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Makerere University Centre for Climate Change Research and Innovations – MUCCRI

Dr. Revocatus Twinomuhangi: Interim Coordinator

Dr. David Mfitumukiza: ERICCA Climate Adaptation Specialist

Dr. Lynne Carter: ERICCA Chief of Party

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INTRODUCTION

- Dr. Revocatus Twinomuhangi: Senior Lecturer, Department of Geography, Geoinformatics, and Climatic Sciences and Coordinator MUCCRI
- Dr. David Mfitumukiza: Lecturer Department of Geography, Geoinformatics, and Climatic Sciences. Adaptation Specialist for the *USAID/Uganda Education and Research to Improve Climate Change Adaptation (ERICCA)* Activity
- Dr. Lynne M Carter: Chief of Party, ERICCA





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MAKERERE UNIVERSITY

- Established in 1922, started as a humble technical school.
- The oldest and premier University in Uganda, and one of the most prestigious in Africa.
- In the 1960's Makerere University College was one of the three colleges of the University of East Africa; other Colleges were Nairobi and Dar-es Salaam.
- Became an independent, fully fledged University in 1971.
- Made up of 9 Colleges, has about 36,000 students and 1200 academic staff.
- Its mandate: training, research and outreach
- College of Agriculture and Environmental Sciences (CAES) is one of the colleges.





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MUCCRI

- CAES has put in place Makerere University Centre for Climate Change Research and Innovations (MUCCRI)
- To strengthen climate change education, research, innovations, information and knowledge management within the university and around the country
- Provide a one stop centre for climate change information, research and innovations
- Focus themes: Climate Science; Adaptation; Mitigation; and Policy, Training and Outreach.





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WHY DO WE NEED MUCCRI?

- Addressing climate change-critical for poverty reduction and sustainable development in Uganda, including SDGs
- Uganda Vision 2040, the NDP I and NDP II recognize the need to address climate change through knowledge generation and dissemination across Uganda
- Uganda's National Climate Change Policy recognizes the need for climate change education, research and knowledge management
- As a premier university, Makerere University needs to spear climate change action through its mandate: teaching, research and outreach





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VISION AND MISSION OF MUCCRI

Vision

To be a leading centre of excellence in climate change research and innovations that enhance sustainable development in Uganda and the African region.

Mission

To generate and disseminate quality climate change knowledge and innovations in order to foster climate change resilience and sustainable development in Uganda and the African region.





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OBJECTIVES OF MUCCRI

- Promote climate change awareness
- Conduct research on climate change science, climate change mitigation and adaptation in all sectors and disseminate the generated information
- Generate and disseminate innovations for climate change mitigation and adaptation in agricultural and natural resources sectors
- Influence climate change policy development to enable Uganda to better address climate change challenges.

