



CALL FOR APPLICATIONS FOR DOCTORAL STUDENTSHIPS IN THE AREAS OF BIOENERGY, WASTE MANAGEMENT AND AIR POLLUTION CONTROL

1. Background

The University of Rwanda (UR) with its partnering Swedish universities offer the opportunity to complete 2 doctoral degrees (PhDs) in the bioenergy area. The University of Rwanda is partnering with Swedish University of Agricultural Sciences, in a new five-year Research Training Program (2021-2026) funded by the Swedish International Development Agency (SIDA) aiming to establish a long-term partnership between the involved partners, which in turn will enable Rwanda to develop its biomass resources in a sustainable way with low environmental impact. Five PhD students are being recruited to the programme; 3 have been appointed and 2 are open in this call.

2. Program description

Two PhD students will be enrolled in a **PhD sandwich program at our partnering Swedish universities**. Students will take courses in Sweden and be supervised jointly by Swedish and UR senior academic staff. The program aims at developing household-, agricultural-, and industrial waste-to-energy systems based on valorization of different local bio-based solid waste materials and residues to promote sustainable development in Rwanda. Candidates are invited to submit their applications according to the sub-theme and process as described below. Studies are expected to start in the beginning of 2022 and last 5 years with 80% PhD studies and 20% teaching (at UR).

3. Role of the PhD projects

We invite candidates who are interested in one of the following two sub-themes:

a) Improved cooking and farming systems in rural households – sustainability, technology and biochar

Gasifier cookstoves provide opportunities to reduce fuel demand for cooking and reduce indoor air pollution, while producing biochar as a by-product. Research issues for this PhD student concern fuel consumption in cooking systems that use biomass resources to produce energy and biochar for soil amendment. A case study with biochar-producing cookstoves in households will be performed. Climate impact and carbon sequestration in biochar will be assessed. User perceptions of cook-stoves will also be investigated through household surveys and observation. The project links to others in the programme regarding emissions and biomass growth.

b) Agroforestry landscapes for bioenergy

Agroforestry in the landscape produce a lot of biomass for bioenergy on e.g. household and charcoal trade scale.



However, the biomass production, bioenergy conversions as well as the bioenergy distribution/trade could be much more efficient. Agroforestry could contribute to wider bioenergy supply and use, e.g. supplying electricity, charcoal and biochar for soil amendments and/or water purification.

Intensification and widening of agroforestry for bioenergy will affect other sectors and these interactions will need to be analyzed and understood. Analyses of synergies and/or trade-offs with, food production, biodiversity, household economy and livelihoods both at local/farm and landscape scales as well as bioenergy value chain development are to be included in this PhD research project. This research will dig into details as e.g. species selection for different niches in the landscape, efficient technologies of bioenergy conversion and utilization, soil fertility and agricultural productivity and value chains as well as modelling the above on landscape scale and relating results/findings to international climate change and carbon sequestration discourses.

The PhD students working on the proposed themes will be enrolled at the Swedish University of Agricultural Sciences.

4. General Eligibility Criteria

The call is open for all, under the following general eligibility criteria, that the applicant must:

- i. Be a citizen of Rwanda,
- ii. Hold a MSc degree in a relevant field,
- iii. Be ready to spend a half of her/his study period abroad (the candidate should spend 5 to 7 months per year in Sweden),
- iv. Be ready to work for the University of Rwanda after completion of the PhD studies.

Male and female applicants below the age of 50 years of age are given priority for PhD Scholarships. Candidates must be prepared to return back immediately after receiving a letter confirming satisfactory completion of the degree to serve in Rwanda. For PhD scholarships, the candidate should be prepared to work full time on the project and not in possession of another fellowship for PhD studies.

5. Specific eligibility criteria

In addition to the general eligibility criteria, the following specific eligibility criteria needs to be considered.



Essential criteria:

- i. The candidate should hold a MSc degree in a relevant field;

For position a:

MSc degree in Environmental Engineering, Chemical Engineering, Agricultural Engineering, Natural Resource Management or equivalent.

For position b:

MSc degree in Agronomy, Environmental Sciences, Soil and Agroforestry, Agricultural Engineering, Environmental Engineering or equivalent.

- ii. The candidate must be English proficient.

Desired criteria:

For position *a*, it is desirable, but not required, that the candidate has knowledge and experience in

- i. bioenergy
- ii. greenhouse gases
- iii. systems analysis
- iv. fieldwork in rural or household settings.

For position *b*, the candidate should have

- i. a strong background in Rwandan agro-ecology and production
- ii. thorough understanding of small scale farming household and agricultural/forest/bioenergy value chains.

Note that the candidate is expected to contribute to teaching at University of Rwanda. However, during the study period, the teaching load is maximum 20%. Other side activities, assignments, consultancies or employment are strongly discouraged.

Female candidates are encouraged to apply and there is a gender equality component in the programme that will provide some support for parents who travel with children.



6. How to apply

Interested applicants should submit the following:

- i. An application letter for the position the subject should be **Bioenergy, Waste Management and Air Pollution** and it must specify which of the positions the applicant is applying for.
- ii. A personal motivation statement for the programme of study. This statement should demonstrate commitment, motivation and reasons for interest in the programme (max 2 pages).
- iii. Two Recommendation letters: one of the recommendation letters should be issued by a previous academic supervisor, preferably the Master's degree supervisor.
- iv. Certified Copy of the Master's degree certificate (or equivalent)
- v. Copies of valid identification card or passport
- vi. Copy of the Master thesis
- vii. Current CV (maximum of 3 pages) with full name, e-mail, date of birth, sex, formal education at previous university, including full specification of the Masters' degree specialization, teaching experience, previous experience relevant to the programme, present position, scientific publications and/or any other academic experience that may be relevant.
- viii. Concept note, outlining a problem statement, research questions, and research design and suggest/discuss some appropriate methodologies for the selected topic as well as a few key references (maximum 4 pages).
- ix. A copy of published scientific papers, proceedings or similar (optional).

7. Mode of submission

An electronic version of the application should be sent to: ur-cpgscholarship@ur.ac.rw and copy to kaberacriss@gmail.com, christoffer.boman@umu.se and cecilia.sundberg@slu.se. Please name the application folder with your name and the document name (e.g: Kabera_Bioenergy).

8. Submission deadline

The deadline for application is 27/12/2021.

9. Recruitment process

Applications must be submitted by e-mail as specified above. The candidates will be notified if they are called for an interview.



The interviews are expected to take place at UR campus in Kigali. The recruitment team includes senior staff from both UR and Swedish universities. Successful candidates will be notified by e-mail and are expected to start on their new position at University of Rwanda at earliest in January and latest in April 2022.

Enquiries: Send an e-mail to the Principal Investigators: UR Team Leader Dr Kabera Telesphore at the e-mail address: kaberaacris@gmail.com or Swedish Team Leader Dr Christoffer Boman at the e-mail address: christoffer.boman@umu.se

Done at Kigali, December 08, 2021



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