

HEEMS – Reinforcement of Higher education as a tool to foster efficient use of energy applied to the poverty reduction within the marine sector through capacity building and regional integration



*Signature of Agreement at the rectorate of
the Universidade de Vigo.*

PROJECT IMPLEMENTATION PERIOD

October 2013 – April 2016

CONSORTIUM

- Universidade de Vigo (UVigo), Spain
- Centro Politécnico (CP), São Tomé and Príncipe
- Universidade de Cabo Verde (UniCV), Cape Verde
- Instituto de Emprego e Formação Profissional (IEFP), Cape Verde
- Universidade Eduardo Mondlane (UEM), Mozambique
- Universidade Zambeze (UNIZAMBEZE), Mozambique

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PROJECT WEBSITE

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SUMMARY OF RESULTS

A diagnosis of academic programmes and academic staff capabilities in São Tomé and Príncipe, Cape Verde and Mozambique regarding their renewable energy sectors has been produced. Staff, students and other stakeholders have been trained in renewable energy subjects with six modules in renewable energy tailored for massive open online courses (MOOCs).

BACKGROUND

Cape Verde, Mozambique and São Tomé and Príncipe have an acute shortage of engineers specialised in the energy sector. In order to increase the number of specialists who are capable of actively working in the energy field, it was necessary to train academic staff to have the capacity to resolve practical energy issues, with a specific focus on the marine sector. Academic performance was enhanced with training programmes linked to the labour market and via curricular development

Increasing institutional capacities was achieved thanks to the review and elaboration of specific curricula adapted to the sector requirements. Capacity was further increased by incorporating practical modules into the curriculum that may be taught through targeted demonstration projects and further developed and tested throughout inclusion on courses. The project also reinforced networking at regional and international levels both between Higher Education Institutions (HEIs) and other sectorial associations, private companies and governments.

METHODOLOGY

The capacity of HEIs at both the management and academic levels was strengthened by improving staff capacity and academic curricula via two approaches:

- Increasing the capabilities of the HEI and academic staff.
- Reviewing and elaborating specific curricula, including the incorporation of practical modules and their adaption to the specific needs of the fisheries sector.

Networking was reinforced between the HEIs and other institutions and civil society groups.

A diagnosis of the academic programmes and capacities of academic staff in the energy field lead to outputs such as adaptation of academic curricula, and specific staff training on using a digital campus and promoting the use and learning of ICT. A regional seminar was used for training in renewable energies and lead to the transfer of knowledge to stakeholders and civil society. A transversal activity was the promotion of national and regional inter-institutional co-operation on renewable energy and in this regard a memorandum of understanding between the HEIs and some stakeholders was signed.



Working meeting with students from São Tomé and Príncipe.

RESULTS

→ Outputs

Capacity Building

- University staff trained in:
 - Design and scaling of energy storages system.
 - Solar complementary technology.
 - Industrial pollution: assessment, prevention and control, environmental management of industrial installations.
 - Management and treatment of waste and industrial emissions.

Curricular development

- New curricula in renewable energy (60 ECTS credits).

Demonstration projects

- Photovoltaic recharge system for cellular telephony.
- Solar cook and oven.

- Training prototype of small wind turbines.
- Solar training prototypes of photovoltaic installations.
- Storage systems with batteries.
- Electric boat KAIKEL for the local fishermen communities.

Documents

- Review of the energy sector and stakeholders in Mozambique, Cape Verde, São Tomé and Príncipe.
- Guidelines on:
 - Energy experiments.
 - Assembling photovoltaic equipment for charging mobile telephones.
 - *Utilização de Sistemas de propulsão eléctrica em pequenas embarcações utilizadas na pesca artesanal em Cabo Verde.*

Networking

- HEI agreements on:
 - training, research and exchange initiatives;
 - joint projects and PhD training.

Publications

- Sánchez A. *et al.*, 2014. Reinforcement of Energy Knowledge in Higher. European Journal of Sustainable Development (2014), 3, 4, 181-188.

Visibility

- 1 conference: Sustainable energy applied to poverty reduction strategies within marine sector development - São Tomé and Príncipe, Centro Politécnico, 13 to 17 July 2015.

↑ Outcomes

- Students, staff and stakeholders are aware of and have competencies in renewable energy issues and technology.
- HEIs and staff have capacity and competence in the use of ICT for the delivery of training and academic courses.
- Partner HEIs have the capacity to define and develop academic programmes in sustainable energy.

🎯 Impacts

Usage

- The training prototypes for student practical learning are being continually tested by the partners. The Department of Fisheries of São Tomé and Príncipe continue testing the boat with local fishermen and the wind turbine and photovoltaic installations are being tested by academic teams in order to incorporate them in new academic programmes.
- The online courses are being replicated for use by teachers from the Universidad

Pontificia Católica de Río Grande do Sul in Brazil.

Policy implications

- The conference has laid the foundations for cooperation at national and international levels between the project partners and stakeholders including governments from São Tomé and Príncipe, Cape Verde and Mozambique.



International Seminar on Renewable Energies.



Heems equipment and practical training on instalment.

TESTIMONIAL



Peregrino do Sacramento da Costa, Rector, University of São Tomé and Príncipe, São Tomé and Príncipe

“With the implementation of this project, the University of São Tomé and Príncipe will train more staff with expertise in developing activities related to energy and environmental protection, as well as enabling more low-income people to use these technologies to their benefit, particularly small businesses, which will benefit from fuel savings, etc.”

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

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