

A GLIMPSE INTO THE JOURNEY OF MUST-VLIRUOS PARTNERSHIP (UCoBS) FOR THE PERIOD OF SEPTEMBER 2024 TO APRIL 2025

Stories for Project Support Unit (PSU) AP3 – February 2025

PSU Goal: To coordinate all programmes in regards to the MUST-VLIR-UOS partnership (UCoBS)

Activity 1: UCoBS held a fruitful annual Flemish 2025 visit

From February 3rd to 7th, 2025, MUST IUC-UCoBS hosted the annual Flemish visit for project coordinators, led by Prof. Gily Coene, the Flemish Coordinator; Kathleen Wuytack, the **Global Partnerships Manager**; Christophe Goossens, the **Institutional Coordinators for Development Cooperation (ICOS)**; and other project team members and students. The purpose of their visit was to monitor the progress of the collaborative activities, conduct field visits touring sites of local engagements with the communities, and co-facilitate workshops and bootcamps with MUST students and the community. The Flemish partners also toured established infrastructures like set-up laboratories and entrepreneurship buildings under construction and shared best practices from universities in Belgium, held interactive meetings with PhD and master's scholars on progress, participated in the on-site Joint Steering Committee meeting, and supported ICT in project implementation.

The annual visit was indeed a success, as it set the pace for the second half of the UCoBS implementation year.



Left, right: Introduction of Prof. Gily Coene to the Mbarara University of Science and Technology's new vice chancellor Prof. Pauline Kibwika Byakika; group photo for the Flemish team and the MUST IUC-UCoBS team



During the Joint Steering Committee meeting and presentations from different Team Leaders



Left-right; Christophe Goossens the ICOS having a working moment with the former project manager; team visit to the biology laboratory

Stories for Project Support Unit AP3 – April 2025

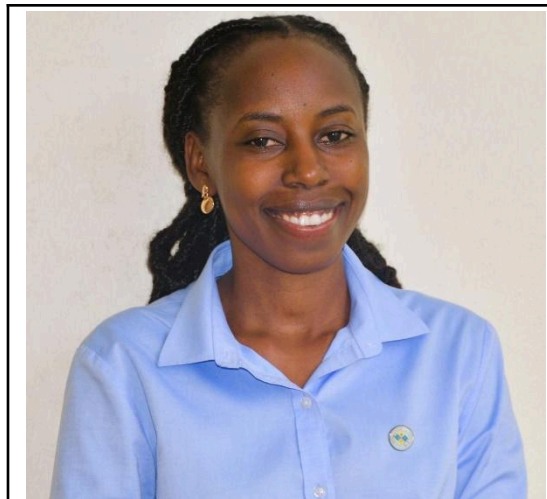
PSU Goal: To coordinate all programmes in regards to the MUST-VLIR-UOS partnership (UCoBS)

Activity 2: MUST gets a new project manager

On April 1st, 2025, UCoBS welcomed a new project manager, Ms. Asiimwe Lydia, who took over the office from Ms. Annah Amwikirize. Annah Amwikirize served as the project manager from 2022 to 2025, coordinating all six sub-projects' finances and work plan activities. She successfully concluded her period of service at UCoBS.

Ms. Asiimwe comes with over eight years of experience in management. In her term of service, she will be coordinating the UCoBS 10-year transformative initiative aimed at facilitating community sustainable solutions to demographic challenges in southwestern Uganda—working hand in hand with all the sub-projects.

Congratulations to Ms. Asiimwe Lydia upon the new appointment. UCoBS wishes Ms. Annah Amwikirize a great career in her new position.



Annah Amwikirize (Out-going PM; 2022 – March 2025)



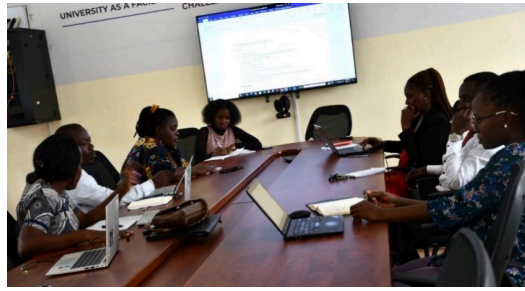
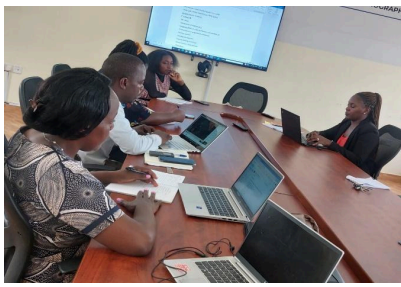
Lydia Asiimwe (In-coming PM; April 2025)

Stories for Project Support Unit AP3 – April 2025

PSU Goal: To coordinate all programmes in regards to the MUST , VLIR-UOS partnership (UCoBS)

Activity 2: Project Assistants' progress report meeting

In April 2025 , an orientation and introductory meeting of the subproject assistants for different subprojects and the International Relations Officer for MUST was held to harmonize with the new project manager, Ms. Lydia Asiimwe. Workplan performance and evaluation were discussed in this meeting.



Photos taken during the orientation meeting for the new project manager and after.

Stories for Project Support Unit (PSU) AP3 – April 2025

PSU Goal: To coordinate all programmes in regards to the MUST-VLIR-UOS partnership (UCoBS)

Activity 3: VLIR-UOS Audit

In April 2025, the MUST IUC-UCoBS welcomed the VLIR-UOS auditors from the RSM InterAudit (the Auditor), located at Lozenberg 18, 1932 Brussels, and represented by Karine Morris, a registered auditor and partner, and Jelle Huysmans, the director. The audit covered the financial reporting period of 2023–2024, and an independent report of factual findings was shared with the MUST IUC-UCoBS administration. The report commended the good progress made on the set targets in the fields of financial management and accountability, implementation of work plan activities, community engagement, and education support for master's/PhD scholars—among others. The report provided evidence of infrastructure support to respective faculties at MUST, appreciated the integration of UCoBS management with MUST, recognized the good leadership, and portrayed confidence in the sustainability of the project at MUST. On the other hand, the report emphasized the role of ICT in management and encouraged members to embrace digitization of record keeping as much as possible as well as continued enforcement of the cybersecurity policy for the security of our records.

