

# RENet: Renewable Energies Education Network

## SUMMARY OF RESULTS

Three programmes developed and/or revised:

- MSc degree for UEH designed and curricula developed.
- A new academic track in renewable energy within the MSc in Electro-mechanic Engineering developed and approved.
- UO has opened a new expert course in Renewable Energy within the framework of its MSc in Energy Efficiency.

Professional courses developed with a training-of-trainers programme.

Laboratories designed and equipped in each of the three partner universities and an e-learning platform developed.

## BACKGROUND

Despite different economic and social realities, the lack of access to energy and dependency on imported resources are distinctive elements in the Cuban and Haitian scenario. In Cuba, whilst 96% of the population have access to electricity, generation is 90% dependent on imported fossil fuels. The Cuban authorities are pursuing a policy of energy independence via two ways: a) by increasing the share of renewable energy and b) by improving energy efficiency. Haiti by contrast experiences the lowest electricity coverage in the region. The lack of energy access is critical to reconstruction and development.

RENet's aim was to improve the graduate and postgraduate academic capacity of the partner universities in the fields of energy access and efficiency. New academic and technological tools have been implemented to respond to societal needs and the labour market. By facilitating south-south networks of co-operation, the academic and institutional links amongst the project partners and associates have been strengthened.

Activities included the design and implementation of new postgraduate programmes, revision of existing programmes and the creation of linkages to sustain the new academic capacities of the Cuban and Haitian partner Higher Education Institutions (HEIs).

## METHODOLOGY

### Design and implementation of a new postgraduate degree in Renewable Energy

Improvement of the postgraduate and graduate academic capacities in energy access and efficiency. Developing parallel activities in each partner HEI, including identification of needs and available capacities (academic, financial and infrastructure), design of curriculum and establishing academic co-operation between institutions.

### Design of training of trainers programme

Training of professors in subjects such as thermal solar energy, Photovoltaics (PV) technology, hydro energy, hybrid systems, biomass and biofuels, and energy audits so to enable autonomous course delivery.

### Design and implementation of professional courses

Training professionals in energy access and efficiency is a core necessity for the two countries and the region to improve access to the labour market.

### Establish or improve renewable energy laboratories

Improvement of laboratory equipment for practical training in renewable energy and for research. Academics and students facilitated to share research and teach more effectively.

### Create academic and institutional links

Creating academic and institutional links between partners, associates and entities from other countries working in renewable energy.



Training-of-trainers course in UEH on 'Solar and Wind energy potential assessment'.

## GRANT

EUR 449,742.64

## PROJECT PERIOD

October 2013 - June 2017

## CONSORTIUM

- Universidad Carlos III de Madrid, Spain
- Université d'Etat d'Haiti (UEH) Haiti
- Universidad de Oriente (UO), Cuba
- Instituto Superior Minero-metalúrgico de Moa (ISMMM), Cuba

## Associated partners:

- Fundación Energía sin Fronteras, Spain
- Agenzia per la Promozione della Ricerca Europea, Italy
- Cubasolar, Cuba

## PROJECT CONTACT

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## PROJECT WEBSITE

[www.renetedulink.net](http://www.renetedulink.net)



## RESULTS

### → Outputs

#### Capacity building

- UEH: a 2-year postgraduate degree in renewable energies divided into 4 semesters (15 courses and a MSc thesis).
- Adaptation and improvement of contents of pre-existing subjects in UO and ISMMM.
- 10 different vocational courses.
- Specific academic materials for courses like Power System Analysis (advanced), Thermal energy or PV energy systems.
- 3 workshop courses, totalling 20 hours, attended by 37 Haitian and Cuban professors.
- 100+ alumni attended the training-of-trainers programme in UEH. 63 trainees trained in at least one complete energy module. Each alumnus attended an average of 4 courses, or 12.5 sessions, or 50 hours.

#### Publications

- Several research works presented at CIN-AREM'2015 (Nov 2015, Moa, Cuba) related to the RENet research lines (energy

efficiency and renewable energies).

- 3 communications in Expociencia 2017, Cuba.
- A poster in VII Congreso Universidad y Cooperación al Desarrollo, 'La Universidad y los Objetivos de Desarrollo Sostenible', UAM (Spain), March 2017

#### Platform

- A platform supporting e-learning (<http://renet.idisc.es/>).

### ↑ Outcomes

- HEIs have the capacity to address energy challenges faced in Cuba, Haiti and the Latin American region.
- HEIs have fit-for-purpose laboratories enhancing research capacities including installation and maintenance skills.
- Professionals have effective skills and the ability to pursue their qualified development.

### 🎯 Impacts

#### Usage

- New postgraduate degree and training-of-trainers programme contributes effectively to improve academic capacities. Applying the results of laboratory work will facilitate new academic and technological tools.
- The online platform will host most of the developed training-of-trainers courses, academic materials and training modules. The platform will be accessible for at least 5 years and it will allow new members and institutions to join the network and share academic materials.

#### Policy implications

- The development of postgraduate specialisation in renewable energy will contribute to the promotion of renewable energy resources. The Cuban government, for example, has committed to increase electricity generation, mainly, from wind and solar energy to 24% by 2030. This will require HEIs to train academic staff and technicians to respond to this challenge.

#### Sustainability

- The consolidated Cuba-Haiti cooperation will allow for the joint development of

academic and research activities and contribute to their academic capacities.



Photovoltaic mobile module at ISMMM.

## TESTIMONIAL



**Yvens Chérémond,**  
Teacher, Director of  
Energy Research Unit and  
Alternative Technologies,  
Université d'Etat d'Haiti

“RENet has reinforced the technical capacity of UEH in teaching as well as the ability to provide community services. UEH has begun to offer energy efficiency services to the private sector and we have started to work closely with other UEH entities to evaluate the energy efficiency of their buildings to improve energy consumption.”

ACP-EU Co-Operation Programmes in the fields of Higher Education and Science, Technology and Research

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