



REGIONAL EXPERTISE HUB CEANGAL

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An tAire Cosúil
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The CEANGAL Project

Energy supply, and specifically electricity accessibility has been recognised as an important driver of economic growth and human development and deemed essential to helping achieve global poverty reduction goals in low-income countries globally.

Goal 7 of the UN Sustainable Development Goals identifies the ‘universal access to affordable, reliable, sustainable, and modern energy for all’ as a target for the next 10 years. However, approximately 1 billion people globally have no access to electricity, the majority of whom are in Sub-Saharan Africa. Mechanisms which can be used to expand electricity access in such regions are therefore needed.

Community-based decentralised rENewAble eNerGy systems and supporting structures for improving electricity Access in Low-income countries

PROJECT OBJECTIVES

Provide improved local competencies and know-how on RES systems, community driven RES projects implementation, and establishment of regional RES expertise hubs with capabilities for supporting communities in achieving electricity accessibility goals.

Improve the overall process economics of RES acquisition, enhance local knowledge and facilitate significant uptake of community-based RES.

The project achieves these objectives by addressing the major issues currently hindering RES adoption in developing communities, through the contribution of significant Irish expertise and knowledge in the community RES sector, and working collaboratively with local knowledge partners and stakeholders to develop vital longstanding local funding, ownership and operational support hubs for community driven RES projects

Through research partnerships with Malawian researchers, the project concept and outcomes will be developed, demonstrated and validated in at least four pilot case sites located in currently underserved rural areas of Malawi (a country having one of the lowest access to electricity globally with about 82% of the population having no electricity access).

Contribute to the goals of the Irish Government’s “A Better World” and “Global Ireland: Ireland’s Global Footprint to 2025” targets of creating a more equal and sustainable world by reaching those furthest behind, by driving growth and development opportunities through improved electricity access in Low Income Countries (LIC) communities. This is expected to strengthen the operation of critical infrastructures and lead to the proliferation and growth of local industries.

Contribute to the goals of the Irish Government’s “A Better World” and “Global Ireland: Ireland’s Global Footprint to 2025”.

Develop and pilot an adaptable and replicable model to support activities and know-how relevant to the selection, procurement, installation and ownership of renewable energy systems (RES), as well as providing support structures to ensure their continuous local operation and maintenance in communities currently without or with low energy accessibility.

The CEANGAL project will:

Develop an adaptable framework focused on the concept of sustainable community-driven RES implementation applicable in LIC communities.

Develop an integrated CEANGAL suite of tools, with tools that will support the CEANGAL framework concept and provide tangible information, and supporting tools with functionalities to afford a detailed knowledge of RES choices, their suitability to meet the local energy requirements, conditions and resources, and specific guides on the installation, operation and maintenance of several suitable RES.

Improve the adoption and implementation of relevant RES solutions by the relevant community stakeholders.

The Regional Expertise Hub

The establishment and collaborative development of regional expertise hubs located in Low Income Countries (LIC) especially those in the Sub-Saharan African regions will be one of the primary approaches used by the CEANGAL project to institute and build the local competencies and support structures to afford the achievement of the project goals of rural electrification.

The overall concept is predicated on the basis of the establishment of an oversight/command knowledge centre located in the region where the intended electrification and Renewable Energy Systems (RES) implementation goals of the project can be affected from.

Depending on the size of the country, availability of collaborating service providers and research partners, and the location of the targeted low accessibility communities, ideally at least one (1) regional expertise hub will be geographically situated in targeted LICs.

Establishment of an oversight/command knowledge centre in Malawi

Scope of the Expertise Hub in Malawi

- The regional hub serves as an engagement hub, providing dedicated support to regional communities under the geographical catchment area of the institution on all matters related to successful RES implementation.
- The services rendered will include advice and application assistance for funding initiatives for RES, assistance in sourcing RES, understanding of local regulations, and providing information and direction on the sustained operation and maintenance of installed RES.
- The hub will also aid the set-up of the local contact community centres, development of training courses, and the identification of new potential communities requiring electricity access.

For the initial project scope, a regional expertise hub will be established at the Malawi University of Business and Applied Sciences (MUBAS), Blantyre, Malawi by building and expanding on the competencies in RES and local development systems available in the institution. This will be achieved through collaborative research activities spearheaded by the local CEANGAL co-PI (Dr. Esther Phiri) and the project lead at Atlantic Technological University, Sligo (ATU).



