**MASINDE MULIRO UNIVERSITY OF SCIENCE & TECHNOLOGY**

# RESEARCH ASSISTANT VACANCY

# WITH THE PROJECT:

## *'Developing Capacity to Design and Distribute Potable Water Supply Technology in East Africa (DC-WaterTech)'*

## JOB DESCRIPTION

**Job Title:** Research Assistant

**Designation:** Intern

**Number of Posts:** Two **(**2)

**Start:** February, 2019 to July 2019

**End:** February, 2020 to July 2020

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**Accountable to:** Dr Veronica M. Kiluva
School of Disaster Management & Humanitarian Assistance
Department of Disaster Preparedness & Engineering Management

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## Role of the Research Assistant

The primary function of this post is to work on a *Global Challenges Research Fund (GCRF)* 2018 project, titled: **Developing Capacity to Design and Distribute Potable Water Supply Technology in East Africa (DC-WaterTech)**. The role will entail undertaking research as well as planning and coordinating activities associated with implementation of the project.

## Duties and Responsibilities

1) Establish and maintain links with key stakeholders in the project
2) Contribute to the planning of the research project
3) Undertake data collection and other activities to achieve the stated project's objectives
4) Support the development of research objectives in conjunction with the academic research manager
5) Plan and manage own activity in conjunction with more senior colleagues and within the framework of the agreed programme
6) Interpret the data collected using appropriate data analysis tools

7) Use initiative to identify areas for development of the research and to create solutions by collecting, analysing, interpreting research data and reporting on data
8) Undertake quantitative and qualitative analysis and write up own research work
9) Work collaboratively with the project partners to present research findings to internal and external bodies involved in the research
10) Network with a range of individuals and organisations internally and externally for effective data collection and to develop the potential for future collaboration
11) Attend and contribute to relevant research meetings
12) Prepare, in co-ordination with the academic manager, proposals and applications to external bodies, e.g. for an extension of funding or for new projects at the end of the contract
13) Dealing with problems and issues which may affect the achievement of the research objectives and create solutions in order to meet delivery deadlines
14) Contribute to the production of project report(s) and disseminate the results through papers, publications and conference presentations
15) Continually update specialist knowledge and understanding and undertake any further training that may be required.
16) To be familiar with research ethics requirements and principles of the of good practice of research
17) Ensure that Health & Safety regulations and risk assessments are produced and adhered to

## Special Requirements

The post holder is expected to travel to project meetings and to research engagements

## General Terms and Responsibilities

1) All staff are responsible for ensuring compliance with University and Faculty/Departmental Health & Safety requirements and regulations
2) All staff are required to positively support equality of opportunity and equity of treatment to colleagues and students in accordance with the university's Human Resources and Management policies and regulations
3) All staff are responsible for carrying out appropriate communication and information sharing

*This job description provides a general reflection of the responsibilities that are associated with the post, and it is expected that the role holder will undertake any other reasonable related duties to ensure that there is smooth service delivery.*

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**For any informal discussion, please contact the supervisor:**

Dr Veronica M. Kiluva
***Mobile:*** *+254720852942*
***Email:*** *vkiluva@mmust.ac.ke*

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## PERSON SPECIFICATION

| POST | ESSENTIAL CRITERIA | DESIRABLE CRITERIA |
|---|---|---|
| **1) Qualifications / Education** | First degree in **Engineering; (Civil, Mechanical), Water Technology,** or related subject | BSc or working to complete MSc degree in relevant subject |
| **2) Experience / Knowledge** | *Experience of:*<br>• Research in a field related to international development<br>• Organising international training workshops<br>• Undertaking qualitative and quantitative research<br><br>*Knowledge of:*<br>• Water technology, supply and sanitation<br>• Global Challenges Research Fund (GCRF) goals and objectives | *Experience of:*<br>• Engagement with GCRF research projects in East Africa<br>• Drafting of reports and proposals for external bodies.<br>• Contributions to research publications<br>• The ethical approval process for research involving human participants<br><br>*Knowledge of:*<br>• Water technology, supply and sanitation issues in East Africa |
| **3) Skills** | • Ability to work with a wide range of individuals from different cultural backgrounds<br>• Ability in using initiative to identify and solve problems<br>• Ability to plan and organise training events with international participants<br>• Good communication skills, using a variety of formats<br>• Good skills in the use of Office IT software | • Organising international travel for self and others<br>• Planning training workshops<br>• Working with a wide range of stakeholder groups<br>• Ability to write up own research work |
| **4) Personal Qualities / Attributes** | • Ability to show initiative<br>• Ability to work in a team as well as independently<br>• Ability to work to deadlines<br>• Flexible and adaptable approach to working<br>• Understanding of and respect for confidentiality<br>• Motivated and reliable | • Interest in working to build capacity to design and distribute potable water supply technology in East Africa |
| **5) Other** | • Willingness to travel to other sites (including UK, East Africa) / conferences / events | • Knowledge of Higher Education Institutions (HEIs) in UK, Kenya and Tanzania |

## PROJECT OV ERVIEW

This project will directly target the United Nations (UN) Sustainable Development Goal 6 - Ensure availability and sustainable management of water and sanitation for all. Specifically Target 6.1 - By 2030, achieve universal and equitable access to safe and affordable drinking water for all. The project builds on a recently completed project, i.e. Leveraging local Innovations through Organisation Networks (Water-LION) project that included the University of Plymouth (UoP), the Nelson Mandela - African Institute of Science and Technology (NMAIST) in Arusha, Tanzania and Masinde Muliro University of Science and Technology (MMUST), in Kakamega, Kenya. In this collaboration, the partnership has been expanded to include two more Kenyan Universities and two private companies.

