U.S.-BRAZIL BINATIONAL ENERGY WORKING GROUP
JOINT ACTION PLAN
BETWEEN THE DEPARTMENT OF ENERGY OF THE UNITED STATES OF AMERICA AND THE MINISTRY OF MINES AND ENERGY OF THE FEDERATIVE REPUBLIC OF BRAZIL

The Department of Energy of the United States of America and the Ministry of Mines and Energy of the Federative Republic of Brazil (hereinafter the "Participants"):

RECOGNIZING the mutual benefits of cooperation on a broad range of energy-related subjects areas that will contribute to the individual, bilateral, and regional energy security, economic sustainability, and capacity to combat the effects of climate change;

SEEKING to advance their countries' progress towards a sustainable and clean energy future;

INTENDING to promote the development and deployment of technologies with low carbon emissions and to strengthen the United States-Brazil relationship in the field of energy; and

ACTING in furtherance of the Memorandum of Understanding between the Department of Energy of the United States of America and the Ministry of Mines and Energy of the Federative Republic of Brazil for the Establishment of a Mechanism for Consultations on Energy Cooperation signed June 20, 2003,

Have reached the following understanding to pursue joint activities in the following areas:

- Renewable Energy, including Biofuels, and Electricity Generation, Distribution, and Transmission
- Energy Efficiency
- Petroleum, Natural Gas and Clean Coal
- Civilian Nuclear Power Generation
- Planning for the conduct of research and development (R & D) between research institutions in both countries

AREAS OF COOPERATION

Renewable Energy

1) Assess the most appropriate technologies for electricity generation from renewable sources and how to attract investment, specifically with regard to solar (photovoltaic and concentrating solar power), wind energy, cogeneration biomass, hydro, and biofuels.

2) Explore information sharing and best practices in technologies for optimal design, construction, operation, and planning of long-distance transmission lines, including those incorporating renewable energy resources into the electricity grid.

3) Exchange experiences on Smart Grid topics such as monitoring and diagnosis of equipment and distribution facilities; standardization procedures/standards with emphasis on interoperability between different systems in the Smart Grid concept; results and experience in implementing

small, medium and large scale Smart Grid projects (technological, industrial standardization, marketing, social, regulatory, logistical aspects in Government level actions) and implementation of phasor measurement units (PMUs).

4) Cooperation in technical aspects related to introduction of higher blends of ethanol (E15), utilization of advanced biofuels, and assessment of the externalities of biofuels usage including sustainability analysis for the Brazilian and United States economies, including workshops, technical visits, and information exchange.

5) Promotion of the sustainable development of hydropower in third countries, through identification of potential financial resources from multilateral organizations and exploring the possibility of collaboration related to hydropower studies in developing countries.

Energy Efficiency

1) Improve industrial efficiency, especially in the area of auditing, by exchanging information and holding workshops to facilitate application in both Participants' countries of energy efficiency policies and technologies.

2) Share best practices and experiences on energy efficiency policies and regulatory frameworks and enhance U.S.-Brazil cooperation in both bilateral and multilateral forums.

Petroleum, Natural Gas and Clean Coal

1) Consider specific activities for cooperation, including, but not limited to: the exploration and development in deep and ultra deep water and environmental and safety practices; and a U.S.-Brazil workshop on experience in onshore and offshore units and floating storage and regasification terminals of liquid natural gas (LNG), in which government and industry could share knowledge and experience in site selection, project financing, licensing, and building, and operating safe, environmentally sustainable units of LNG.

2) Cooperation in the clean-coal related area should include the following: policies, programs, and technologies with special emphasis on efficient and environmentally responsible coal utilization for power generation and clean fuels production, including coal gasification. Collaboration on coal green house gas mitigation technologies, including CO_2 capture and storage and support of capacity building for these areas.

Civilian Nuclear Power Generation

Explore cooperation in areas such as: probability risk analysis, reactor life sustainability, human resources development, licensing, severe accident management and emergency response and preparedness, and fuel burn-up efficiency.

Research & Development Cooperation between Strategic Research Institutions

The Participants express their interest to encourage cooperation in R&D between Brazilian research institutions, mainly those linked to the Ministry of Mines and Energy, and similar institutions in the United States, especially DOE's national laboratories. The focus of this

cooperation, conducted in accordance with appropriate written arrangements therefor, would initially be the topics identified in this Joint Action Plan and further defined after prioritization of the activities cited above.

The Participants may invite other entities to participate in the cooperative activities carried out under the auspices of the Binational Energy Working Group, including, but not limited to: governmental agencies, private sector firms, science and research institutions; universities; and other entities of the Participants' respective countries.

FORMS OF COOPERATION

The forms of cooperation under this Action Plan may include, but are not limited to.

1) The exchange of publicly-available scientific and technical information.

2) The organization of seminars, workshops, and other meetings on mutually determined topics;

3) Exchange of scientists, engineers, and other professionals, including those from industry and other non-governmental sectors;

4) The conduct of joint analytic studies and assessments; and

5) The identification of areas and projects suitable for possible future conduct of joint research and development and pilot scale and demonstration projects.

NEXT STEPS

The Participants plan to hold technical-level meetings on the specific activities to be undertaken under the auspices of the U.S.-Brazil Binational Energy Working Group. The technical coordinators from both countries are to work together to ensure that substantive work and information exchange occurs and that the Participants' principals are kept informed of those actions and progress.

Signed at Washington, in duplicate, this 20th day of July 2010, in the English and Portuguese languages.

For THE DEPARTMENT OF ENERGY OF THE UNITED STATES OF AMERICA:

Steven Chu
Secretary of Energy

For THE MINISTRY OF MINES AND ENERGY OF THE FEDERATIVE REPUBLIC OF BRAZIL:

Márcio Pereira Zimmermann
Minister of Mines and Energy