Dr Esther Phiri, MUBAS



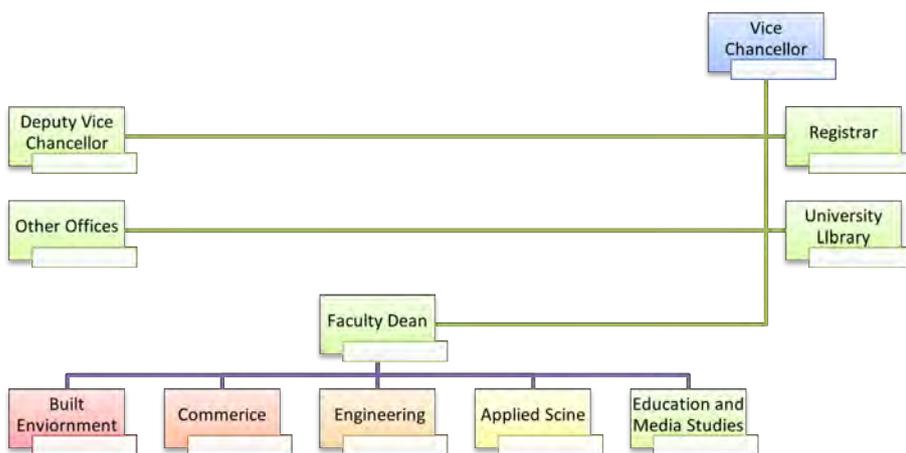
Stakeholders and reach targeted by the Expertise Hub in Malawi

The regional expertise hub at MUBAS will cover the entire geographical area of Malawi. The hub will therefore be responsible for executing all the intended project activities and outreach to targeted stakeholders in the three (3) regions and the 28 districts of Malawi:

- Northern region (with 6 districts – capital: Mzuzu)
- Central region (with 9 districts - capital: Lilongwe)
- Southern region (with 13 districts - capital: Blantyre)

Map of Malawi and its location

	Stakeholder type	Remarks
1	Regional Communities	At least 3 communities will be selected and engaged during the project lifetime to demonstrate the project solutions
2	Co-operative groups having electrification needs	At least one co-operative group will be engaged during the project period
3	Local and Regional (District) authorities	
4	Department of Energy	
5	Relevant NGOs and support organisations	Local NGOs operating in the area of rural electrification and RES implementation will be engaged and their existing projects and community networks further exploited by the hub.
6	Financial institutions	Regional financial institutions which could potentially provide long term funding to communities to help meet the project and hub goals will be engaged.
7	Technology providers	Relevant RES technology providers, especially those offering products for low-income countries will be approached.



Organizational Structure at MUBAS

Management and Operational structure

The regional expertise hub at MUBAS will be primarily overseen by the CEANGAL project co-PI - Dr. Esther Phiri, who will be responsible for the day-to-day management and activities oversight. She will be designated as the Hub Coordinator and will be supported by the Research Assistant, Mr Peter Sandula, working fulltime on realising the expertise hub and overall CEANGAL project objectives.



Malawi Institute of Business and Applied Sciences (MUBAS)

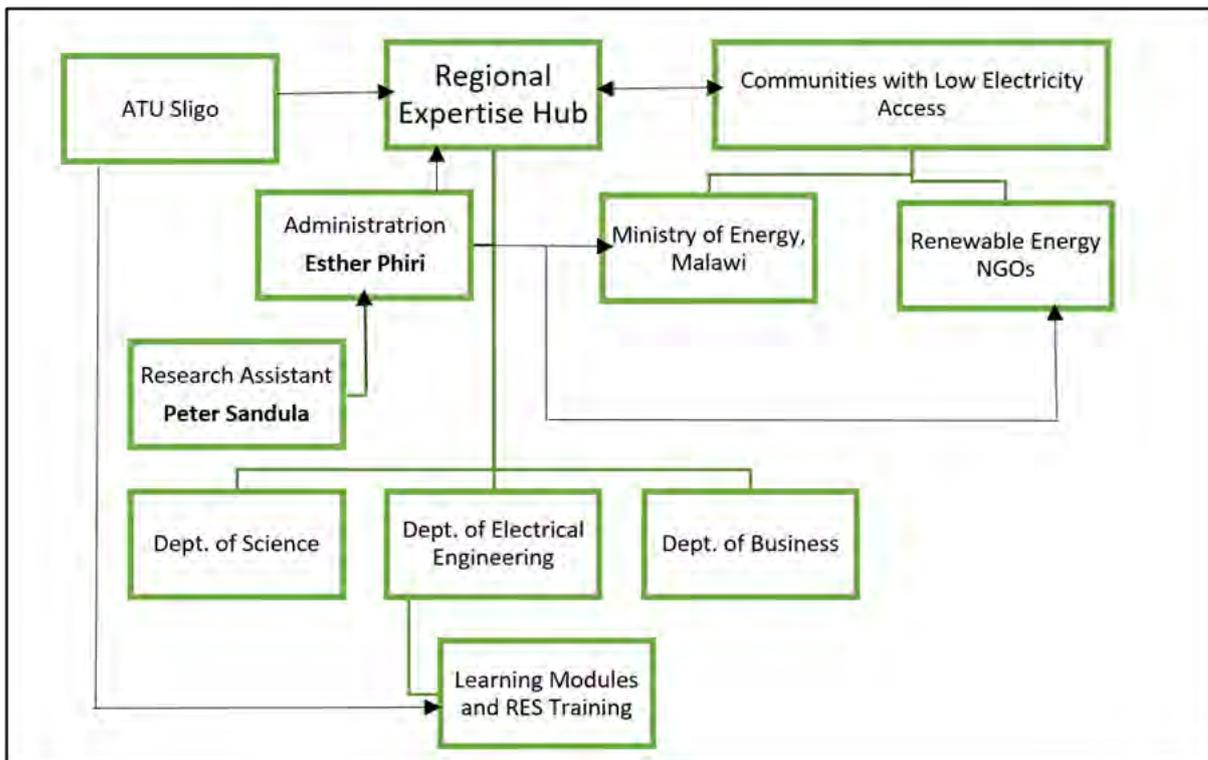
The Malawian regional expertise hub will further draw on the existing competencies of academic and research environment at MUBAS, not only those from the Department of Electrical Engineering, but will also include those from other engineering, applied sciences and social sciences specialisations seen to be relevant to the achievement of the project goals.