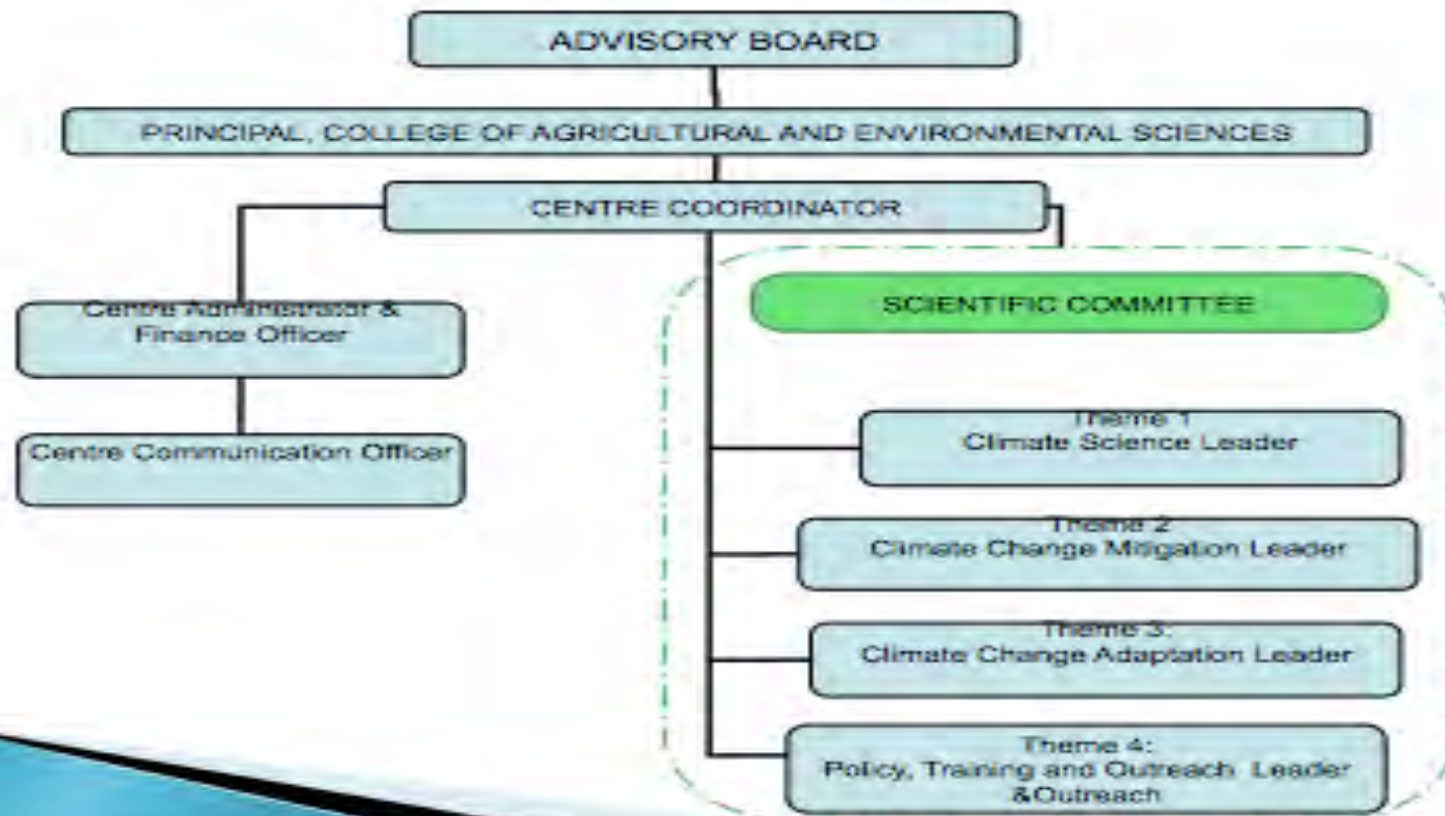




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GOVERNANCE STRUCTURE



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MODUS OPERANDI

- Establish experts teams/working to carry out research and training
- Commission of research
- Training and capacity development
- Policy engagement and outreach
- National and International climate change negotiations – apply for Makerere University observer status at the UNFCCC.





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WHAT WE WANT TO ACHIEVE: BY THEME

- **Theme 1: Climate Sciences:** contribute to the science of climate change: prediction and projections and analyses of climate change impacts and developing early warning systems
- **Theme 2: Climate Change Mitigation:** promoting low emission/ low carbon development pathways, green growth, access to international climate finance.
- **Theme 3: Climate Change Adaptation:** Reducing vulnerability, Disaster Risk Reduction and promoting climate change resilience.
- **Theme 4: Policy, Training and Outreach:** Science policy dialogues - communicate research finding to policy makers and stakeholders that most need the information.





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CLIMATE SCIENCES

CLIMATE SCIENCE PROJECTIONS: Partner with the Meteorology Unit in the Department of Geography, Geoinformatics and Climate Sciences and with UNMA

Upcoming: FAO partnering with MAK and UNMA on local downscaling effort





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CLIMATE CHANGE MITIGATION

- REDD+ project funded by NORHED
- Biomass energy – efficient charcoal production and use
- Partnering with the College of Engineering and Centre for Renewable Energy and Energy Conservation to promote energy efficiency
- Centre for Waste Management
- Promote climate smart agriculture that contributes to GhG reductions





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CLIMATE CHANGE ADAPTATION

USAID supported project to operationalize MUCCRI with a focus on adaptation

- Work with faculty around campus to include climate change information in courses – Development Studies next topic
- Contributing to awareness raising/knowledge building around Uganda: Uganda Law Society, Army, many NGOs, media, etc; Climate Champions from around Uganda; college student climate change boot camp, etc.
- Supporting graduate (PhDs, MScs) and undergraduate research efforts: some traditional some innovative approaches





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POLICY, TRAINING, OUTREACH

- Developed short courses and retooled 80 academic staff and university administrators
- IPCC AR5 outreach event in Kampala
- Partnership with Department of Communications and Journalism and information dissemination with/for media on research findings
- Partnering with the Climate Change Department (CCD) in Ministry of Water and Environment (CCD) to develop a climate change information and knowledge management system
- Partnering with FAO in climate knowledge management systems
- Seminar series for students and general public