Stories for PSU – AP3 – April 2025

P4 Goal: To coordinate all programmes in regards to the MUST Partnership with VLIR-UOS Belgium

Activity 1: Site visit and inspection of Subproject 3 Irrigation project at Rwendezi mixed farm in Isingiro

For the last year, 2024, sub-project 3 has been implementing a community demonstration project in Isingiro District. Part of the workplan activities is to identify and select a farmer in the local community in a selected district who practices modern farming and has enough land resources to implement various demonstration farming projects and is willing to allow the community people to visit his farm and learn from his farming practices. The Rwendezi Mixed Farm, owned by Prof. Bitariho Geogratus, was selected in Isingiro District for this support under the UCoBS sub-project 3. This initiative also gives a research platform to MUST PhD scholars from the Faculty of Applied Sciences and Technology (FAST) to participate in the innovation work and support of the farms' technology systems. The three study areas for the 3 PhD scholars funded included the socio-economic adoption of renewable energy technologies, solar energy cooking, and biomass briquettes. These were actively involved in the project as part of their research with financing from the UCoBS sub-project 3. The Rwendezi Mixed Farm was supported by boosting and powering their irrigation system. The team was led by Dr. Johnes Obungoloch, working hand in hand with the farm manager, Mr. Ambrose, who has been engaged in this project. The purpose of this inspection exercise was to assess whether the project was on course and progressing well based on their work plan and to know if there was any further support needed. Participants in this inspection exercise were the MUST Auditors (Mr. Mutebi Geoffrey, Ms. Nansubuga Bridget Linda, and Mr. Mutungye Geoffrey), UCoBS local coordinator Prof. Charles T. Kazooba, the project manager Ms. Lydia Asiimwe, the team leader for sub-project 3, Dr. Johnes Obungoloch, and his team members Dr. Denis Bbosa, Ms. Faith Natukunda, Dr. Imelda Kemeza, the sub-project 3 assistant, the sub-project 6 assistant, and the administrative assistant (UCoBS). During the site visit and inspection, the project and MUST at large were appreciated for empowering farmers through the use of solar energy to power irrigation, which lowers the cost in terms of energy. The head auditor, Mr. Mutebi, appreciated the team for setting up an irrigation system that worked well, comprising 21 automatic sprinklers for coffee irrigation. He added that the farmer needed to put effort on how the rest of the community can benefit, advising the team leaders to put organized activities so that output could be seen by

the whole community. Posters were recommended for the infrastructure (i.e., the water purification tank) for MUST and Humasol Visibility.



Photos taken during the field inspection activity for sub-project 3's irrigation project in Isingiro by the MUST staff and PSU administration.

Stories for Subproject 1AP3—September 2024 to March 2025
P1 Goal: Improved conservation practices for the environment and natural resources in southwestern Uganda
Activity 1-4: Understanding the implications of wetland degradation on sediment and nutrient concentration on water quality for conservation of Rwizi Macro catchment

From September 2024 to date, P1 collects data every month on the water quality and quantity parameters of River River and Lake Mburo. This activity is led by the PhD scholar Patience Ayesiga, assisted by Rogers Tinkasimire (the MA scholar), UWA rangers (Matovu Nicholas and Mr. Baliganikya Bonny), and community guides (Sselunga Sulait). During this period, P1 focus

was put on understanding the implication of wetland degradation on sediment and nutrient concentration on water quality at River Rwizi. This is part of continued monitoring of the lower catchment for the River Rwizi. Between December 21 and 22, 2024, we collected water samples for sediment and nutrient concentration in water quality assessment. Water samples were collected from 10 sites within the Rwizi catchment (four points on the river and six points on the lake) to evaluate indicators such as temperature, pH, dissolved oxygen, turbidity, electrical conductivity, and nutrient concentrations, including nitrates, nitrites, silicates, ammonia and phosphates. These parameters are crucial for understanding the health of wetland ecosystems and the extent of anthropogenic impacts. This activity aligns with broader efforts to conserve the River Rwizi macro catchment by providing empirical data on water quality. This information is vital for identifying critical areas of intervention and designing targeted conservation strategies. Moreover, the findings from this field study will contribute to ongoing research aimed at mitigating the impacts of wetland degradation and ensuring sustainable water resource management in the region. By integrating field data with broader conservation efforts, the study aims to enhance the understanding of wetland dynamics and inform evidence-based decision-making for the restoration and protection of wetlands in the Rwizi macro catchment. No data (discharge and diver) was collected on the River Nyarutengura entrance (LM3) into Lake Mburu wetland. Most parts of the stream scattered wet patches with stagnant water. LM1, LM2, LM4, and LM5 displayed high discharge due to prevalent torrential rains.



Figure 1-2: Discharge along LM2 and the February field monitoring by the Flemish team. Source: Field data Dec 2024 and Feb 2025

The feeder path through the wetland to access the River Rwizi stream at LM5 was covered with water. We had to maneuver through to access the usual site



Figure 3-4: High discharge evident along LM5, Source: Field data November 2024



Figure 5: Measurement of physical parameters at LM5. Source: Field data November 2024

The stream discharge was extremely high as compared to the previous months of the year at LM4 and LM5. One had to traverse to enable measurement of flow velocity as shown in Figure 4.



Figure 6-7: Measurement of flow velocity and collection of the sediment sample at LM4. Source: Field data January 2025



Figure 8-9: collection of the diver at LM4 to download data. Source: Field data January 2025

Several wetlands neighbouring community arable lands have been degraded. Different seasonal crops have for long been grown. However, some regenerating papyrus patches were evident near this site.



Figure 10: Degraded wetland near LM 5, Source: Field data Dec 2024



Figure 11: Regenerating lowlands mainly used by livestock. Source: Field data Dec 2024



Figure 12: High discharge at LM4 diver point. Source: Field data January 2025

The wetlands surrounding the stream had stagnant water as evidence of overflow at fullbank causing regeneration.



Figure 13: Water collects in wetlands along the stream at LM4. Source: Field data January 2025



Figure 14: High river bank sediment deposition at LM1. Source: Field data Dec 2024



Figure 15: Dr. Medard Twinamatsiko on the River Rwizi generating data on sediments. Source: Field data February 2025

The high sediment deposition was heaped along the diver point there, blocking discharge. The sediment was then manually removed to enable the diver to swing freely in the metallic and collect better results.