Since the activities carried out at the expertise hub is further expected to carry on past the lifetime of the CEANGAL project funding period, the sustained buy-in from the MUBAS authorities is therefore essential.

Project reports on the societal, economic and developmental impacts of the expertise hub , and its relevance to MUBAS and the university profile in general (especially with regards to community focused initiatives) will be put forward and made clear to the relevant authorities to support the sustained operation of the hub.

The expertise hub will work directly and cooperatively with the project PI (ATU) and report to the funding body (IRC) through the specified reporting mechanisms.

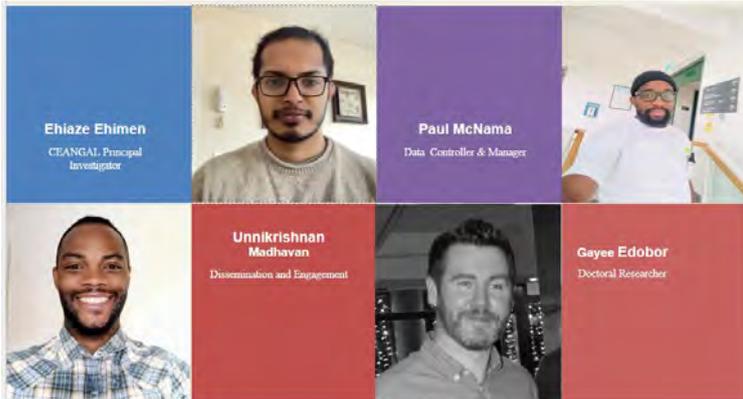
Although not directly funded by the project, such associated academics and researchers will contribute to the eventual outputs of the project, especially with regards to developing course/training modules for structured learning and training in relation to RES acquisition, acceptance, operation and maintenance.



Interaction of Expertise Hub with various stakeholders

Relationship with CEANGAL and Atlantic Technological University, Sligo (ATU Sligo)

Team CEANGAL, Atlantic Technological University, Sligo



Team CEANGAL, Atlantic Technological University, Sligo

The CEANGAL project concept, approach and overall objectives of providing and demonstrating practical, replicable mechanisms and support systems to facilitate an improved uptake of decentralised RES for the electrification and energy provision to communities which hitherto have no electricity access.

The operation of the expertise hub will therefore be mainly directed by the implementation plans, task and activities descriptions, and outputs as described in the CEANGAL project proposal.

The activities at the ATU Sligo with regards to the expertise hub operation will be led by Dr. Ehiaze Ehimen (Lead PI), with support from the research and administrative team involved in the project.

ATU will further act as the external oversight body regarding the monitoring of the expertise hub activities, will administer and overlook the financial aspects of the hub operations, and will be responsible for the periodic reporting the hub outputs and activities to the project funders.



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Sustaining the Regional Expertise Hub

Competencies Development and Expansion

It is anticipated that the regional expertise hub through its activities and outreach to the targeted communities and stakeholder groups will afford the acquisition of competences in relation to RES uptake and operation.

This increase in the local capacity will in turn increase the standing of the regional hub as the preferred knowledge centre for future communities and stakeholders interested in the intended goals to engage with.

The expertise hub at MUBAS will therefore be marketed as a one-stop-shop for advice on almost all aspects of rural electrification using RES systems, which will be sustained even after the project lifetime.

It is further expected that the staffing levels at the expertise hub at MUBAS will increase in future following a successful demonstration of the project concepts, and in line with the intended expansion goals to cater for more community electrification and RES implementation schemes in Malawi.

Funding from regional and international will be pursued to support this.

