

MEMORANDUM OF UNDERSTANDING (MOU)

Among

- **The Universidad Nacional Autónoma de Honduras**, a non-profit corporation with a principal location at Ciudad Universitaria, Tegucigalpa, Honduras
- **The Universidad de las Regiones Autónoma de la Costa Caribe Nicaragüense (URACCAN)**, an intercultural community university composed by four campuses with a principal location at Siuna, North Atlantic Autonomous Region (RAAN), Nicaragua.
- **The Universidad Nacional de Costa Rica**, a non-profit corporation with a principal location in Heredia, Costa Rica
- **The University of Massachusetts Amherst**, a university of higher education incorporated under the laws of the Commonwealth of Massachusetts with its principal location at University Campus, Amherst, MA 01003 USA
- **The University of Massachusetts Lowell**, a university of higher education incorporated under the laws of the Commonwealth of Massachusetts with its principal location at One University Avenue, Lowell, MA 01854 USA

PREAMBLE

The Memorandum of Understanding (MOU) presented below arose over many years of interaction among the institutions listed above and other organizations located throughout Central America and the Caribbean region and within the United States. The parties included not only the academic institutions listed above, but also a varied body of other educational, entrepreneurial, governmental and nongovernmental organizations. The primary organizations include the Initiative for Sustainable Infrastructure in Developing Regions, the Mesoamerican Development Institute, and the 1420 Foundation and its Learning for a Sustainable World Network. There is a large inventory of successful activities of diverse types that have been undertaken by these parties and their local partners. This Memorandum of Understanding will allow a more efficient, integrated and broad-based effort to take place to the benefit of all participants and their countries. This is only a memorandum to express an interest to follow up a formal relationship in the future with no binding responsibilities for the participant's organizations to create a joint research group for the benefits of the institutions and their respective countries.

The above listed institutions of higher education hereby agree to sign this Memorandum of Understanding in order to pursue the jointly held objectives described in the following articles. This is an initial intention with the objective to create a future agreement for the creation of a Networked Engineering Research Center (NERC) by the above institutions.

Article 1:

The purpose of this Memorandum of Understanding is to facilitate exchanges and cooperative initiatives among the five institutions listed above in the areas of teaching, research, international education and appropriate sustainable development.

Article 2:

The five institutions listed above will create an academic consortium that will be called the Networked Engineering Research Center (NERC). The NERC will be formed by designated individuals from each of the institutions who will work together to create an entity that is acceptable to and will operate for the benefit of all parties involved.

Article 3:

The NERC will involve the participant institutions in the:

- Exchange of researchers
- Exchange of faculty
- Exchange of students
- Exchange of scholarly information and modernization of pedagogical materials relating to the areas of science and engineering
- Joint collaborative research
- Joint development and implementation of projects, both in Central America and the Caribbean region and North America, that will result in appropriate sustainable development
- Promotion of joint regional policy development efforts so as to improve the environment at both local and international levels
- Accreditation of educational programs
- Promotion of technical assistance and/or training for the benefit of rural enterprises
- Promotion of, and policy and research development relating to, the expansion of the Mesoamerican Biological Corridor
- Other cooperative efforts as may subsequently be agreed to among participants and that will advance the general objective as set forth in Article 1

Article 4:

The main focus of NERC will be to research and apply knowledge that will advance broad, regional rural industrial development programs and expand environmentally protected areas in which sustainable production and environmental protection will be promoted.

The NERC will limit itself to two primary thrusts that are designed to serve as channels to adoption and commercialization of the envisioned engineered systems:

- 1) Agro-industrial processing
- 2) Biodiversity-friendly productive systems for raw materials

The applied research will focus on coffee, essential oils and the biofuels industries. These products will serve as test-bed sectors by which the intensity of education and research required to achieve sustainability will be demonstrated. Coffee is the second largest traded commodity in the world after petroleum and one of the most significant agro-industrial systems in Latin America. Massive quantities of coffee are consumed worldwide and coffee represents one of the most energy-intensive agro-industrial sectors. Similarly, essential oils represent a rapidly growing and energy-intensive economic activity supplying the cosmetic and pharmaceutical industries worldwide. Biofuels will have a leading role in powering human development in the near future by harnessing the energy to power rural-based industrial processes from plant materials.

Cooperation will also focus on the expansion of the Mesoamerican Biological Corridor throughout the Central American region. This can be a framework to create and apply transformational technologies to enhance the lives of the current human inhabitants through the industrial production or products associated with renewable energy technologies and effective supply chain strategies that will be in synchrony with preservation of the environment. These transformational technologies will also contribute to biodiversity conservation through the alleviation of poverty, which allow producers to make rational choices about land use, as well through the encouragement of agroforestry, using methods like Integrated Open Canopy (IOC) creating forest connectivity. This effort within the Mesoamerican biological corridor offers a model with continental implications for the restoration and enhancement of habitats through the development and propagation of technologies directed at addressing coffee, essential oils, and biofuel production and processing issues as the platform to promote other industries under the same sustainable criteria.

