Call for applications
Grants for University of Rwanda Master's students to support research on Ecosystem-based Adaptation projects in line with LCDF II
Applications are due: 24 May 2019

A collaborative agreement between Rwanda Environment Management Authority (REMA) and University of Rwanda (UR) for sponsored research under the project Ecosystem-based adaptation (EbA) in degraded wetlands, forest and savannah sponsored by LCDF II/REMA has enabled 10 research grants to be awarded to UR Masters students with successful research proposals in line with the EbA project criteria.

The REMA project is called "Building resilience of communities living in degraded forests, savannahs and wetlands of Rwanda through an Ecosystem based Adaptation approach" and abbreviated as LDCF-II. The main objectives of LDCF-II project are to build resilience of communities living in degraded forests, savannahs and wetlands in Rwanda, using Ecosystem-based Adaptation (EbA) approaches.

The Physical implementation of LDCF-II project focuses mainly on:

1. Protection of Kibare Lakeshores in Kayonza District
2. Protection of Murago Wetland in Bugesera District
3. Contribution to removal of water hyacinth in Lake Cyohoha North Lake in Bugesera District
4. Contribution to restoration of Nyandungu Wetland in Gasabo District
5. Protection of Nyiramuhondi River Banks and Nyange Watershed in Ngororero District
6. Protection of Ibanda Makera Natural Forest and Savanahs in Kirehe District
7. Agroforestry development of Mushongi in Kirehe District
8. Restoration of Sanza Natural Forest in Ngororero
9. Restoration of natural forest in Rwinkwavu, Kayonza District
10. Rural Settlement and the site of Gakoro IDP Green Model Village Construction and Lake Ruhondo Management in Musanze District.

The collaboration between REMA and CoEB/UR will support 10 Masters research projects. Research will be started by June 2019. UR Masters students may come from any Masters program within UR where the research topics of LCDF II and EbA described herein are aligned with the UR Masters program requirements for research topics in that Masters program.

The **Center of Excellence in Biodiversity and Natural Resources Management** (CoEB) is collaborating with the LCDF II/REMA project to meet project objectives under EbA approaches. The CoEB is well positioned to become a key technical partner with REMA and LAFREC to implement the research component of this project. The CoEB is a knowledge management center consisting of a consortium of governmental and non-governmental environment-related research and higher learning institutions called *nodes*, coordinated by a central *hub* located at University of Rwanda. The mission of the Center is to *enhance the knowledge of biodiversity and natural resource management for sustainable development.*

The Center focuses on three main areas: 1) *Education and awareness raising* for biodiversity and natural resource management including advocacy, promotion of science-policy linkages, and improved knowledge management and information sharing mechanisms; 2) *Research and monitoring* to generate knowledge about biodiversity and natural resources, including biodiversity informatics, for evidence-based decision-making supporting policy development and sustainable development goals; *Valorization of biodiversity* from genes to ecosystems for sustainable development in Rwanda through *bioprospecting* initiatives. The Center functions as a consortium with its nodes to produce firsthand knowledge through research and education, while the hub plays a catalytic and coordinating role to ensure sharing of scientific knowledge, skills and expertise.

The proposed research projects available for UR Masters students will contribute to LCDF II Project components of Ecosystem-based Adaptation and may include:

- Water Hyacinth management; participation of local communities in water hyacinth management; relationship between water hyacinth removal and the reduction of negative effects of this invasive species: i) water flow; ii) water quality; and iii) biodiversity; viability of using removed water hyacinth for handcrafting, fodder and as an input for organic fertiliser
- Rational use of wetland buffer zones
- Carbon dioxide sequestration
- Effectiveness of bamboo as buffer zone planting along wetlands
- Effects of EbA on local communities' vulnerability to climate change in Rwanda using specific EbA approaches
- Promoting the use of the climate-resilient indigenous species for restoration and agroforestry activities.
- Restoring natural savannas; ii) promoting the development of agroforestry in adjacent agricultural land; iii) promoting water harvesting and conservation techniques; and iv) promoting the use of biogas as an alternative source of energy to woodfuel
- Climate-resilient species for restoration activities including: i) riparian species that are resilient to periodic droughts (e.g. *Salix gooddingii*); ii) hydrophilic plants that are adapted to anaerobic conditions (e.g. *Aeschynomene indica*); and iii) stream bank species resilient to water logging (e.g. *Cocos nucifera*). Riparian species that produce fodder offer additional benefits for local communities and will be prioritised for wetland restoration; these species include *Pennisetum purpureum*, *Tamarindus indicus* and *Vernonia amygdalina*; communities living adjacent to the restoration areas can be assessed for their engagement with these activities and whether their preferences for species can be prioritised.
- Forest restoration with climate-resilient tree species to increase local communities' resilience to intense rainfall events and landslides; forest restoration with climate-resilient species should be evaluated for: i) increase soil stability; ii) decrease sedimentation in watersheds downstream; iii) increase water infiltration; and iv) increase the diversity of local communities' livelihoods.