Figure 16-17: Clearance of debris at the diver point LM1. Source: Field data Dec 2024



Figure 18: Sediment sampling at LM1. Source: Field data Dec 2024

Stories for P1–AP3—January 2025
P1 Goal: Improved conservation practices for the environment and natural resources in southwestern Uganda
Activity 4-5: The implications of spatial temporal wetland degradation on water quality for conservation of Rwizi Macro catchment

The field activity was undertaken on 2nd to 4th January 2025 to investigate the short term spatial temporal wetland changes over six months. The implications of wetland degradation on water quality. This was the second drone operation conducted after the first one in June 2024. Four representative sites of Kagongo-Kamarebe, Kiretwa, Kajura and Kashasha were considered for the operation within middle Rwizi macro-catchment. The fieldwork focused on conducting drone flight operations across wetlands in Isingiro and Kiruhura districts within the Rwizi catchment area. This exercise aimed to assess wetland status, recovery, degradation, and conservation efforts in the last six months. The operation was conducted to collect

high-resolution spatial data that will aid in understanding wetland dynamics and inform sustainable management strategies. The drone flights were conducted in purposively selected wetland zones in Isingiro and Kiruhura districts. These areas were chosen based on their ecological significance, observed degradation patterns, and ongoing conservation interventions during the first drone flight operation. A Phantom 4 Pro V2 drone was used to acquire very high-resolution imagery (4 cm/pixel), with Ground Control Points (GCPs) established using a Trimble TDC600 GPS receiver. The Flight Altitude was 100 meters above ground level. Flights were scheduled during clear weather to optimize image quality. The drone captured high-resolution orthomosaic images and videos. Ground control points (GCPs) were established for georeferencing to ensure data accuracy. The team documented field observations alongside drone data.

Wetland Status

The imagery revealed significant variability in wetland health across the sites. Intact vegetation was observed in some areas of Kashasha and Kajura, indicating stable ecosystems. Encroachment by agricultural activities and settlements were evident in several locations, leading to wetland shrinkage in Kiretwa and Kagongo. The wetland sites previously mapped presented evidence of recovery, continuous degradation as evidenced by the new burnt papyrus pockets. Some wetlands showed a slow pace to recovery after a period of six months.

Pockets of natural regeneration were identified, particularly in areas with reduced human disturbance.



Figure 19: wetland pockets regenerating at Kagongo and Kamarembe. Source: Field data January 2025

Community-led conservation initiatives, such as tree planting, showed promising results in enhancing vegetation cover. This is part of the community-led interventions that we will focus on at policy level.





Figure 21: Evidence of a slow pace in recovery at Kashasha, Kiretwa, and Kajura. Source: Field data January 2025

Degraded zones were characterized by bare soils, loss of vegetation, and visible sedimentation in nearby watercourses.



Figure 22: New pocket columns of degradation after burning in Kiretwa. Source: Field data January 2025



Figure 23: Diverted water trench at Kagongo with a cleared wetland. Source: Field data January 2025

Drainage channels constructed for agriculture and grazing activities were prevalent, exacerbating hydrological disruptions. The ongoing interventions, such as buffer zone restoration and regulated access, were noted in Kashasha and Kajura. However, the enforcement of conservation regulations remains inconsistent, with illegal activities such as arable farming persisting in certain areas. Limited accessibility to some wetland areas due to dense vegetation and poor road infrastructure. Community resistance in areas where wetland use is a primary livelihood source was evident in Kagongo, Kiretwa and Kajura. There is need to strengthen community awareness programs on wetland conservation and alternative livelihoods and enhance enforcement of existing wetland management policies to curb illegal activities. Scaling up drone-based monitoring to cover a broader geographical area and improve data collection frequency on wetland change. Foster collaborations among stakeholders, including local governments, conservation organizations, and community leaders for holistic wetland management.



Figure 24: Flight operation in Kagongo with the community. Source: Field data January 2025

Drone Flight Sample Images Captured





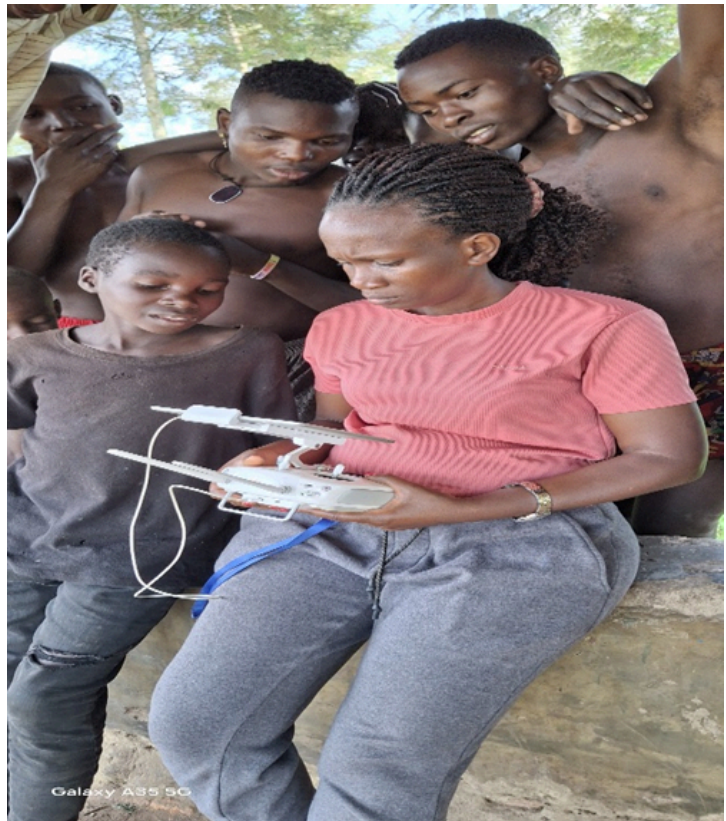


Figure 26-31: Flight mapping in Kashasha fishing village. Source: Field data January 2025

Stories for P1 – AP3 – January- February 2025
P1 Goal: Improved conservation practices for the environment and natural resources in South Western Uganda
Activity 6: Manuscript write-ups

We have embarked on writing papers for publication from both micro-research and scholars' research. Junior Ainomujuni is currently writing an article titled "A Review of Exploring the Role of Indigenous Knowledge in Environmental Governance: A Case Study of Lake Mburo and Bwindi Impenetrable National Parks in Uganda." This article has been submitted to a peer-reviewed journal and is currently under review. The expected publication window is between 28th May and 18th June. The second article, titled "Dilemmas in Distributive Equity around Bwindi Impenetrable National Park: Benefits, Accessibility, Perceptions, and Realities among Adjacent Communities," has been completed in draft form and shared with my supervisors for feedback. Upon incorporating their input, Junior intends to submit it for publication consideration. Dr. Medard

Twinamatsiko is leading two papers on indigenous knowledge integration in protected area management and citizen science monitoring approaches.


