



## CALL FOR APPLICATION FOR FIVE (5) PhD SCHOLARSHIPS UNDER UR-SWEDEN PROJECT AND SUBPROGRAMME OF WATER RESOURCES AND ENVIRONMENTAL MANAGEMENT

### A. Background

The Research Training Partnership Programme “Enhancing Water Resources and Environmental Management for Sustainable Livelihoods in Rwanda (E-WREM-SLR)” has main objective of contributing to improvenatural resources management toward poverty eradication, sustainable livelihood and improved community health in Rwanda, by building capacity and stimulating solution-oriented research related to water, environmental, and health management. The training partnership will focus on three main areas: (1) Sustainable management of water and sanitation, (2) Sustainable integrated water technologies, and (3) Environment and health, with given special attention to mainstreaming of gender, climate change, and labour market. The sub-programme is intended to make contribution towards achieving the priority 7 of the National Strategy for Transformation NST1 of Rwanda, through the areas mentioned above. The project will follow Integrated Water Resources and Management (IWRM) approach which is a process that promotes coordinated development and management of water, land, and related resources to maximise economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.

### B. Call for applications

1. **Irrigation Engineering:** Irrigation is known to improve agricultural production as only about 20 percent of the total cultivated land globally is irrigated and it contributes 40 percent of the total food produced. Sub-Saharan Africa is having highest prevalence of undernourishment, 25 percent in 2011-2013 against 12 percent at global level and only about 3 percent of the cultivated land is irrigated in this region. This shows that there is need for Sub-Saharan Africa to invest more in irrigation to ensure improved food security in the region. However, water which is the key driving element in irrigation is becoming scarcer in many countries including Rwanda. Therefore it is essential to deal with the considerable challenges of water management. Agriculture is the largest water user worldwide, representing about 70 percent of total withdrawal.

Rwanda is targeting to achieve 102,000 hectares of irrigated land by the year 2024 from the current about 48,000 hectares. This is expected to add enormous pressure on the water resources of the country. To ensure sustainability of agricultural irrigation in Rwanda there is need to identify and adopt best irrigation water management practices that are suitable for the irrigated land in the country.

The PhD study is expected to investigate those aspects of irrigation engineering that contribute to effective and efficient irrigation water management in Rwanda. This may include assessment of the current technologies use for water abstraction, transportation, distribution and application, comparative analysis of the use technologies and it suitability, modeling of the operation of the selected system for optimisation of its operation, looking into possibility of conjunctive use of surface and groundwater for irrigation, integrating operation of hydropower and irrigation, etc.

2. **Hydraulics Engineering:** The applicant for this position is expected to conduct research in the field of hydraulics. This should be related to the application of the principles of fluid mechanics for the





design, construction and/or modeling of water engineering structures, civil and environmental engineering facilities such as, canal, river, dam, reservoir, water treatment plant etc. The research is expected to be conducted in a Rwandan catchment. The researcher will conduct detail review of the selected issue and identify in consultation with the supervising team. The identified research problem should one of the key hydraulics in Rwanda such as, flood, sediment transport, channel erosion, contaminant transport etc.

3. **Water and Sanitation (Water transport and Distribution):** Access to water and sanitation will play important role toward achieving other SDG goals. Rwanda target to achieve 100% access to water and sanitation by 2020. To achieve this target and maintained the achievement there is need of very well trained specialist at all level in that field. One of the important aspects of water and sanitation are water transport and distribution as well as collection, treatment and disposal. This offer is intended to train specialist who is expected to make contribution in teaching, research and community service in water transport and distribution. The research may include assessment and modeling of water transportation network – pressure sufficiency, leakage, unaccounted for water etc.

**Hydrology and Water Resources Management:** Recent national water accounting conducted by the Ministry of Environment indicates that Rwanda is water scarce country with about less than 700 cubic meters per capita per year of renewable water resources. In addition to that other water related issues in the country include, erosion, landslide and mass movement, flood, various kind of pollution, uncertainties associated with climate change, rise in water demand, etc. To ensure sustainable management of water resources it is essential to have sufficient and accurate data, planned and manage catchment, model scenarios for projection of future water resources situation, ensure appropriate implementation of Integrated Water Resources Management (IWRM). This fellowship is intended to train a specialist in Hydrology and Water Resources management who in turn will contribute in capacity building through teaching, research and community service.