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WAY FORWARD

MUCCRI is seeking:

- Development of regional and international partners for research
- Opportunities for sharing of training and education innovations
- Collect and share climate change information useful for local actions
- Becoming a centre of excellence at the University and nationally





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Climate Change and Development in Uganda: *Education, Training and Research*

David Mfitumukiza
Lynne Carter



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A DEVELOPMENT VISION FOR UGANDA

“A transformed Ugandan society from a peasant to a modern and prosperous country within 30 years”

Development Opportunities

- Oil and gas
- Tourism
- Minerals
- ICT business
- Abundant labour force
- Geog. Location & trade
- Water resources
- Industrialization
- Agriculture





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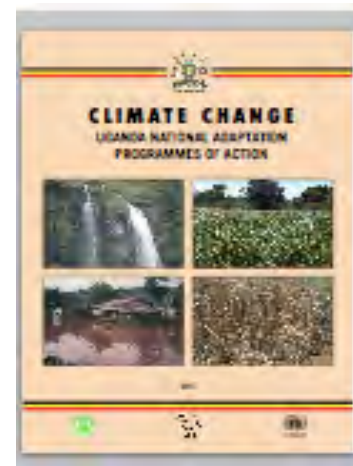
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CLIMATE CHANGE AND DEVELOPMENT IN UGANDA

- The GoU has recognized the importance of climate in the development process along with the risks and opportunities climate change may represent:
 - Necessary legal, policy and institutional frameworks—National, Regional and International
 - Climate Change Policy
 - Strategies and programs to mainstream climate in the development process
 - National Development Plans (NDPs)
 - NAPAs/NAPs
 - NAMAs



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CLIMATE CHANGE AND DEVELOPMENT IN UGANDA

“Uganda cannot afford to choose between addressing climate change and promoting development; the two are interlinked and will become increasingly so over the foreseeable future”

(Uganda National Climate Change Policy, 2014)

“Experience suggests that the best way to address climate change impacts on the poor is by integrating adaptation responses into development planning”

(EAC Climate Change Policy, 2010)





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CLIMATE CHANGE AND DEVELOPMENT: CHALLENGES

- GOU's efforts to build climate resilience and effective response actions into its development programs have encountered substantial challenges e.g.:
 - Institutional arrangements are not entirely coherent
 - Capacities are weak at all levels—database, tools, and information systems are inadequate
 - Infrastructure is planned, designed and operated without sufficient consideration of current (known) and future (uncertain) climate risks, resulting in poor performance





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“There is still poor understanding of climate change and variability in Uganda and hence inadequate adaptation and mitigation measures currently in place in the country”

(Uganda Vision, 2040, Pg 101)





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CLIMATE CHANGE AND DEVELOPMENT: PLANS

- NDP II proposes providing enabling environment for climate change response & implementation of priority interventions e.g.:
 - Invest in climate **knowledge** and in an **information, education** and communications program that would serve all stakeholders
 - Involve NGOs, **universities**, farmer organizations and professional and industry bodies and the private sector in planning and programming
 - Integrating climate change in **education curricula and education materials** at all levels
 - Building the **capacity of local authorities** to enable them integrate climate change in local development plans and implement climate change response actions





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FROM PLANS TO PRACTICE: EDUC., TRAINING & RESEARCH

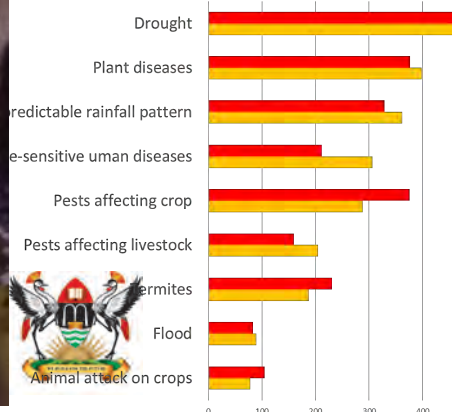
Information and skills are determinants of responsive capacity

USAID/Uganda Education and Research to Improve Climate Change Adaptation Activity at MUCCRI

- **Build human capacity:** *Provide cutting edge short and long term training to students, staff, and external stakeholders*
- **Support student research opportunities:** *Generate high quality climate change and climate change research*