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EAST AFRICAN NATURE & SCIENCE ORGANIZATION

OFFICE OF THE EDITOR-IN-CHIEF

REF: EANSO/EIC/R/05/171143 DATE: 7TH MAY, 2025

Junior Ainomujuni
Mbarara University of Science and Technology
P. O. BOX 1410, Mbarara.



Dear J. Ainomujuni,

RE: SUBMISSION RECEIVED AND UNDER REVIEW AT THE AFRICAN JOURNAL OF CLIMATE CHANGE AND RESOURCE SUSTAINABILITY.

Welcome to the **East African Nature and Science Organization**, we are excited about working with you. The manuscript you submitted through the Editor-in-Chief was received, processed, and placed under the peer-review process of the **African Journal of Climate Change and Resource Sustainability**. It was assigned the tracking ID **9W7V9** as shown below.

SUBMISSION METADATA

Tracking ID: **9W7V9**

Submission Title: *A Review of Exploring the Role of Indigenous Knowledge in Environmental Governance: A Case Study of Lake Mburo and Bwindi Impenetrable National Parks in Uganda.*

Main Author: *Junior Ainomujuni.*

Co-Author(s): *Medard Twinamatsiko, Stefaan Smis & Upton Nirwagira.*

Journal Title: *African Journal of Climate Change and Resource Sustainability (AJCCRS).*

Journal ISSN: *2790-962X (Print) and 2790-9638 (Online).*

Journal DOI: <https://doi.org/10.37284/2790-9638>


Date Received: *Wednesday, 7th May, 2025 at 12:28 PM, EAT.*

Expectation: *Be reviewed and published between 28th May 2025 and 18th June 2025.*


Cost: *110 United States Dollars.*

We have a **manuscript tracking system** where our authors can independently track the progress of their submissions and even know the publication points that each author will get after the paper is published. To track your submission, visit our tracker at <https://tracker.eanso.org> and use the tracking code **9W7V9** assigned to your submissions in the search box. Payment should be made after the manuscript is accepted for publication. We shall send you an email immediately after the decision on your manuscript is reached. We wish you all the best through the peer-review process.

Yours Faithfully,



Prof. Jack Simons
EDITOR-IN-CHIEF, AJCCRS



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Figure 32, titled "A Review of Exploring the Role of Indigenous Knowledge in Environmental Governance: A Case Study of Lake Mburo and Bwindi Impenetrable National Parks in Uganda," has been submitted to a journal and is currently under review. The expected publication window is between 28th May and 18th June.

Stories Subproject 1 AP3 – January 2025

P1 Goal: Improved conservation practices for the environment and natural resources in southwestern Uganda

Activity 7: Data collection completion by Junior Ainomujuni around Bwindi Impenetrable National Park

Data collection has been ongoing for the integration of governance principles into protected area management. This part of Junior Ainomujuni's work on equitable governance as a trade-off to protected area management. She has finished most parts of data collection, including field surveys, multi-stakeholder engagement meetings, focus group discussions, and key informant interviews. She is now writing her thesis and paper publications.



Figures 33-36: Group photo after discussion about procedural equity, recognition, and rights at Rubuguri in the southern sector of Bwindi Impenetrable National Park.

Stories for Subproject 1 AP3 (September 2024 to March 2025)

P1 Goal: Improved conservation practices for the environment and natural resources in southwestern Uganda

Activity 8: Continuous Human Wildlife Conflicts

P1 has continued to monitor and analyze data for human-wildlife conflicts (HWC) around Bwindi Impenetrable and Lake Mburo National Parks using citizen science. This monitoring offers a participatory approach to conservation that places communities at the forefront of wildlife management. Citizen science engages trained community members—often from local human-gorilla conflict resolution groups (like HUGOs)—to record incidents such as crop raiding, livestock predation, and wildlife sightings in real time using mobile-based tools and structured reporting forms. This community-led data collection generates timely, localized insights on the frequency, type, and spatial patterns of HWC, which are critical for designing responsive interventions and policy adjustments. In both Bwindi and Lake Mburo, where adjacent communities frequently bear the brunt of conservation costs, citizen science not only strengthens conflict reporting systems but also fosters trust and cooperation between the Uganda Wildlife Authority (UWA) and local populations. By leveraging local knowledge and ensuring community involvement, this model builds a sense of ownership in wildlife conservation and enhances early

warning systems. Over time, such engagement is expected to reduce HWC incidents, support targeted mitigation measures like fence reinforcement or wildlife corridors, and contribute to long-term coexistence strategies. We have so far received 430 cases ranging from human injury, livestock predation, and crop raiding, as shown in the photos that follow.