See the LCDF II project document for complete information for possible research topic development. http://climatechange.rema.gov.rw/node/84

The research projects should address Priority Research Areas from the LCDF II project document: Climate change, including increased mean temperature and erratic rainfall, is negatively affecting rural communities in Rwanda. Erratic rainfall results in flooding events in the

central and north-western highlands, whereas rainfall shortage and drought occurs in the eastern and southern lowlands. Consequently, major sectors in Rwanda are affected by climate change, including agriculture and water. Such effects include: i) decreased agricultural production because of soil erosion, reduced soil moisture and water availability; ii) decreased agricultural yields because of crop damage from flooding and landslides; and iii) decreased quality and quantity of water as a result of flooding and droughts, respectively.

Rwanda's natural forest, savanna and wetland ecosystems provide a wide range of services. These include regulating services such as erosion control and flood mitigation. Subsequently, these ecosystems notably contribute to the resilience of local communities to climate change. For example, intact riverine ecosystems mitigate the effects of floods on adjacent agricultural areas. However, these ecosystems are at risk. The most prevalent threat is the unsustainable use of natural resources by local communities. This leads to the degradation of natural ecosystems and thereby reducing their capacity to provide ecosystem services. Consequently, the vulnerability of local communities in Rwanda to the effects of climate change is increased.

To address the problems caused by floods, droughts and landslides in Rwanda, the LCDF II project will use an Ecosystem-based Adaptation (EbA) approach to restore degraded savanna, forest and wetland ecosystems. This will enhance the resilience of these ecosystems against the effects of climate change. As a result, the climate vulnerability of local communities will be reduced. This will be achieved by: i) increasing the technical capacity to plan and implement EbA at national and local levels; ii) strengthening the national and local policies, strategies and legislation to facilitate the national implementation of EbA; and iii) restoring degraded savanna, forests and wetlands to provide proof-of-concept for the role of ecological infrastructure in increasing climate resilience and providing alternative livelihoods for local communities. The EbA restoration activities will be combined with: i) bio-physical interventions to increase the climate resilience of local communities; and ii) green technologies that promote the sustainability and resilience of restoration activities. These interventions will further increase the resilience of local communities in Rwanda to the predicted effects of climate change.

The proposed projecst will demonstrate the benefits of EbA by using intervention sites in the most vulnerable areas in Rwanda. The proposed projects will address priorities identified in Rwanda's NAPA and will build on several on-going baseline projects including Projet d'Appui à la Reforestation au Rwanda (PAREF), Land Husbandry Water Catchment and Hillside Irrigation Programme (LWH) and Rural Sector Support Project (RSSP). The project will be executed by the Rwandan Environmental Management Authority (REMA) within the Ministry of Natural Resources (MINIRENA) in partnership with the Rwanda Natural Resource Authority (RNRA) within MINIRENA, the Ministry of Agriculture and Animal Resources (MINAGRI) and several other government ministries.

Details of possible research projects to help guide proposal development

Successful proposals will receive a research grant that will cover funding for the research permit, lodging, communications and transport, as well as some field equipment, and fees for supervision and site visits by supervisors for each student. The research grants will provide for the research permit, transportation to and from field sites, food, lodging, and communications while in the field. Equipment is not included individually, but some key equipment is being purchased for the projects and equipment needs should be included in the proposal.

Expected outcomes from the UR Master's student researchers: Students who receive the research grants are expected to participate in regular research meetings for all researchers in the LCDF II funded project, to discuss research updates, and engage in interdisciplinary dialogue to enhance research outcomes. Outcomes from funded students include a report to LCDF II/REMA with results from each student, and the final thesis report towards the student's Master's degree following UR requirements. REMA would like these project results to be applicable to other scenarios across the country, and students should consider this in writing up the results of their research projects.

Projects will conclude by 2020 when results will be presented. It is expected that students will publish their results in peer-review journals with assistance from project supervisors.

