

FRAME Project Description

The project, Fostering Research and Intra-Africa knowledge transfer through Mobility and Education (FRAME) aims at strengthening research and education exchange to help finding solutions to the challenges of Food, Energy and Water Security (F.E.W.S) in Africa amid increased pressure from climate change, population, development and related impacts. FRAME has five African university partners (i.e. Buea, Cameroon; Hawassa, Ethiopia; KNUST, Ghana; Free State, South Africa and NUST, the applicant and coordinator, Namibia) with University of Twente, Faculty of ITC and Namibia Qualification Authority as technical and associate partners respectively.

The objective of FRAME is to implement mobility via a strong graduate research and studies programme (GRSP) on Food, Energy, and Water Security (F.E.W.S) with a suite of academic programmes that contribute to this topic. The GRSP model is based on the research plan built on the needs of partner countries and using university centres as hosts of the mobility beneficiaries. Using GRSP, FRAME seeks to foster an integrated approach that encourages multi and trans-disciplinarily research aimed at contributing to the capacity required to improve F.E.W.S in partner countries.

The composition of the graduate degree programmes on offer and the existing overlap in thematic fields allows for academic mobility and research in this scheme that is beneficial for each partner. For example, countries with a similar defined need in agricultural sciences (Namibia, Cameroon, Ethiopia, Ghana) still offer different areas of specialisation within their programmes: Crop production/crop protection, Agronomy, Agroforestry, Soil Science, Agricultural economics, and Animal science. Ghana, South Africa and Namibia offer expertise in Energy technologies which others tap into while Namibia has a strong and proven natural resources management track record that is shared with partner universities.

Some of the programmes chosen are research based aimed to increase research skills and capacity of students and also increase research outputs. Through the combined areas within the consortium, the diversity of the programmes is targeted considerable so that students can either expand their study spectrum or to acquire specialisations. In case of non-degree mobility, mobility up to 9 months are offered to comply with an area that matches the previous degree of the applicant to enhance future academic career options and employability.

Number and Description of Positions

Type: PhD

Number: 1 scholarship

Position/Study Duration: 48 months

Mobility Scholarship duration: 36 months

Position: This programme was designed to address the problems of:

- Limited number of skilled engineers in renewable energy technologies including solar photovoltaic (PV), wind and biofuels; and
- Low knowledge of RE Technology on the part of key actors in the public and private sectors, including energy policy makers and small/medium scale entrepreneurs.

At the end of the programme the student should be better equipped to:

- utilise innovative approaches for solving complex problems in the field of renewable technology;

- able to analyse, synthesise and evaluate interdisciplinary knowledge to solve complex problems in sustainable energy;
- able to utilise entrepreneurial skills to convert renewable energy ideas into realistic business models;
- able to appreciate multi-cultural differences with partners in a team /group;
- able to assess environmental, social and economic impacts;
- design and conduct experiments, as well as to analyze and interpret data;
- apply thermal science fundamentals to the design/analysis of renewable energy system components;
- apply basic principles of operation of prevalent renewable energy converters;
- design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability;
- function on multidisciplinary teams;
- design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability;
- understand professional and ethical responsibility;
- use the techniques, skills, and modern engineering tools necessary for engineering practice;
- an ability to function on multi-disciplinary teams;
- an ability to identify, formulate, and solve engineering problems.

Host Academic Programme

The duration of the PhD Sustainable Energy Technologies programme is 48 months.

Graduation Requirements

For the award of the PhD SETs, the student must have:

- Obtained a minimum pass mark of 50% in any examination;
- Obtained a minimum pass mark of 65% in in a comprehensive examination;
- achieved a minimum credit of 82 credit hours;
- obtained a minimum CWA of 55.00;
- submitted at least two publications from thesis in a reputable journal; and
- submitted and successfully defended a Thesis.

Employment:

A significant percentage of our graduates are already employed, however, for the few who may be looking for jobs, employment opportunities exist in the following areas:

- Generation Companies like the Volta River Authority, and Aboadze Thermal Power Company;
- Government Ministries like the Ministry of Energy and the Ministry of Power;
- Regulatory institutions in the Ghana and the West African sub-region like the West Africa Power Pool, the Energy Commission of Ghana, the Public Utilities and Regulatory Commission;
- Grid Management Companies like the Ghana Grid Company Limited;
- The several renewable energy companies springing up in the country and the sub-region;
- R & D experts and managers in energy production and power generation companies;
- Consultants in the field(s) of energy and sustainability; and

- Education and academia, research institutions.

Description of Host

The Mechanical Engineering department focuses on the principles of mechanics and energy and their application to the design of machines and devices as well as their control. The department has five specializations: thermofluids and energy systems, industrial engineering, design and manufacturing, applied mechanics, and automobile engineering. Research interests mainly lie in:

- Resource assessment and feasibility studies
- Development of models and tools for renewable energy implementation and management
- Materials for the manufacture of batteries and PV system components
- Energy and its relationship with digital development
- Energy efficiency and other cross cutting issues

For more details please follow this link <https://mech.knust.edu.gh/>

Position requirements

Admission Requirements

- i. Applicants with good master's or MPhil degree in Engineering or related field from a recognised University
- ii. In addition, candidates must pass an interview.

Scholarship Position Benefits

- Settling Allowance
900 €
- Monthly Subsistence Allowance
900 €
- Allowance for female scholarship holders
(per academic year only for mobility equal or longer than 2 academic years) 900 €
- Research Costs
(per academic year only for mobility equal or longer than 10 months) 2000 €
- Insurance Costs
75 €/per month
- Travel and Visa Costs

Who can apply (Scholarship Eligibility)

All applicants must have studied and obtained a qualification at any African Higher Education Institution. In addition:

- **Target Group 1 (TG 1):** Nationals and/residents of African countries who are staff, alumni and or students registered in one of the Partner Universities at the time of application
- **Target Group 2 (TG 2):** Nationals and residents of Africa, registered in or having obtained a university degree or equivalent in a higher education institution of such countries and not included in the Partnership.

Application Documents

- BSc transcripts
- MSc transcripts
- 2 References
- BSc certificates and MSc certificates
- Motivation Letter
- Research Proposal

Contacts Details

The Administrator of the Mechanical Engineering Department

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Contact could be made between: 09:00 – 16:00 GMT

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Visit the FRAME website: <https://frame.nust.na/> and click on the call for further details.



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