**Water engineering and biotechnology:** Sustainable Development Goal 6 is about ensuring availability and sustainable management of water and sanitation for all. An estimated 785 million people globally still lacked even a basic drinking water service. There is need finding locally available technologies for water and waste water treatment. The candidate is expected to work on finding local available biomaterials for water and waste water treatment. The technology could include identifying locally available biomaterial for coagulation, testing for bioremediation (removal of chemical found in raw water and removal of microbial contaminants, biological treatment process for removal of nutrients and other chemical contaminants, modeling of the removal of specific contaminants, development of prototype etc.

### C. Funding

The PhD training will be funded by the UR-Sweden Programme grant.





**D. Requirement**

The applicant should be:

1. a Rwandan Citizen;
2. a Master's degree holder in the mentioned field/s stated under each PhD project above
3. Candidates from collaborating Rwandan Government institutions such as RWFA, REMA, Rwanda Meteo, WASAC, REG, etc. are eligible and invited to apply. When successful, such candidates shall have to produce commitment letters from their respective institutions to release them to undertake the PhD on sandwich model. Furthermore, UR shall have agreed with these institutions on how the acquired expertise shall benefit both the institution of origin of the candidate and UR.
4. Ready to adhere to UR capacity building policies and regulations;
5. Having interest and passion in water resources and environmental management (teaching, research, inter-institution collaboration for WREM matters);
6. Ready and able to conduct his/her PhD research activities in a collaborative way.
7. All things being equal, priority will be given to UR staff.
8. In line with UR's gender policy and UR's commitment to bridge gender gap in academic (teaching and research) jobs; all things being equal, female candidate shall be preferred.

**E. Application file**

Applicants must submit the following documents (well numbered):

1. Application letter addressed to the Ag. Director of Centre for Postgraduate Studies, University of Rwanda; the letter should demonstrate commitment, motivation and reasons for interest in this PhD program. A special section should be devoted to demonstrating how the applicant meets the above requirements;
2. Curriculum Vitae;
3. Copy of the degrees (Masters degree in the mentioned area under each of the seven projects)
4. Administrative recommendation letter from the direct supervisor;
5. Recommendation letters from at least two individuals of which one should be from academia;
6. Interested candidates should demonstrate in writing:
  - i. brief reflection on the key issues of water resources and environmental management in Rwanda – about half a page.
  - ii. their interest in one of the PhD projects described above and motivate why.





- iii. earlier experience in the field chosen;
- iv. academic merits such as exams in the field, any related publications, any field experience relevant to the PhD project applied for.

**F. How to apply?**

1. The complete hard copy application files should be submitted to the office of the Ag. Director of the UR-CPGS at UR Head-Quarters (Gikondo) with a copy to the Dean of the School of Engineering at UR-CST Nyarugenge Campus.
2. A soft copy of the application should be sent to the Mrs. Gloriose UMULISA GASHAYIJA, the Scholarships Officer at UR-CPGS (email: [gashayijagloriose@gmail.com](mailto:gashayijagloriose@gmail.com)) with Cc. to the sub-program team-leader, Prof. Umaru Garba WALI (email: [ugarbawali@gmail.com](mailto:ugarbawali@gmail.com)).
3. Shortlisted eligible applicants will be invited for an interview for the final selection of the Candidate.

**G. Deadline for application**

Application should be submitted not later than 4<sup>th</sup> October, 2019 at 5:00 p.m.

**H. For more information**

Applicants can contact the Project PI, Prof. Umaru Garba WALI (email: [ugarbawali@gmail.com](mailto:ugarbawali@gmail.com)).

*Done at Kigali, on 3rd September, 2019*



**Dr Celestin NTIVUGURUZA**

*Acting Director, University of Rwanda Centre for Postgraduate Studies (UR CPGS)*