminate this Implementing Arrangement at any time upon six-months advance written notification. Such termination shall be without prejudice to the rights that may have accrued to either Party under this Implementing Arrangement up to the date of termination.

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DONE at Brasilia, D.F., in duplicate, this 14th day of
October, 1997 in the English and Portuguese languages, each text
being equally authentic.

FOR THE GOVERNMENT OF THE
UNITED STATES OF AMERICA:

A handwritten signature in dark ink, appearing to read "Madeleine Albright", written over a horizontal line.

FOR THE GOVERNMENT OF THE
FEDERATIVE REPUBLIC OF BRAZIL:

A handwritten signature in dark ink, appearing to read "F. Collor", written over a horizontal line.

**ANNEX I
FOR COOPERATION IN THE
FIELD OF COAL AND POWER SYSTEMS**

DOE and MME, as Executing Bodies, have a mutual interest in exchanging experience and views on coal and power systems, which includes clean coal research, development, and demonstration technologies, and in pursuing general collaboration in these areas.

The Parties recognize the contributions of fossil fuel technologies, including advanced power systems technology development, to fuel diversity, enhancing mutual environmental protection and energy security, and expanding opportunities for international trade.

The Parties will mutually benefit from collaboration in the deployment and use of coal and power systems.

MANAGEMENT

1. Each Executing Body shall designate one Program Coordinator for this Annex; these Program Coordinators shall provide technical management and coordinate activities under this Annex. Each task undertaken under this Annex shall be covered by a work plan that is approved by both of the Coordinators, each of whom shall then designate a Co-Project Officer for that specific task.

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SCOPE

2. The Executing Bodies agree to cooperate in a manner that will facilitate joint activities and market deployment of fossil energy technologies in an environmentally responsible way.

Pursuant to Article II of the Implementing Arrangement, these joint activities may include, but need not be limited to:

- A. Consultations by senior program officials to permit joint planning of cooperative projects for which the participating organizations agree to share the tasks, the costs, or both; (B) Joint technical evaluation of fossil energy technologies. In recognition of the important role of coal in the Brazilian fuel mix, the Parties shall cooperate to facilitate the application of these technologies to resolve issues concerning coal use;
- B. Joint technical evaluation of fossil energy technologies. In recognition of the important role of coal in the Brazilian fuel mix, the Parties shall cooperate to facilitate the application of these technologies to resolve issues concerning coal use;
- C. Exchange of technical and economic data, including clean coal data regarding power systems, fuel

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upgrading, and environmental control options, and co-sponsorship of conferences and seminars specifically related to:

- Advanced power systems, combustion technologies, and developmental components and sub-systems, such as air-blown gasification, pressurized fluidized-bed combustion, externally fired combined-cycle systems, hot-gas cleanup, and the combustion of coal-water mixtures;
- Advanced coal preparation, conversion and utilization technologies, such as the manufacture of ultraclean coal-water mixtures, coal-water slurry transport systems, and direct and indirect coal liquefaction processes;
- Environmental control technologies, such as wet and dry SO₂ scrubbers, NO_x reduction processes, including low NO_x burners and reburning technologies, combined SO₂ and NO_x control systems, selective catalytic and non-catalytic reduction (SCR and SNCR), high-efficiency particulate removal systems, and processes for by-product and ash utilization and/or waste management;

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- Environmental monitoring technologies, including continuous emission monitors, and computer modeling and assessment techniques for determining potential impacts, and alternative pollution prevention and control and waste minimization opportunities supportive of sustainable development and economic growth;
 - Exchange information on environmental legislative approaches and standards consistent with and supportive of coal use and environmental protection;
 - Environmental improvements with regard to coal production, handling, and transportation, including efficiency enhancement and cost-effective modern analytical devices and mechanisms for decision making and operational infrastructures.
- D. Exchange of information including operating experience regarding fuel cells and gas turbines, and co-sponsorship of conferences and seminars specifically related to:
- The distributed power applications of fuel cells

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while decreasing the emissions of carbon dioxide, a greenhouse gas; and reducing other pollutants;

- Conducting studies on the capability of Advanced Turbine Systems to minimize pollution and increase performance through high efficiency over other conventional power options.