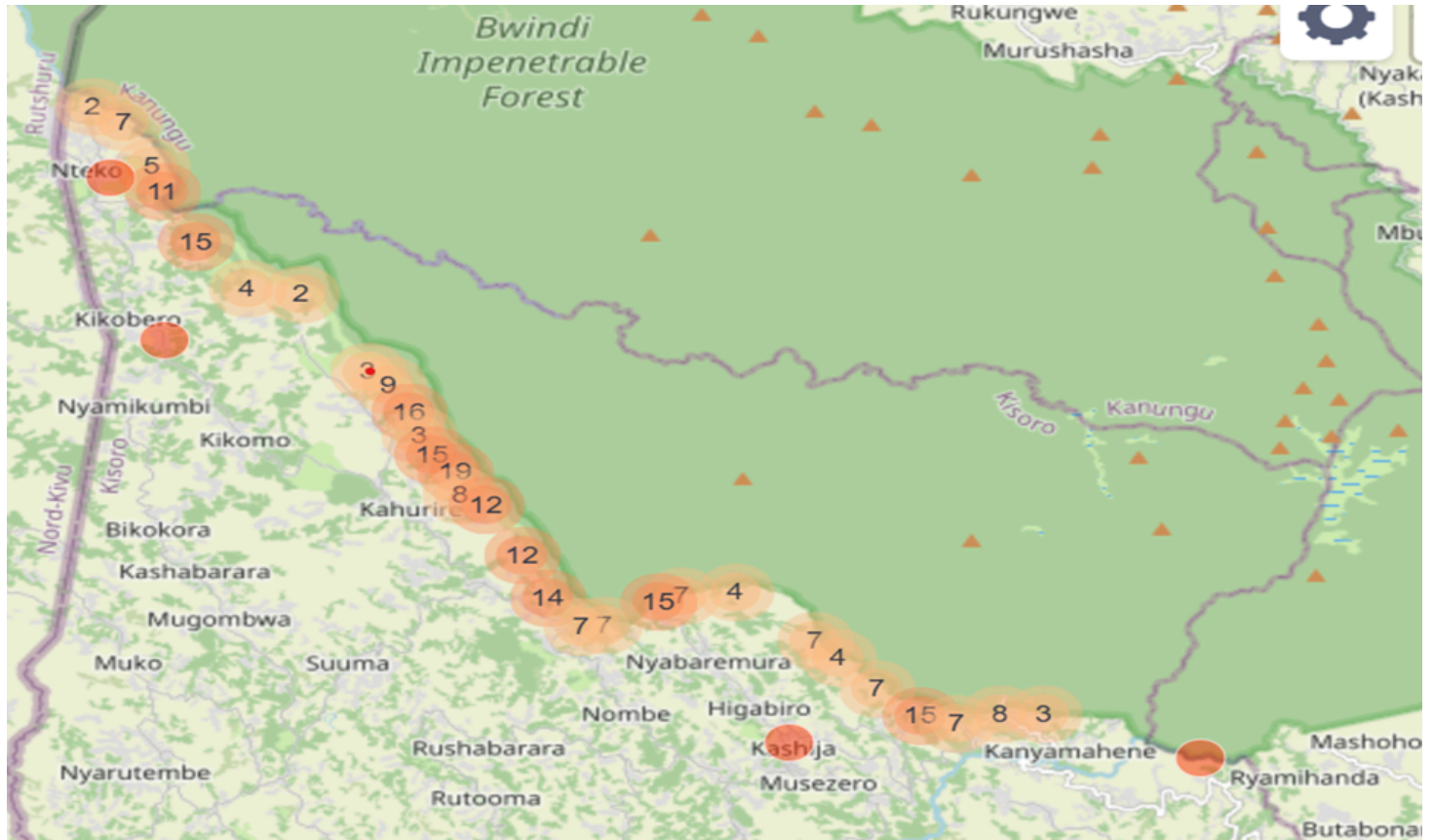


Figure 37: Map showing study areas



Figure 38-39: Crop raiding and Livestock Predation



Figure 40-41: Engagement with UWA staff at Lake Mburo National Park over Citizen Science Network and Project One Meeting at UCoBS board room

Stories for Subproject 1 AP3 September 2024 to March 2025
P1 Goal: Improved conservation practices for the environment and natural resources in South Western Uganda
Activity 9: Alternative livelihoods for indigenous people: Continuous tourism business development of Bwindi Batwa Forest Experience, Kobusina Pocket Forest and ACCCA trail



Figures 42-43: Batwa Indigenous people monitoring their own natural resources using their culture

P1 has supported the process of developing the tourism development plans for Rubuguri Town Council and ACCCA Lake Mburo National Park. The tourism plan for Rubuguri Town Council has been completed and awaits approval by the Town Council. The one for ACCCA Lake Mburo is in the final stages of completion.



Figure 44: ACCCA Chairperson, students and Dr. Kule during ideation exercise for ACCCA business plan at Lake Mburo Education Centre



Figure 44: ACCCA Chairperson, students and Dr. Kule during ideation exercise for ACCCA business plan at Lake Mburo Education Centre



Figure 45: Dr. Medard and Dr. Manasseh issuing certificates to Participants at MUST UCoBs Boardroom



Figure 46-47: Water installation to facilitate a tourism product at Lake Mbuoro National Park

From Figures 44 to 47, as part of alternative livelihoods for the indigenous people around Lake Mbuoro National Park, a tourism product, ACCCA, is under the development process. So far, water has been installed (as in Figures 16 and 17), and a contractor has been identified to make renovations and installations on the tourism trail infrastructure. Once completed, the trail will be a revenue-generating stream for ACCCA members and is hoped to reduce tension and improve the relationship between Lake Mbuoro National Park and the community.

Stories for Subproject 2 AP3—October 2024

P2 Goal: Improve mechanisms for climate change adaptation for sustainable food production for small scale farmers.

Activity 1-2: Immaculate Nakazibwe | PhD Scholar's Journey in Finger Millet Research and Soil Health

In the hills of southwestern Uganda, farmers have been reporting a steady decline in soil fertility. As crop yields fall, especially under unpredictable weather conditions, the need for climate-smart and practical solutions becomes more urgent. Immaculate Nakazibwe is a PhD researcher jointly affiliated with MUST and KU Leuven, and a Vliros Scholar. My research contributes to sub-project 2, "Mechanisms for Climate Change Adaptation for Sustainable Food Production." Our goal is to support smallholder farmers with evidence-based strategies to improve food security in a changing climate. The journey began in October 2024 when Immaculate worked closely with 20 farmers across Kichwamba, Kirugu, and Kyabakara sub-counties in Rubirizi District. We conducted a nutrient omission trial to understand which soil nutrients are most limiting to finger millet production. Each farmer's garden acted as a block in a Randomized Complete Block Design (RCBD). We established eight treatments on 3 m² plots per farmer: control (no fertilizer), PK (No Nitrogen), NP (No Potassium), NK (No Phosphorus), NPK (basic macronutrients), NPK + manure, and NPK + Manure + Mg + Ca + S + B + Zn. All plots were managed using recommended agronomic practices, namely: i) line sowing for even spacing, ii) Seremi 2—an improved finger millet variety, iii) timely weeding, and iv) integrated pest and disease management. Even though the planting was done slightly late due to logistical delays, farmers were impressed by the performance of Seremi 2. It stood out for its vigor and yield potential, even with limited inputs. This research was carried out *with* farmers, not *for* them. They were involved from the beginning: helping set up plots, managing them throughout the season, and participating in harvest. Their feedback and experience have been key to shaping the direction of the study. After harvesting, I brought soil and plant samples to KU Leuven, where I'm currently working with the Soil and Water Management Division. Using advanced analytical instruments, I'm now processing the samples to assess how different nutrient treatments affected growth and yield. This was just Season 1. We'll be repeating the same experiment in future seasons, using the same design and variety. This continuity will help us gather consistent and reliable data to inform practical, low-cost fertilizer recommendations for finger millet production for local farmers. This journey is about building knowledge together slowly, consistently, and with the community at the center. In the face of climate change, small shifts in how we manage soil, nutrients, and crops may make a big difference. I'm grateful to my supervisors, collaborators, and the incredible farmers of Rubirizi for walking this journey with me. Together, we're planting

seeds not just of finger millet, but of resilience, equity, and sustainable growth. Stay tuned as I continue to explore how soil, science, and society can come together to build climate-smart food systems for the future.