To apply for the scholarship funding, students must submit the following:
1) Cover letter explaining reasons why you believe you are qualified to receive the research grant. *In your cover letter you must indicate which number from Table 1 your research project falls in.*
2) Evidence of current registration in a UR MS program relevant to the proposed LCDF II research topics (pending registration is possible if the registration will be confirmed by the start of the field work)
3) Letter from student applicant's supervisor indicating support for the project and signing that he/she has reviewed and provided input to the proposal.
4) Research proposal of no more than 10 pages in length (number the pages of the proposal) with the following sections (see below for more details on what is expected in this proposal):
   - Introduction (not more than 3-6 paragraphs; include brief theoretical framework for your study, brief background information and clear statement of research question(s)
   - Literature review (not more than 4 pages; theoretical framework showing where your research question(s) come from, and why they are important
   - Methods section – clearly explain the methods you will use to gather data to answer your research questions; explain how you will analyze your data
   - Expected Results – explain how you believe your research project will contribute to LCDF II's objectives
   - Time line (not included in page limit)
   - Budget (not included in page limit)
   - Literature Cited – you must use a software such as Mendeley (not included in page limit)
   - Number all pages, use 12-point font, include your name on the title page, and use 1 ½ line spacing.
   - Include your name and name of Masters Program at the top of the proposal.

IF YOU DO NOT INCLUDE ALL THESE SECTIONS IN YOUR PROPOSAL, YOUR PROPOSAL WILL BE REJECTED.

5) CV – must include a list of references, including contact information for each reference
6) List of your committee – your main supervisor, and at least one additional committee member who will supervise your research (at least two, one supervisor and one co-supervisor, others if applicable). Each supervisor listed must sign that they have reviewed your proposal prior to submission and given you feedback on it.

All documents must be submitted to CoEB@ur.ac.rw
You must include this in the Subject line: LCDF II research proposal.

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Evaluation of Research grant proposals will be completed by a team of academic staff from UR and other members of the Oversight committee for this collaborative project. Criteria include relevance of the research to the LCDF II project goals, quality of proposal in terms of quality of the: writing, theoretical framework, research questions, research design, and academic, research and field experience background of the applicant, as well as adherence to the guidelines contained in this document,. All students applying must be current Master's students registered in a UR program relevant to the LCDF II project goals at the time of application.

For questions email: CoEB@ur.ac.rw or call Prof Beth Kaplin at 0788664551

Detailed guidelines for the proposal

Introduction: 3-6 paragraphs; the introduction should present the research you wish to do and place it into a theoretical context or conceptual framework - what has been done before and why the question is important. Keep in mind that in the Background section you will go into greater detail on justification so the Introduction needs to set the context for the project you are proposing. In the introduction you will establish the general boundary or territory of your research project. You should describe the general foundation for your study, including references or citations from existing literature so that you provide a good enough background for the reader to understand where your study questions come from but you don't want to give too much detail that becomes redundant with the background section. The introduction should include the justification for why this question is important. The introduction should end with the last paragraph clearly stating your research questions. You do not need a separate section called Problem Statement. Just state clearly your research questions. If you are using 'goal' and 'objective' (e.g., the objectives of my research are to…) be sure you understand the difference between goal and objective. If you are using hypotheses and/or predictions these can go in the start of the Methods section linked to your specific methods.

Background or Literature Review: This section may be 2-4 pages and will establish the theoretical framework for your research. You may include conceptual diagrams to illustrate your research questions and framework but it is not a requirement. This section should be tight and cohesive with good transitions and segues that shows the reader you understand what has been done before and where your research question(s) come from – you will use citations from the relevant literature to back up your points. Do not list every study you read. Make a point or posit an argument and then back it up with examples from the literature.

Methods: It is helpful to repeat your research questions and link each question to the methods you will use to collect data to quantitatively or qualitatively analyze and answer your research question(s). Your methods need to be in enough detail so the reader could do your study by following your methods section. Your will include an explanation of how you will analyze your data in this section.

Time line: Include a time line for when you wish to finalize the proposal and begin the data collection.

Anticipated format for thesis: describe how you envision your chapters to come together; how many chapters and the focus for each chapter; which ones you wish to publish and in what journal.

Literature cited section – you must use citation software such as Mendeley.

Appendices: If you are using a survey or questionnaire you will need to include a draft in the Appendix.

Some hints:
Use first person active voice (I will…). Don't use numbering on your subheadings or section titles. You must have at least one person edit your proposal so that you do not submit a first draft for consideration for these grants. Number your pages. Make sure your name is on the document and include the date it was submitted on the title page! Never submit a first draft – get a colleague or mentor to review it and revise it before submitting the final best version.

Budget:
Here is an example budget table to help you prepare your budget

	Unit Cost (Rwf)	# units needed	Cost	In-kind (costs of things you need but that will be covered by other grants, your office, or you personally)
Equipment				
List equipment items here				
Ex: GPS unit	222,500	1	222,500	
Transport				
List transport needs here				
Other expenses				
List other items here				
Total Budget Request			*Sum this column to get total budget request to LDCFII*	

Done at Huye
5/5/2019

Prof. Beth A.Kaplin
Director of the Centre of Excellence in Biodiversity and Natural Resources Management
College of Science and Technology, University of Rwanda