- E. Joint review of appropriate research and development projects, both those in progress in the United States and Brazil and those that are deemed meritorious for initiation to benefit the enhanced use of coal in Brazil, followed by an agreed-upon plan to implement the findings and recommendations culminating from the review;
- F. Exchange visits to mutually agreed-upon United States and Brazilian coal mining and equipment organizations, commercial and clean coal technology research, development, and demonstration program facilities pertaining to the technical areas and issues described above;
- F. Training and internship program support for personnel in the aforementioned coal and power system technologies to strengthen related human resources and institutional government, university, and industry

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laboratory infrastructure, and to facilitate joint government and industry activities;

- H. Joint development of technical programs to facilitate industrial partnerships between coal and power systems industries of the United States and Brazil.

EXPENSES

3. Except when otherwise specifically agreed in writing, all costs resulting from cooperation under this Annex shall be borne by the Party that incurs them.

GENERAL PROVISIONS

4. Cooperation under this Annex shall be subject to the Implementing Arrangement.
5. This Annex shall remain in effect for five (5) years or until termination of the Implementing Arrangement, whichever occurs first. This Annex may be amended or extended by mutual written agreement of the Executing Bodies.
6. At the discretion of either Executing Body, this Annex may

be terminated upon six (6) months advance notice in writing by the other Executing Body.

**ANNEX II
FOR COOPERATION IN THE
FIELD OF RENEWABLE ENERGY**

The Parties have a mutual interest in promoting the competitive use of renewable-based electric power;

Effective collaboration by the Parties in the field of renewable energy will contribute to sustainable development, promote global environmental protection, and stimulate the market for renewable energy technology; and

The Parties will mutually benefit from collaboration in the development and utilization of renewable energy technologies;

AREAS OF COOPERATION

1. Cooperation under this Annex may include, but is not limited to, the following areas:

- A. Hybrid power for business development.
- B. Policy and technical support for integration of renewable energy in electric utility restructuring.
- C. Renewable energy resource assessment.
- D. Energy supply for rural uses and off-grid communities.

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- E. Energy policy analysis including impact of policy reform on renewable energy development and privatization initiatives.
- F. Identification of opportunities for solar thermal, solar photovoltaics, wind, biomass and small and micro hydroelectric projects.
- G. Development, packaging, and distribution of information on renewable energy and business development, for encouragement of business ties between Brazilian and US Companies.
- H. Identification of financing sources for renewable energy projects in Brazil.

OTHER PARTICIPATING ORGANIZATIONS

2. Pursuant to Article V of the Implementing Arrangement, additional organizations may participate in cooperative activities under this Annex, at their own expense, and subject to such terms and conditions as the Executing Bodies may specify. For the Federative Republic of Brazil, such organizations may include, but are not limited to the National Energy Development Program for States and Municipalities (PRODEEM), Electric Power

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Research Center (CEPEL) and Petrobrás Research Center (CENPES). For the United States of America, such organizations may include the United States Agency for International Development, the National Renewable Energy Laboratory (NREL), Sandia National Laboratory, and the Export-Import Bank.

MANAGEMENT

3. Each Executing Body shall designate one Program Coordinator for this Annex. Program Coordinators shall provide technical management and coordinate activities under this Annex. Each task undertaken under this Annex shall be described in a work plan that is approved by both the Coordinators, each of whom shall then designate a Co-Project Officer for that specific task.

EXPENSES

4. Except when otherwise specifically agreed in writing, all costs resulting from cooperation under this Annex shall be borne by the Executing Body that incurs them.