Photo: Research team and farmers applying fertilizer in rows during the field trial setup at Garden 4 in Kirugu sub-county; Plot Layout for Garden 2, Kirugu Sub-county; finger millet harvest conducted at Garden 4 in Kirugu Sub-county; sample processing before Laboratory Nutrient

Stories for P2 – AP3 – September 2024

P2 Goal: Improve mechanisms for climate change adaptation for sustainable food production for small-scale farmers.

Activity 1-1: An analytical laboratory set up and gets equipped while climate monitoring equipment gets installed in study community areas

Three weather stations and localized rain gauges have been installed in three study districts to monitor climate variability. In addition, procurement, shipment, and setup of key equipment in a soil science laboratory at MUST were conducted. The items included a sample ring kit, a hydrometer kit, a benchtop pH/mV/ISE/EC meter, a drying cabinet, a mill, and a spectrophotometer. This facility has supported training of students and analysis of soil physical chemical parameters, water quality plant samples nutrient analysis



Photos; Laboratory at MUST, Weather station in one of the districts (Rubanda).

Stories for P2 – AP3 – September 2024

P2 Goal: Improve mechanisms for climate change adaptation for sustainable food production for small scale farmers.

Activity 1-2: Soil fertility interventions for increased finger millet yield responses

Twenty three field plots were established in each of the three districts representing the three agro-ecological zones of South western Uganda under a randomized block design to experiment millet response to a number of fertilizer combinations in partnership with the farmer households that grow millet in these regions. The choice of the study sites and soil testing was done in collaboration with the Flemish supervisors Prof. Roel Merckx and Prof Maarten from K U Leuven University. Selected soil nutrient management treatments including total nitrogen, available phosphorous, extractable magnesium, Sulphur, boron, zinc and farm yard manure were analyzed and applied. Each farmers' field acted as a replicate for the experiment. Data on the growth and yield parameters of finger millet in the different experimental plots was collected and are under the analysis at the Division of Soil and Water Management laboratory at KU Leuven, Belgium to determine total nutrient uptake in the different treatments. Despite the increasing demand for finger millet, low soil fertility is a major problem constraining crop productivity in smallholder farming systems of Uganda due to inadequate nutrient replenishment. Compared to the major cereal crop production such as maize, sorghum and rice in Uganda the recommendations available for nutrient management in finger millet have not been documented. It is thus hoped that this experimental trials will document this but also recommend land suitability for sustainable finger millet production without compromising the quality of the Environment.



Photos; Soil fertility interventions in South Western Uganda

Stories for P2 – AP3 – October 2024

P2 Goal: Improve mechanisms for climate change adaptation for sustainable food production for small scale farmers.

Activity 1-3: MUST signs MoU with NARO

On October 29,2024, Mbarara University of Science and Technology (MUST) and the National Agricultural Research Organization (NARO) embarked on a strategic partnership aimed at driving innovation and research in Uganda. The partnership was formalized through a Memorandum of Understanding (MoU) signed by the Vice Chancellor of MUST, Professor Pauline Byakika-Kibwika, and the Director General of NARO, Dr. Yona Baguma Leveraging Strengths: The partnership will leverage the expertise and resources of both organizations to enhance research capacity and innovation in promoting Agricultural Research and NARO’s extensive research capabilities in agriculture will also be integrated with MUST’s academic programs to foster agricultural development and food security.



Photos: Joint Steering Committee nominated by the two institutes

Stories for P2 – AP3 – January 2025

P2 Goal: Improve mechanisms for climate change adaptation for sustainable food production for small scale farmers.

Activity 1-5: PhD scholar David Mubiru’s data collection for on an epidemiology of the banana bunchy top virus in banana and predoc training at KU Leuven

David is currently undertaking research on Banana Bunchy Top Virus disease in Uganda. In January and February, he conducted field surveys on BBTV in the Kasese district in midwestern Uganda and the Arua and Zombo districts in northeastern Uganda. The disease is spreading expansively, and many farmers are already affected by the disease with significant losses. On the other hand, preliminary observations indicated many farmers were not yet aware of the disease. David is working in collaboration with Dr. Patrick Odongo from the National Agricultural Laboratories in Kawanda, Dr. Walter Ocimati from Alliance of Bioversity International and CIAT, and Prof. Herve Vanderschuren, based at KU Leuven University. Currently, he is pursuing a predoc fellowship at KU Leuven, Belgium, and is attached to the Tropical Crop Improvement Laboratory. This research and study stay in Belgium is enabling him to acquire a range of molecular skills, including performing gel electrophoresis and band visualization, BBTV inoculation of in vitro banana plantlets, and BBTV infection phenotyping.



Stories for Subproject 2 – AP3 – January 2025

P2 Goal: Improve mechanisms for climate change adaptation for sustainable food production for small-scale farmers.

Activity 1-2: Bukenya Hakim reflects on a transformative Erasmus+ Exchange Experience at VUB, Belgium

In September 2024, Bukenya Hakim, a Master of Science student at Mbarara University of Science and Technology (MUST), embarked on a life-changing Erasmus+ exchange at Vrije Universiteit Brussel (VUB) in Belgium. Facilitated through MUST UCoBS Subproject II (P2). The program offered Hakim an opportunity to deepen his research expertise, engage with global

scholars, and experience life in a multicultural academic setting. “The exchange significantly transformed me both academically and personally. It pushed me beyond my comfort zone and expanded my worldview,” Hakim noted. His objectives were to engage directly with his supervisors, Prof. Hervé Vanderschuren at KU Leuven and Prof. Matthieu Kervyn at VUB, finalize his master’s research, and gain insights into project coordination. The structured academic environment at VUB, alongside rigorous coursework in *terrestrial ecology* and *agroecology*, provided the ideal setting for advancing his thesis. He successfully completed both courses and submitted his dissertation during the exchange.

