

Dar es Salaam Institute of Technology

Developing the skillsets of students required to address
real-life challenges



Programme objective | **To improve engineering capacity in sub-Saharan Africa through improving the knowledge, skills and employability of African engineering graduates**

Region | **East Africa**

Introduction

The Dar es Salaam Institute of Technology (DIT) is undergoing both administrative and academic transformations to establish itself as a world-class centre of excellence in engineering, applied sciences and entrepreneurship. Within this strategic framework DIT participated in the HEP SSA as a hub institution during 2018-2021 (original end date was extended due to Covid).

The HEP SSA project brought together the knowledge and expertise of five universities and three energy companies to collaboratively work on improving the knowledge, skills and employability of engineering graduates. The project received £123,457 funding from the HEP SSA Programme.

Spoke universities

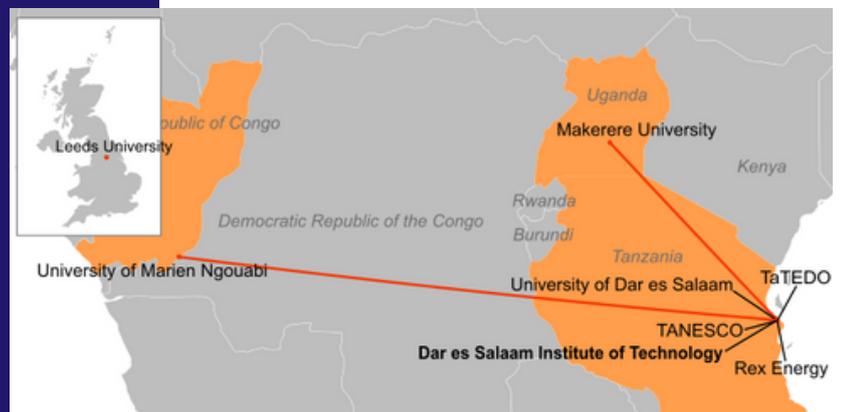
- University of Marien Ngouabi
- Makerere University
- University of Dar es Salaam

Industry partners

- Tanzania Electric Supply Company Limited (TANESCO)
- Tanzania Traditional Energy Development Organisation (TaTEDO)
- Rex Energy

UK partners

- Leeds University



Main activities

As part of the project, the partners:

- carried out secondments of DIT academic staff to industry partners to identify gaps in the teaching curriculum and to record best practices,
- conducted applied training to students from the DIT and other local universities involving industry partners teaching part of the course,
- co-developed with industry partners a renewable energy business and technology incubator for final year students,
- organised an Industry Renewable Energy forum and dissemination workshops at the spoke universities.

Results and impact

For the DIT, the curriculum reviews enabled **updates to the methods of teaching** engineering courses. The engineering, mechanical engineering and entrepreneurship departments **benefited from design thinking training** delivered by external consultants. Participating spoke universities were engaged through **knowledge exchange activities**.

From the outset the project sought to **build students' capacity** to enable them to **design solutions for problems** experienced in the **local communities**. The training provision for students focused on **entrepreneurship**, ways of **commercialising innovative engineering solutions** and developing innovative ways of **tackling real-life engineering problems**. The engagement of students has been a particularly successful aspect of the project.

Students have been actively involved in hands-on training, including **prototype-building**. They developed the idea of a low-cost automatic breathing ventilator for emergency applications as a response to the Covid-19 pandemic. At the initiative of the project lead, some of the **funding was reallocated towards the purchase of materials** for building a prototype of the ventilator they designed.

The **first developed prototype** is capable of pumping oxygen at a constant rate, and during the next stage of the development the aim is to add sensors capable of detecting the breathing rate dynamically.

Hands-on training on the design and installation of a wind-solar hybrid system was also completed with a group of 56 students. As a results, a **3 KW wind-solar hybrid system** was installed at the DIT powering one of its laboratories.



Source: Dar es Salaam Institute of Technology

Sustainability of the results

The project delivered sustainable benefits beyond the participating institutions. Due to **extended knowledge sharing activities** some of the **local rural communities** are set to gain **better access to power**. Specifically, **several field visits** were conducted to renewable energy-based power generating plants during the project. These visits and meetings took place with village committees and villagers during which **awareness was raised on power quality and proper uses of power**. Training was also provided to local personnel on the **maintenance of reliable power supplies**.



Source: Dar es Salaam Institute of Technology