Major Hazards and Impacts of the



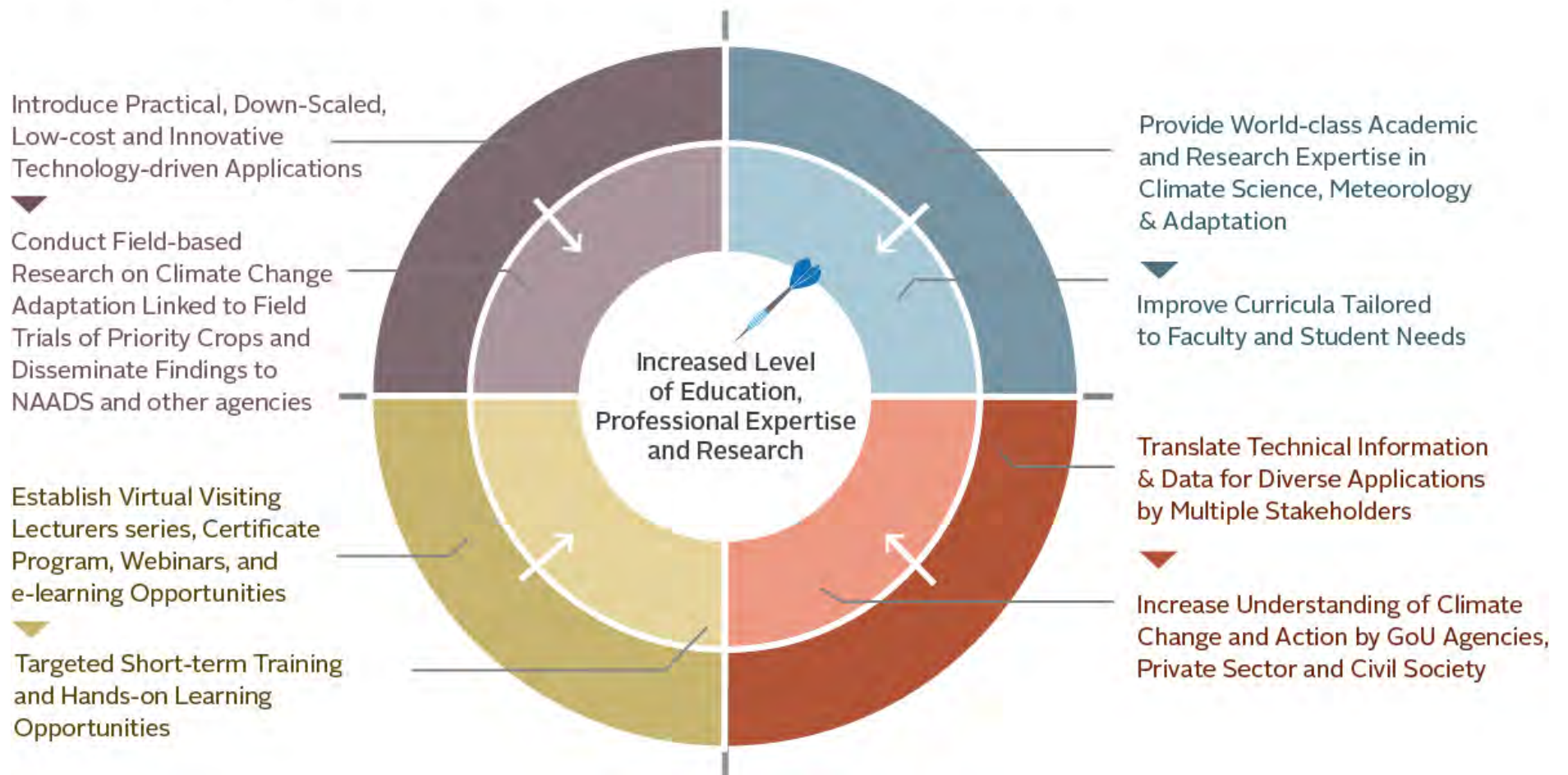


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USAID/Uganda Education and Research to Improve Climate Change Adaptation

TRANSFORMING MUCCRI-CAES INTO A LEADING CENTRE OF EXCELLENCE FOR CLIMATE SCIENCE, RESEARCH, AND ADAPTATION IN UGANDA AND AFRICA





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LONG TERM TRAINING: Undergraduate and Graduate

Lack of informed, skilled and trained personnel reduces adaptive capacity

Enhancement of formal academic offerings for undergraduate and graduate students:

- Awareness campaigns for interest in CC info
- Identification of Programs and courses for climate change content integration
- Curriculum Review
- Mentorship for CC teaching and learning





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LONG TERM TRAINING: Development Studies

- Identified a champion in the Department
- Orientated the champion to the need for climate change content in development studies
- Worked with the champion to organize awareness raising presentations for faculty and students
- Identified climate change training avenues in the development studies training program
 - One example course reviewed for climate change identified for CC content suggestions (**Energy, Environment and Development**)
 - The course used as model for mentorship in CC teaching and learning—developing materials, teaching/training & assessment



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LONG TERM TRAINING: Development Studies

Approach:

Learn-by-Doing. Through student and faculty centered practice, mentoring, and establishing networks with stakeholders to provide real-life experiences to apply newly acquired knowledge.