Beyond academics, Hakim’s experience was enriched by cultural and social immersion. With the support of his landlord and Ugandan colleagues, he explored Brussels and other parts of Belgium, including a memorable tour of the Port of Antwerp and festive events at the Grand Place. He also participated in the Young Researchers Overseas Conference, where he presented a poster on his research and networked with scholars from across Europe. Reflecting on the journey, Hakim expressed deep appreciation to the people who made the exchange possible: Prof. Grace Kagoro, Prof. Matthieu Kervyn, and Ms. Shilah Niinye, whose support was instrumental throughout both the application and stay. Despite the challenges such as high living costs, language barriers, and initial social isolation, Hakim emerged more resilient and professionally prepared. “I’ve gained not only academic skills but also life lessons that I’ll carry forward,” he said. Hakim returned to Uganda in January 2025 and lives to encourage other students to pursue educational opportunities presented to them. Hakim’s last remarks “Have a clear plan, stay open to learning, and embrace the full experience. The growth is worth every moment.”



Photos of Hakim Bukenya in Belgium undertaking the students’ exchange programme.

A story for P3 – AP3 – January- February 2025
P3 Goal: Increase access and utilization of Affordable Energy Technology
Activity 1: Inspection and Maintenance Activities for Water Irrigation Project

In the month of January 2025, sub-project three (P3) held two maintenance activities for the Water Irrigation Project, whose implementation is ongoing at Rwenzesi Mixed Farm (owned by a community leader, Prof. Bitariho, located in Isingiro District). P3 is running a program where they support outstanding farmers in the community by strengthening their irrigation systems. The aim is to have this supported farm serve as a demonstration and learning ground for other farmers in the community who are interested in upgrading to modern methods of farming. P3 supported the Rwenzesi mixed farm by installing an irrigation system for which they also offer regular maintenance services. The maintenance included activities such as inspection conducted by field participants, who included 10 males and 4 females led by the irrigation students’ team at Mbarara University of Science and Technology (MUST). The inspection resulted in identifying loose valves, which were fixed immediately. The system pressure was also monitored, and the pressure was increased. Automation of sprinklers was monitored to ensure that water spread evenly to every part of the coffee plantation. There are 3 rows, each having 7 sprinklers, making a total of 21 sprinklers. Lastly, the system was flashed to monitor the operation of the flashback gates in each row of sprinklers and was found to be operating well.

In February 2025, the second inspection and maintenance exercise was conducted by a team of 13 male and 4 female students of MUST from the disciplines of electrical, civil, and computer engineering. In this maintenance exercise, leakages were fixed on the tank outlet pipes and at the manholes; manholes and valves that were covered by sand were uncovered; the bush around the undertank was cleared; rusted manhole covers and tank stands were painted; new manhole covers were welded, and concrete was cast around to keep them firm.



Photo of the automatic sprinkler, and that of the loose/broken valves fixed/replaced



a civil engineering student fixing a manhole valve leakage

Photos
showing
plumber

story for Subproject 3 AP3 – January 2025
P3 Goal: Increase access and utilization of Affordable Energy Technology
Activity 2: Partnerships and Stakeholder Engagements for briquette production

the
and

A preliminary visit to identify partnerships and stakeholder engagements was conducted by Sub-project 3 (P3) on the 29th and 30th of Jan, 2025. The project team, including undergraduate students and PhD scholars, held a preliminary site visit to Isingiro District and Mbarara municipality. It started with a meeting at the Natural Resources Department office of Isingiro District headquarters with Mr. Oreeba Oneemas (the District Environment Officer) following the request of PhD scholars. The mission of this visit was to develop a partnership with particular briquette producing groups facilitated by the Environment Officer. The briquette-producing groups that were recommended and selected and these included; Kyakabandi Briquette producers to work with PHD scholar Constance and 7CJ's home of briquette producers to work with PhD scholar Justus and Rwenjeru Agro-Tourism and Demonstration farm to work with Eng. Ssali on solar cooking technologies.



Photo of team at Isingiro headquarters, and the kyakabindi briquette producers

Stories for P3 – AP3 – February 2025
P3 Goal: Increase access and utilization of Affordable Energy Technology
Activity 3: Flemish Team Visit; Planning Meetings and Field Activities

Sub-project three (P3) was privileged to host their Flemish partners here in Uganda. This visit took place on 4th to 5th February 2025 hosting two visitors. The programme started with a project planning meeting that was held at the MUST Kihumuro campass. At this meeting, the PhD scholars had the opportunity to present their study briefs. Discussions about the budget were held and some funds allocated to the PhD scholar's extensive research. A field visit was then held to 7CJ'S home of briquette makers to meet the founder Ms. Jacky who was working with PhD student Constance to improve the quality of her briquets who enlightened the team about the ingredients of the briquets she made including; carbonized charcoal dust, clay, porridge state cassava flour, saw dust and sometimes mollusk depending on the affordability of the raw-material. Some of the challenges discussed on site were lack of a fabricated machine that can produce 1000 briquettes per day to meet her high demand. The next field visit was to Rwenjeru Farm were the team and the farm directors focused on how students (both undergraduate and PhD) could create an impact regarding the farming mechanisms to help the farm achieve its objective of giving back to the community to benefit Uganda and beyond. The next visit was to Kyakabindi briquette producers. The visitors were impressed and expressed that this group was the biggest producer of briquets among the other groups, they were very focused, they knew what they wanted, worked with limited machinery but still were able to maximize production and regardless of their education.



Photo; project planning meeting, visit to TCJ'S home of briquette producer and to Rwenjeru Farm and Kyakabindi briquette producers



Figure showing the team inspecting the clay store where its kept moistened

Stories for P3 – AP3 – February 2025
P3 Goal: Increase access and utilization of Affordable Energy Technology
Activity 4: Inspired by Humasol: A Journey of Connection, Purpose, and Impact

Mbarara University of Science and Technology (MUST) recently had the honor of hosting two visiting engineers inspired by the **Humasol water purification project** — a shining example of youth-led international collaboration. Among them was **Eng. Rani Bockstaele**, a 25-year-old environmental engineer from Belgium, who currently works in Dubai as a marine environmental site engineer on the Palm Island project. Rani's journey to Uganda was sparked by a powerful story shared by her colleague **Willem Van Melle**, who had volunteered with the Humasol team at MUST before joining the Jan De Nul company. Willem had spoken passionately about his experience—designing and implementing a water purification system, working with a diverse and motivated team, and being inspired by Uganda's people and landscape.

