MEMORANDUM OF UNDERSTANDING

BETWEEN

THE MINISTRY OF NEW AND RENEWABLE ENERGY OF THE REPUBLIC OF INDIA

AND

THE DEPARTMENT OF ENERGY OF THE UNITED STATES OF AMERICA

ON COOPERATION IN THE DEVELOPMENT OF BIOFUELS

The Department of Energy (DOE) of the United States of America, and the Ministry of New and Renewable Energy (MNRE) of the Republic of India, hereinafter referred to as the "Participants",

Acknowledging that developing fuels that utilize biomass resources in accordance with their national policies is an important way to significantly reduce fossil fuel consumption, enhance energy security, promote the agricultural sector, and support rural development;

Recognizing the important role played by government, industry and research entities in both countries in the area of biofuels development, and the benefits expected from their potential collaboration, in pursuit of enhancing long-term cooperation between the United States of America (hereinafter "United States") and the Republic of India (hereinafter "India") in the development of biofuels; and

Desiring to cooperate on the basis of equality, reciprocity and mutual benefit,

Have reached the following understanding:

1. Scope of Cooperation

The purpose of this Memorandum of Understanding (MOU) is to establish a framework of cooperation covering scientific, technical and policy aspects of production, conversion, utilization, distribution and marketing of biofuels in a sustainable and environmentally friendly manner in accordance with national priorities and socio-economic development strategies and goals.

2. Areas of Cooperation

a. The Participants intend to develop a work plan to define the scope of their proposed collaborative activities under this MOU. The work plan may be revised as mutually determined by the Participants.

b. Specific areas of cooperation to be included in this work plan may include, but are not limited to:

i. Biofuel feed-stock production based on sustainable biomass with active involvement of local communities through non-edible oil seed bearing plantations on wastelands, to include production and development of quality planting materials and high sugar containing varieties of sugarcane, sweet sorghum, sugar beet and cassava.

ii. Advanced conversion technologies for first generation biofuels and emerging technologies for second generation biofuels including conversion of lingo-cellulosic materials to ethanol including switch grass, crop residues, forest wastes and algae, biomass-to-liquid (BTL) fuels, bio-refineries.

iii. Technologies for end-use applications in the transportation sector based on a large scale centralized approach and stationary applications in rural areas and industry for motive power and electricity production based

on a decentralized approach through active community participation.

iv. Utilization of by-products of bio-diesel production processes such as oil cake and glycerin.

v. Development of test methods, procedures and protocols, standards and certification for different biofuels and end use applications.

vi. Assessment of potential and joint policy studies and business models to promote greater penetration of biofuels in various sectors.

vii. Promotion and facilitation of technology transfer, joint ventures, and investments in the biofuel sector in India.

viii. Establishment of a continuing dialogue on biofuels between the two countries including exchange of visits, information exchange and capacity building.

3. Forms of Cooperation

a. Exchange of publicly available scientific and technical information;

b. Organization of seminars, workshops, and other meetings on agreed topics;

c. Exchange of scientists, engineers and other specialists, including those from industry and other non-government sectors;

d. Visits by a Participant's specialist teams or experts to the facilities of the other Participant, and field visits to research labs, renewable energy installations and industrial sites for

technical exchanges and experience sharing on renewable energy technologies;

e. Identification of areas/projects suitable for the possible future conduct of joint research and development, and pilot scale and demonstration projects.

4. Joint Working Group

The Participants intend to establish a Joint Working Group composed of representatives from DOE and MNRE. Each Participant is to identify a point of contact responsible for coordination. The Joint Working Group should review the work plan on an annual basis. However, when such a meeting cannot be arranged, changes to the work plan may also be made in writing by mutual determination. The Participants intend to also nominate members from concerned departments, agencies and other stakeholders in their respective countries to participate in the Joint Working Group.

5. Participating Organizations

MNRE plans to coordinate the participation of other Indian Government ministries under this MOU. The DOE plans to coordinate the participation of other United States Government agencies under this MOU, such as the United States Department of Agriculture.

6. General

a. Each Participant is responsible for the costs of its participation in all cooperative activities carried out under this MOU unless the Participants otherwise determined in writing. Each Participant's participation in the cooperative activities under this MOU is subject to the availability of funds, resources, and personnel and is to be conducted in accordance with the laws and regulations of that Participant's Government.

b. This MOU does not create any legally binding obligations between the Participants.

c. Cooperation under this MOU may commence from the date of signature. This MOU may be revised by mutual determination of the Participants in writing. A Participant should endeavor to give the other Participant at least 6 months written notice of its intention to discontinue its cooperation under the MOU and the Participants should continue to work together to conclude specific cooperative projects already in progress.

Signed at New Delhi, the 3rd day of February, 2009, in duplicate.

3/2/09

(Gauri Singh)
Joint Secretary
For the Ministry of New and Renewable Energy of the Republic of India

(Steven J. White)
Deputy Chief of Mission
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For the Department of Energy of the United States of America