



To the MSc holders of INES-Ruhengeri

The VLIR-UOS TEAM SENSOR² project (Supporting Early-warning systems and Nature-based Solutions using Opportunistic Rainfall sensing in Rwanda) would like to select **one** high-potential staff member of Institute of Applied Sciences INES Ruhengeri, for

PhD research on nature-based solutions to prevent geohazards in urban and rural context near Musanze (Mukungwa catchment), Rwanda

Place of study: Belgium, Ghent University, Rwanda, University of Rwanda and INES Ruhengeri.

The successful candidate for this academic position should:

- Be a current staff member of INES Ruhengeri with a MSc degree (promising MSc students with exceptional grades, graduated before the start of the project, may be considered as well).
- Have an academic or professional background that is relevant to the proposed PhD topic (geohazards, geomorphology, earth sciences, nature-based solutions).
- Meet the following minimum requirements (a, b, c):
 - a) Hold a master's degree in science or engineering, and has obtained above average results during their BSc and MSc studies. Any study visits abroad are considered an asset.
 - b) Demonstrable experience with scientific writing (e.g. published a paper in an international (SCI) journal or wrote a substantial technical report, preferably in the field of interest).
 - c) Demonstrable expertise in geomorphology, geohazards and nature-based solutions, and experienced with performing field work and desktop analysis using GIS, Python, R, Matlab or equivalent.
 - d) Demonstrable excellent written and oral skills in English.
 - Candidates that do not fulfil the minimum requirement for selection should provide a motivated statement to explain their progress.
- In case of equal qualifications, priority will be given to female and early-career candidates. **We strongly encourage early-career and female candidates to apply.**



The PhD research

- PhD topic: This research will explore the potential of nature-based solutions (NBS) for landslide and flood prevention in the Mukungwa catchment and particularly Musanze. The research will assess prevention practices like terraces, woodlands, dams, ponds, hedges, grass strips or crop rotation and will evaluate their effectiveness under different rainfall conditions, accounting for soil moisture, runoff and connectivity. Considering local needs and traditional knowledge, this research aligns with ongoing projects like LAFHAZAV (<https://aresproject.ines.ac.rw/>) and the Volcano Communities Resilience project (<https://projects.worldbank.org/en/projects-operations/project-detail/P178161>). In addition to a detailed geomorphological mapping of geohazards and detailed field work, this PhD will help develop multi-hazard preparedness and response strategies based on participatory planning of envisaged futures and model-based assessment of the effects of nature based solutions and risk exposure and vulnerability.
- Four year sandwich research programme, 24 months in Belgium (Ghent University), 24 months at University of Rwanda/INES Ruhengeri, starting with 8 months in Rwanda.
- Main promoter in Belgium: Prof. Amaury Frankl.
- Main promoter in Rwanda: Dr. Emmanuel Rukundo.

Broader context of the Sensor² project:

Flash floods and landslides in Rwanda claimed 135 lives and cost €400 million between 2nd and 3rd May 2023 alone. A lack of accurate and sufficient rainfall data hampers the ability to issue timely warnings and prevent these increasingly frequent disasters. SENSOR² will establish a multi-stakeholder, multi-institutional partnership to introduce an innovative and cost-effective rainfall monitoring system using mobile phone network antennas. These unprecedented, nationwide rainfall data will be integrated in updated, accessible early warning systems and will be used to support research on nature-based prevention measures in the rapidly expanding city of Musanze. SENSOR² will bring together academia, government bodies and the private sector to design targeted solutions towards the most vulnerable communities in rural and urban areas of Rwanda. The project will support 3 “sandwich-style” Ph.D. candidates, hired from Meteo Rwanda, University of Rwanda-College of Agriculture Animal Sciences and Veterinary Medicine – UR-CAVM and the Institute for Applied Science – INES Ruhengeri.



Submission of applications

- Motivation letter (maximum 1 page) and CV (maximum 2 pages; including telephone numbers or email addresses of 3 reference persons).
- Copy of BSc and MSc degree and grade reports.
- The application should be submitted by email to amaury.frankl@ugent.be, emmanuel.rukundo@rwb.rw and uwihirwejudith@yahoo.fr with the subject line: "SENSOR2 PHD APPLICATION UGENT INES".
- **Before 25 August 2024, 6 p.m.**

Procedure

After screening for eligibility, the applicants will be evaluated and ranked by a selection committee of the SENSOR² project. The top-ranked eligible candidates will be invited to an interview (**27 September 2024**), which will take place hybrid at the University of Rwanda headquarters in Kigali and online. The candidate is expected to keep this date free and travel to Kigali for the interview.

The PhD programme is expected to start on 1 January 2025. Study stipends while in Belgium will be at PhD level (VLIR-UOS standards). Applicants implicitly agree to these procedures. For more information on the research topic, procedure and eligibility criteria, please contact Prof. Amaury Frankl (amaury.frankl@ugent.be), Dr. Emmanuel Rukundo (emmanuel.rukundo@rwb.rw) or Prof. Judith Uwihirwe (uwihirwejudith@yahoo.fr).