The NERC's multidisciplinary programs will support the development and adoption of new and sustainable technologies and methods for productive systems resulting in sustainable products/markets. It will promote market-driven transformation of agro-industrial processing and production through the adoption of engineered systems that support both increased biodiversity and financial return throughout the supply/value-added chain.

Article 5:

The Initiative for Sustainable Infrastructure in Developing Regions (ISI) at the University of Massachusetts Lowell will act to assist in the operation of the NERC by involving other entities with which it has relationships:

- For internet based communication and teaching platform resources, it will team with the 1420 Foundation, which has developed the "Learning for a Sustainable World Network" program (L4SW Network). This partnership will permit advancement and support of the activities of NERC by facilitating communication and knowledge of transformational technology and sustainable productive practices throughout supply chains in Central America, the Caribbean, and North America.
- The University of Massachusetts Lowell's "Service Learning Integrated throughout the College of Engineering Program" (SLICE Program) will facilitate the utilization of established relationships and test-bed feedback for multi-disciplinary analysis with students and faculty.
- For research, design, and manufacturing experience with test-bed sector activity, the Mesoamerican Development Institute (MDI) will be involved. MDI will provide expertise and models for sustainable development as practiced throughout many years of interaction with the University of Massachusetts (both Lowell and Amherst campuses) and other universities to assist the implementation of the NERC. The NERC will also benefit from and build on the participation of MDI and its patented production/processing technology, domestic manufacturing partners and alliances working with international test-beds practitioners. MDI's knowledge base and ongoing translational research offers a well developed understanding of the technological and institutional barriers to the adoption of clean technology and production methods. Their knowledge of market opportunities and advantages to the multiple interests, from producer to retailer, are also highly significant assets.
- The University of Massachusetts Amherst, Department of Natural Resources Conservation and the USDA Forest Service Northern Research Station will provide additional expertise based on their years of study and collaboration with MDI in measuring the biodiversity benefits of Integrated Open Canopy (IOC) and Mixed Productive Canopy agroforestry production methods.
- The Universidad de las Regiones Autónomas de la Costa Caribe Nicaragüense (URACCAN) will provide at the Siuna Campus facilities such as its experimental farm, human resources (faculty and researchers) and research driven knowledge base particularly linked to their work on sustainable agriculture with local farmers and communities, both indigenous and Mestizo.
- The Universidad Nacional de Costa Rica will apply its expertise in social and environmental sustainability to the supply chain in creating new models for sustainability.
- The Universidad Nacional Autónoma de Honduras (UNAH) will utilize its network of campuses throughout Honduras and share this expertise with the other NERC partners. UNAH will also enhance education for the coffee sector through its unique relationship and programs with the Honduran Coffee Institute (IHCAFE).

Article 6:

Projects carried out within the envelope of the NERC may be executed by an individual or by any suitable combination of member institutions and recognized affiliated organizations acting under the authority of a sponsoring or supporting institution.

Systematic and coordinated fund raising efforts are viewed by the partners as the most efficient and practical approach to institutionalizing our combined efforts. Additionally, independent fundraising may be carried out singly or jointly for the benefit of the entire NERC even when it might be for a limited, project-specific purpose.

Article 7:

All specific projects that may arise within the NERC to which this MOU may lead will be subject to the joint and periodic evaluation by the appropriate authorities charged by their member institutions to participate as a body so as to monitor and maintain the integrity of the NERC. The overall program should be reviewed, evaluated and updated by that body one year from its effective date.

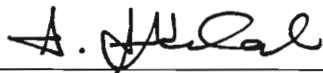
Article 8:

This MOU will become effective for each institution on the date it is signed by the officer designated below. The MOU will remain in effect for a period of four (4) years and can be altered and/or renewed by mutual consent at any time. All underwriting institutions have the right to initiate a termination of their participation in the consortium described in this MOU by providing a sixty (60) days notice to each of the institutions involved of their intent to withdraw.

All underwriting institutions are committed to the policy that all persons deemed by their institution as qualified to participate shall have equal access to programs, facilities, and employment without regard to personal characteristics not related to ability, performance, or qualifications as determined by their institutional policies or by local, state or federal authorities. The institutions shall not discriminate against any person because of age, ancestry, color, disability or handicap, national origin, race, religious creed, sex, sexual orientation, or veteran status. All participating institutions shall abide by these principles in the administration of this MOU, and none may impose criteria for the exchange of scholars or students that would violate the principles of non-discrimination as set forth in this document.