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GENERAL PROVISIONS

5. Cooperation under this Annex shall be subject to the Implementing Arrangement

6. This Annex shall remain in effect for five (5) years or until termination of the Implementing Arrangement, whichever occurs first. This Annex may be amended or extended by written agreement of the Executing Bodies.

7. At the discretion of either Executing Body, this Annex may be terminated upon six (6) months advance notice in writing to the other Executing Body.

**ANNEX III
FOR COOPERATION IN THE
FIELD OF ENERGY EFFICIENCY**

The Government of the Federative Republic of Brazil is developing objectives and specific National Programs for energy efficiency which include protecting natural resources and the environment through technical improvement in energy utilization, increasing the economic benefit of energy utilization, and realizing a sustainable strategy for economic development; and

Effective collaboration by the Parties in the field of energy efficiency technology will increase energy efficiency, promote global environmental protection, and stimulate the market in the Federative Republic of Brazil for energy efficiency, goods and services;

The Parties will mutually benefit from collaboration in the development and utilization of energy efficiency technologies;

OBJECTIVES

1. The objectives of cooperation under this Annex are:

A. Supporting Brazilian National Programs on energy

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efficiency strategies and policies to promote and expedite sustainable development in Brazil, through comparative evaluation of technologies for the energy end-use sectors and reducing barriers to energy efficiency;

- B. Expediting, with the support and participation of U.S. industry, U.S. organizations and other U.S. Government agencies, the introduction into the Federative Republic of Brazil of technically feasible and cost-effective energy efficiency technologies, through, but not limited to, project demonstration by U.S. firms and information exchange on technology, technical services and project financing;
- C. Assisting the Federative Republic of Brazil achieve its energy efficiency targets over the next five years, while simultaneously advancing global environmental protection and stimulating trade in energy efficiency technology, goods, and services; and
- D. Training support and technical assistance from U.S. experts.

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AREAS OF COOPERATION

2. Cooperation under this Annex may include, but is not limited to, the following areas:

- A. Energy efficiency policy and regulatory issues;
- B. Information exchange and business outreach;
- C. Performance monitoring and verification;
- D. Appliance testing, labeling and standards;
- E. Industrial assessments and process control as they relate to energy efficiency
- F. ~~Transportation~~
- G. Energy efficient motor systems and engines;
- H. Natural gas end-use technologies
- I. Efficient lighting;

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- J. Reflective roofs;
- K. Public buildings retrofit and utility demand-side management; and
- L. Identification of financing sources for energy efficiency projects.

OTHER PARTICIPATING ORGANIZATIONS

3. Pursuant to Article V of the Implementing Arrangement, additional organizations may participate in and (or) lead cooperative activities under this Annex at their own expense, and subject to such terms and conditions as the Executing Bodies may specify. For the Federative Republic of Brazil, such agencies and organizations may include, but are not limited to the National Electricity Conservation Program (PROCEL) and the National Oil and Natural Gas Conservation Program (CONPET). For the United States of America, such organizations may include, but are not limited to, the United States Agency for International Development.

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MANAGEMENT

4. Each Executing Body shall designate one Program Coordinator for this Annex. Program Coordinators shall provide technical management and coordinate activities under this Annex. Each task undertaken under this Annex shall be described in a work plan that is approved by both of the Coordinators, each of whom shall then designate a Co-Project Officer for that specific task.

EXPENSES

5. Except when otherwise specifically agreed in writing, all costs resulting from cooperation under this Annex shall be borne by the Executing Body that incurs them.

GENERAL PROVISIONS

6. Cooperation under this Annex shall be subject to the Implementing Arrangement.

7. This Annex shall remain in effect for five (5) years or until

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termination of the Implementing Arrangement, whichever occurs first. This Annex may be amended or extended by mutual written agreement of the Executing Bodies.

8. At the discretion of either Executing Body, this Annex may be terminated upon six (6) months advance notice in writing to the other Executing Body.