### Partners to the Project Include

- University of Plymouth University (UoP), UK
- Nelson Mandela - African Institute of Science and Technology (NMAIST), Tanzania
- Masinde Muliro University of Science and Technology (MMUST), Kenya
- Egerton University (EU), Kenya
- Kibabii University (KU), Kenya
- Savemod Earth Link (SEL), Kenya
- Gongali-Model (GM), Tanzania

The Africa Competitiveness Report 2017, found that there has been a lack of progress in creating conducive environments for development and economic transformation across Africa. In Kenya, that need is well recognised in the Kenya Vision 2030 programme, especially within the social and economic pillars, which explain the need to develop technical higher level skills for the engineering sector in Kenya. The Kenyan vision promotes strengthening linkages between industry and training institutions, but states that transformations can only occur if the workforces' health is secure. To address that need, in March 2017, the Royal Academy of Engineering approved funding for a project called Water-LION. The Water-LION project took a water filter, developed at NMAIST and, via UoP, created a collaborative network with two Universities in Kenya (MMUST and Oshwal College in Nairobi) to introduce the water filter into the Kenya market.

Water-LION addressed needs in Kenyan communities with poor infrastructure and where there was chronic ill-health resulting from water contamination. As well as providing an impact on the health security of Kenyan communities, the Water-LION project also learned lessons about the challenges facing entrepreneurs in their quest to "spin-out" innovations from African Universities. This project will build on the achievements of the Water-LION by running two workshops for a mix of UK and African early career researchers, emphasising on rural community and engineering enterprise development. One workshop will develop skills in entrepreneurship and one will develop strategies for enterprise development in East Africa.

Preliminary findings from the Water-LION project revealed that we could provide safe water to communities in Tanzania and Kenya for an affordable cost of 0.3USD/litre. Bottled water of similar quality was sold commercially at 0.8USD/litre. Poor populations in Kenya regularly spend 0.1USD/litre on untreated water and often contract diarrheal diseases, putting stress on already weak health services. The next step of our research is to combine distributed source development in communities with quality assurance achieved using adapted technology. The adaptive technological solutions are essential to avoid adverse impacts on the long-term success in community development projects. We will seek to create effective strategies to achieve universal and equitable access to safe and affordable drinking water for all, by focusing on the development of entrepreneurial skills in early career researchers, those with the capacity to design and distribute potable water supply technology in East Africa.

From an academic research perspective, enhancing capacity to create indigenous solutions to developmental problems across Sub-Saharan Africa is just the first step and many

innovations fail to achieve an impact due to their inability to expand beyond their local environment (WEF 2017). Considerable challenges can be encountered by entrepreneurs when growing their distribution network, as distribution partners need to have a high degree of technical knowledge, entrepreneurial business skills as well as a capacity to conduct market research programmes. Kaijage, Wheeler and Newberry (2013) suggested that projects aiming to build capacity in East Africa require six elements to be effective: Developing shared knowledge and conceptual frameworks; Enhancing national education policies and practices; Developing accessible learning materials; Training trainers and building enterprise educator support networks; Supporting social networks and the informal sector. This project will assess that validity of that suggestion, addressing all six element using a Participatory Action Research (PAR) methodology (Bryman, 2015).

## Programme of Work

- ***Evaluate Water-LION project findings (Jan-Jul, 2019):*** *Synthesise* data from the project, logging challenges encountered and lessons learned from the study. This project will assess the findings to reveal implications for enterprise incubation and spin-out from Higher Education Institutions (HEIs) in Africa.
- ***Skills development workshop (Jul, 2019):*** Engage a group of early career academics from the UoP and African partners in a capacity building workshop in Plymouth, with expert contributions from entrepreneurship and engineering development research centres at Plymouth University.
- ***Strategy workshop (Jan, 2020):*** Focussing on enhanced design and distribution of potable water supply technology in East Africa. Engaging the same group of early career researchers in a second workshop in Kenya, to learn about strategies for community development and enterprise creation.
- ***Monitoring strategy implementation (Feb-Jul, 2020):*** Monitor implementation of strategies for enhanced design and distribution of potable water supply technology in East Africa and assess benefits and impact achieved by the project.

## Planned Project Outputs

- ***Output One:*** **Report:** "challenges in the design and distribution of potable water supply technology in East Africa" – Framed around issues raised by The Africa Competitiveness Report 2017 (WEF 2017) and the Kenya Vision 2030 programme, presenting an evaluation of lessons learned on the Water-LION project.
- ***Output Two:*** **A capacity enhanced network of early career academics:** to achieve this output, the project will engage experts, in community development, entrepreneurship and engineering business strategy. The expert support will be deployed in two 3 day capacity development workshops. The first workshop will focus on entrepreneurship and the second workshop will focus on strategy development.
- ***Output Three****:* **Enterprise development strategies:** new strategies will be developed for the design and distribution of potable water supply technology in East Africa
- ***Output Four:*** **Project report:** for dissemination "Strategies for enhancing the design and distribution of potable water supply technology in East Africa"

## APPLICATION MODE

Interested applicants should email a soft copy of Application Letter, enclosing a 3 page current CV, copies of Certificates and Testimonials on or before **Friday 25th January, 2019** by **5.00 p.m** to the address: *vkiluva@mmust.ac.ke*