IN WITNESS WHEREOF, the parties hereto have caused this memorandum to be executed by their duly authorized representatives effective as of the start date as set forth above in Item 8.

University of Massachusetts Lowell



By: Ahmed Abdelal
Title: Provost and Vice Chancellor

Date:

Universidad Nacional Autónoma de Honduras

By: Olvin Rodriguez
Title: President

Date:

Universidad Regional Autónoma de la Costa del Caribe de Nicaragua

By: Ms. Alta Hooker Blandford
Title: Rector

Date:

Universidad Nacional de Costa Rica

By:
Title:

Date:

University of Massachusetts Amherst

By:
Title:

Date:

reconocidas afiliadas que actúen bajo la autoridad, patrocinio o apoyo de una de las instituciones miembro.

Una forma sistemática y coordinada de esfuerzos para la recaudación de fondos son vistos por los socios como el enfoque más eficiente y práctico para la institucionalización de esfuerzos combinados. Además, se podrá efectuar una recaudación de fondos independiente o conjuntamente en beneficio de toda la organización CIRED, aun cuando puede que sea para un propósito limitado, o un proyecto específico.

Artículo 7:

Todos los proyectos específicos que puedan surgir dentro del CIRED a los que puede llevar este Memorando de Entendimiento estarán sujetos a la evaluación conjunta y periódica de las autoridades competentes encargados por sus instituciones miembros para participar como una organización única con el fin de controlar y mantener la integridad del CIRED. El programa general debe ser revisado, evaluado y actualizado por esa autoridad en un año desde su fecha de vigencia.

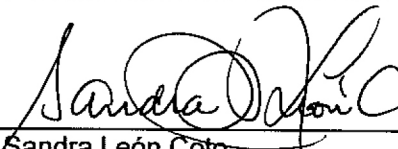
Artículo 8:

Este Memorando de Entendimiento entrará en vigor para cada institución en la fecha de su firma. El Memorando de Entendimiento permanecerá en vigor por un período de cuatro (4) años y puede ser renovado por un periodo igual de tiempo. Todas las instituciones que suscriben este documento tienen el derecho para iniciar un cese de su participación en el consorcio que describe el presente Memorandum, proporcionando sesenta (60) días de anticipación a cada una de las instituciones que participan, de su intención de retirarse.

Todas las instituciones que suscriben este memorándum están comprometidas con la política de que todas las personas de su institución serán calificadas para participar y tendrán igual acceso a programas, instalaciones, y el empleo sin distinción de características personales no relacionadas a habilidad, rendimiento o calificaciones según lo determinado por sus políticas institucionales o reglamentos locales, estatales o federales. Las instituciones no discriminarán a ninguna persona por razón de edad, ascendencia, color, discapacidad o minusvalía, origen nacional, raza, credo religioso, sexo, orientación sexual o condición de veterano. Todas las instituciones participantes deberán cumplir con estos principios en la administración de este MdE, y nadie puede imponer criterios para el intercambio de académicos o estudiantes que viole los principios de no discriminación como se establece en este documento.

EN FE DE LO CUAL, las partes que han causado este memorándum a ser ejecutado por sus representantes debidamente autorizados, sea efectiva a partir de la fecha de inicio según lo establecido anteriormente en el punto 8.

Universidad Nacional de Costa Rica


Por: Sandra León Coto
Rectora



RECTORIA

Fecha 03/09/2010



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Universidad de Massachusetts Lowell

Fecha

Por: Ahmed Abdelal
Provost y Vice-Rector

Universidad Nacional Autónoma de Honduras



Por: Julieta Castellanos
Rectora



Fecha 15/11/2011

Regional de la Universidad Autónoma de la Costa del Caribe de Nicaragua

Fecha

Por: Alta Hooker Blandford
Rectora

Universidad Nacional de Costa Rica

Fecha

Por: Sandra León Coto
Rectora

Universidad de Massachusetts Amherst

IN WITNESS WHEREOF, the parties hereto have caused this memorandum to be executed by their duly authorized representatives effective as of the start date as set forth above in Item 8.

University of Massachusetts Lowell

By: Martin T. Meehan
Title: Chancellor

Date:

Universidad Nacional Autónoma de Honduras

By: Olvin Rodriguez
Title: President

Date:

Universidad Regional Autónoma de la Costa del Caribe de Nicaragua

9.1500—

By: Ms. Alta Hooker Blandford
Title: Rector

9/07/10

Date:



Universidad Nacional de Costa Rica

By:
Title:

Date:

University of Massachusetts Amherst

By:
Title:

Date: