

# ENERGISE – Enlarged Network in Education and Research for a Growing Impact of Sustainable Energy engineering on local development



*South-South Knowledge Transfer Dedicated Seminar, Arusha, Tanzania (March 2017).*

## PROJECT IMPLEMENTATION PERIOD

October 2013 – April 2017

## CONSORTIUM

- Politecnico di Milano (POLIMI), Italy
- Jimma University (JU), Ethiopia
- Technical University of Kenya (TUK), Kenya
- Technical University of Mombasa (TUM), Kenya
- Dar Es Salaam Institute of Technology (DIT), Tanzania

## PROJECT CONTACT

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## PROJECT WEBSITE

<http://www.edulink-energise.polimi.it/welcome>

## SUMMARY OF RESULTS

- Overview of the current status of education in energy engineering extended to the 3 partner countries.
- Upgrading of faculty members competences in innovative technologies and modern renewable energies.
- Collective design and delivery of an upgraded market-driven high quality Sustainable Energy Engineering Master of Science.
- Regional and integrated network of HEIs open to public and private stakeholders for promoting efficiency and access to energy.
- South-South knowledge transfer for curricula upgrading in the energy field and a multi-stakeholders dissemination plan.

## BACKGROUND

The energy access rate is extremely low in Ethiopia, Kenya and Tanzania, especially in the rural areas. At the Higher Education Institution (HEI) level there is also a lack of experience and up-to-date knowledge in the energy field. Therefore, the enhancement of HEIs capacities in promoting energy programmes, joint research and effective networking are required to promote appropriate strategies for local energy access.

ENERGISE aimed at promoting innovative and labour-driven curricula in energy engineering and increasing the number, quality and skills of specialised energy engineers. These future professionals should be able to promote appropriate technologies and engage with the complex challenges of access to energy, specifically to sustainable energy.

Training sessions were tailored for faculty members (live and on a dedicated e-collaborative platform) to foster capacity building on new teaching methodologies and on Distributed Energy Systems, based on renewable energy sources.

The long-term vision is a new generation of African innovators in the energy sector. The project dealt first with innovative teaching methodologies for preparing future professionals, who should then be able to promote sustainable and innovative solutions for local energy systems.

## METHODOLOGY

### Baseline study on education in energy engineering

The actual curricula situation and needs, including a quality assurance system and specific requirements for laboratories were assessed. The analysis of the assessment including feedback from stakeholders determined the definition of the curricula upgrading and capacity building.

### Skills development

The competences in innovative technologies and modern renewable energies were upgraded. Staff capacity in advanced teaching method was built.

### Design and delivery of a MSc Energy Engineering

Joint curricula were developed. Facilities were upgraded with appropriate technology for teaching laboratories and set-up and identification of a quality assurance system. The pilot of the MSc in Sustainable Energy Engineering in Ethiopia was launched.

### Establishing a network

A network was established promoting efficiency and access to energy of HEIs, stakeholders and the public, as well as an e-collaborative platform linking HEIs and private and public stakeholders with joint events and projects.

### Dissemination plan

Participatory project management together with the organisation of stakeholder meetings were successful ways to constantly share information and disseminate project activities.

## RESULTS

### → Outputs

#### Capacity building

- 150 staff trained with ex-cathedra lessons, hands-on sessions and project management.
- 4 harmonised curricula for the MSc in Sustainable Energy Engineering with general guidelines for the development of new curricula.
- 5 staff exchanges lasting 4-5 months at POLIMI during which research activities in different areas were carried out.
- 4 student exchanges. Twinned theses between the partner universities developed.
- Guidelines for Quality Control systems

for teaching including key elements from shared materials, and principles from Bologna and Copenhagen processes.

- Pilot MSc in Sustainable Energy Engineering officially approved and running at Jimma University since October 2015.

#### Documents

- Assessment of the current status of energy engineering in the partners countries.
- ENERGISE quality system guidelines.
- Scientific paper 'Energising the higher

education system in Africa for promoting sustainable energy development tailored to local context'.

- White paper on the ENERGISE experience.

#### Visibility

- E-collaborative platform.
- Project website.
- Creation of pages and groups on: Facebook, LinkedIn, Researchgate.
- Rollup and project flyer.

### ↑ Outcomes

- Engineering faculties have the capacity to deliver quality programmes in energy engineering focused on sustainability.

- Faculty members are competent in the design and delivery of innovative teaching techniques.

- Regional HEIs are collaborating in teaching and research in energy engineering and innovative technology.

### 🎯 Impacts

#### Usage

- TUM and TUK in Kenya have implemented the new curricula in Sustainable Energy Engineering. Their Senates have approved the new curricula which are now under the examination of the local authorities for final approval.

#### Policy implications

- The trainings and courses developed in Sustainable Energy, Water-Energy-Food Nexus and Green Economy will enable the HEIs to contribute effectively to the socio-economic development policies of their countries.

#### Sustainability

- Further trainer-training programmes have been organised (Jimma University) using teachers trained during the project so as to guarantee a multiplier effect of the knowledge obtained.



Staff training in Nairobi (February 2015).



Fist management meeting at Jimma University, Ethiopia (July 2014).

## TESTIMONIAL



**Adedoyin Adeleke,**  
Centre for Petroleum,  
Energy Economics and  
Law, University of  
Ibadan, Nigeria

“The need for capacity building related to sustainable energy in Africa is widely acknowledged, however limited practical effort has been implemented. The EDULINK project is an effective approach to sensitise and motivate stakeholders to initiate new curricula capable of providing energy engineers with skills and

competences that are required to exploit the abundant resources on the continent.”

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