- Teach sustainable development
- Encourage Research on sustainable development
- Support local sustainability efforts—local partnership and network building
- Engage and share information with regional & international networks





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LONG TERM TRAINING: Development Studies

Achievements:

- The Department of Development Studies has already started teaching and examining climate change content as a result of the Activity technical support—Training materials etc. provided
- Students holiday program to identify action areas for climate change adaptation and mitigation responses in their home districts (BHAPs – Back Home Action Plans).
- Demand to have more courses integrated with climate change content—Seven additional development courses are under consideration for adding climate content
- Faculty available and is supporting climate change and development training efforts within and outside the university





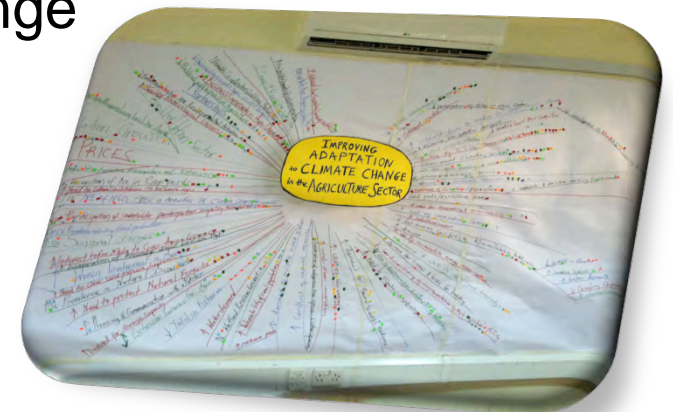
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SHORT TERM TRAINING: *Within and Outside the University*

An array of short-term training options and vehicles to increase climate change knowledge for key stakeholder groups

- External climate change and development related groups but linked to the university, including select public sector institutions, civil society, and the private sector
- Create a network of Ugandan community with information and proven technologies, tools and practices from well-trained and knowledgeable individuals who in turn, have received instruction and a solid academic foundation in climate change





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SHORT TERM TRAINING: *Within and Outside the University*

Examples:

- District local government
 - Supporting integration of climate change in the district development plans
 - community based connection points through which information can flow in and out of communities.
- Student and other youth groups—harnessing youth numbers and influence in Uganda for climate change responsive development





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CLIMATE CHANGE RESEARCH

Research and improved access to information increases likelihood of timely and appropriate climate response actions—improved CC response capacity

- Focus on climate change response actions for sustainable agricultural production
- Local research partnerships linked to international networks to improve:
 - Understanding of climate change risk
 - Improved risk management
 - Institutional knowledge and capacity for climate risk management
 - Improved and integrated climate change responsive capacity





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CLIMATE CHANGE RESEARCH: Graduate Level

Both PhD and MSc

- Partnerships with National Agricultural Research Organisation (NARO) and The International Institute for Tropical Agriculture – Uganda (IITA)
- Focus on
 - Adaptation technologies practices, approaches, and tools
 - Generate adaptation information packages:
 - share, educate and support appropriate use of knowledge and information





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CLIMATE CHANGE RESEARCH: Graduate Level

Examples of ongoing research

- Pest dynamics in Robusta coffee: Influence of canopy closure and climate variability
- Climate Change Adaptation Technologies and Crop Productivity
 - Includes understanding of adaptation trade-offs
- Analysis of policy and institutional framework for climate change adaptation among smallholder farmers
- Projection of crop yield based on temperature projections





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CLIMATE CHANGE RESEARCH: Undergraduate Level

Focus on integration of climate change and development

- Undergraduate multidisciplinary climate change research
 - e.g. Agriculture, gender, forestry, devt studies, education, communication/journalism—jointly conceptualize, design, implement and publish
- The aim is to introduce climate change response research to students as early as possible
 - Foundations for climate change education and research for graduate studies and professional development especially to support climate change response actions





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The Big Picture...



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