Collaboration with other Research Organisations, NGOS and Support Organisations

As part of the implementation activities of the expertise hub, to attain the electrification goals intended by the project, close working collaborations with relevant NGOs and support organisations operating in the RES sector will be established and nurtured.

These relationships will be potentially built to afford other relevant projects and initiatives that will provide the basis of future projects and in line with the objectives of the expertise hub.

Following the successful demonstration of the solutions in this project, through the exploitation and CEANGAL project expansion activities afforded through WP 6- “*Further Refinement, CEANGAL Exploitation and Innovation Management*” (Task 6.2) of the project, the expertise hub will have a ready list of potential collaboration research and academic organisations/institution partners which could be used to pursue future expansion and sustainability goals.



Competencies Development and Expansion



Collaboration with other Research Organisations, NGOS and Support Organisations



Development of Renewable Energy Related Modules and Training Courses



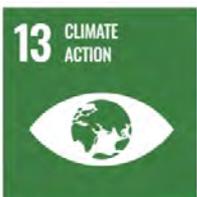
Leveraging Hub Continuity and Activities with Future Funding

Development of Renewable Energy-related Modules and Training Courses

As a key output of the CEANGAL project, structured modules (including micro-credentials) aimed after delivery in formal third-level courses, as well as micro-modules aimed for community lifelong learners on a wide range of RES acquisition, operation, maintenance and sustainability issues will be developed through the expertise and contacts availed of by the expertise hub.

The modules will be aimed to be incorporated in the course delivery structures available at MUBAS, and will potentially increase the student learning options offered by the institutions. The successful availability and future refinement and expansion of these modules offerings by the expertise hub will in turn strengthen the sustainability of the expertise hub as the regional knowledge centre for RES matters past the funding period.

The realisation of the developed modules will further support the attainment of the UN Sustainable Development Goals (SDG) goals. This is with the successful implementation of CEANGAL project, and the developed training and knowledge transfer outputs impacting the SDGs realisation:



SDG 13-Climate action:

The training course outcomes will support the greenhouse gas (GHG) and CO₂ emissions reduction targets of implementing communities through educating relevant stakeholders on RES, and the role of energy choices in abating future climate change and realising climate action goals.



SDG 7-Affordable and Clean Energy:

By affording know-how to support the uptake and use of RES with minimal environmental impacts, and expanding access for underserved SSA LIC communities.



SDG 11-Sustainable cities and communities:

Via the training and use of the CEANGAL tools and, an enhancement of clean and secure energy choices for communities is afforded, reducing the society's dependence on environmentally negative activities i.e. wood felling and deforestation to meet energy needs.



Skills training at MUBAS

Leveraging Hub Continuity and Activities with Future Funding

From the second half of the project funding period (i.e. from M18) the regional expertise hub at MUBAS in collaboration with the research team at ATU, Sligo will actively investigate and identify relevant national, regional and international funding opportunities that will be used to ensure the continuation of its activities and the ability of the hub to provide its primary goal of supporting rural electrification through community-owned decentralised RES use.

This will also be expanded to cover applications for joint EU-African Union cooperation funds especially those related to energy.

Working closely with private industry players, and rural electrification NGOs, the regional and international African project funding mechanisms which will be exploited. Some of which are mentioned in the following sections.



Access the Southern African Development Community (SADC) project funding for energy and rural development related projects.

Increased cooperation with the established SADC Centre for Renewable Energy and Energy Efficiency (SACREEE) to be able to engage with future calls on energy.

The sustainable energy fund for Africa, managed by the African Development Bank.

The project would also evaluate potential funding from the following sources:

Growth Accelerator Grants Malawi

The LEAP-RE Call for AU-EU Collaborative Research and Innovation projects on Renewable Energy (*if still operational*)

African Union (AU) Research Grants

African Development Fund for infrastructure development (includes electrical and energy infrastructure)

Malawi Innovation Challenge Fund for innovative scaling- up proposals.

Summary

The regional expertise hub is the key component of the CEANGAL project. It will be the project hub in Malawi (both physically and virtually) and it would be the single most important outcome that would remain even after the lifespan of the project.

A conscious effort has been made to ensure that the regional hub and hence CEANGAL project activities are integrated into the existing organisational structure of MUBAS and with the local communities without electricity access to ensure that it evolves in a sustainable fashion.

One of the key expected outcomes in the latter half of the project is to explore and apply to funding opportunities to accelerate electrification by utilising the demonstration of technologies using the initial seed funding by the IRC and DFA.

Variety of training modules of different academic levels including CPDs, skill development, youth sensitization will be developed by the project and be delivered through the hub.

From ATU Sligo's point of view, the hub would leave an indelible footprint of Ireland and its commitment to the achievement of SDGs beyond geographical barriers much beyond the island itself.

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