Motivated by his story, Rani and a friend (also an engineer in the water sanitation sector) traveled to Uganda in **March 2025**. While journeying between Lake Bunyonyi and Lake Mburo, they contacted Willem, who gladly linked them up with **Morian Hope**, a key figure in the project. Morian's warm welcome and inspiring leadership left a deep impression on Rani, who described her as “one of the most inspiring women I have ever met.”

The visit took them to **Kihumuro Campus**, where the Humasol team had built the water purification system. They explored the technical setup, maintenance routines, and current legal hurdles hindering full operation. The team's passion and commitment to sustaining the project stood out, demonstrating how knowledge transfer and community engagement can create lasting impact. Later, they visited a **second Humasol project**—a self-sustained farm powered by solar energy and using well water for automated irrigation. This closed-loop agro-system integrated intercropping, composting, and livestock, showing how sustainability, innovation, and education can work hand in hand. Rani expressed profound gratitude to **Willem, Morian, and the MUST team** for opening their doors and sharing their work. The visit became one of the most meaningful moments of her time in Uganda, rekindling her passion for global volunteerism and sustainable development. In her own words:

"Never settle for the sky when you can reach for the stars."



Photos; PA and Engs Rani and Taat and James, the head of the maintenance team (Water Purification Project). Eng Taat being taken through the manhole valve operations for the sprinklers and enjoyed the guavas at the farm.

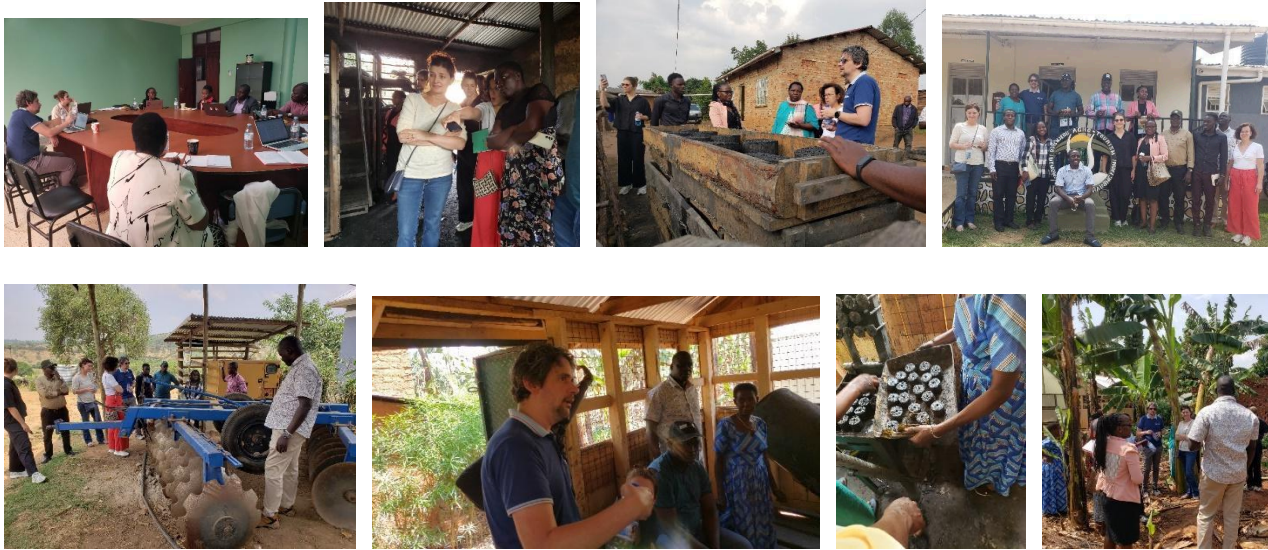
Stories for P3 – AP3 – February 2025
P3 Goal: Increase access and utilization of Affordable Energy Technology
Activity 5: Strategic Planning and Field Visits Strengthen Community-Based Research at MUST
4th and 5th February 2025

Effective project implementation requires careful planning, timely allocation of resources, and collaboration between all stakeholders. In line with this, the **IUC-UCoBS project team**, including both local and Flemish partners—**Maarten** and **Sophia**—held a planning meeting in the boardroom at **Kihumuro Campus, Mbarara University of Science and Technology (MUST)**. The meeting focused on planning upcoming field trips and ensuring that the limited time available was used efficiently. During the session, PhD scholars presented briefs on their research studies, which guided the budget discussions. Following a thorough review, funds were distributed to each scholar based on the scope of their research and the field sites involved. The team emphasized the importance of matching funding to impactful, field-based research.

One of the most significant visits was to 7CJ's Home of Briquette Makers, where the team met the founder, Ms. Jacky. She provided a detailed explanation of the briquette production process, which uses **carbonized charcoal dust, clay, cassava flour in porridge form, sawdust, and occasionally mollusks**, depending on availability and cost.

Ms. Jacky highlighted a major constraint: the **lack of a high-capacity briquette machine**. Her current setup only allows production of **200–250 briquettes per day**, far below her target of **1,000 per day**. She appealed for project support to help acquire a fabricated machine, which would not only increase production but also create opportunities for meaningful collaboration with researchers. The team also visited **Rwenjeru Agro-Tourism Farm**, where plans were discussed to engage **Eng. Ssali** in the promotion of **solar cooking technologies**. Dr. Imelda Kemeza and Mr. Duncan, the Co-Director, will supervise Madam Faith Natukunda and Mechanical Engineering students in this initiative.

At Rwenjeru, the discussion focused on how students can contribute innovative ideas to improve farming systems that benefit the larger community. Although the tight schedule limited in-depth discussion, key issues were addressed. To deepen this engagement, the team agreed to organize a **multi-day student workshop** at the farm. This will allow students to explore challenges, **prototype solutions**, and design technologies that can be applied in real-life agricultural settings.



Photos showing project planning meeting, team at 7CJ'S home of briquette, team at Rwenjeru Farm, checking the farm machinery, visit to Kyakabindi briquette producers, team inspecting the clay store, team having meals at dream wood suites

A story for subproject 3 AP3—March 2025

P3 Goal: Increase access and utilization of Affordable Energy Technology

Activity 6: ideation and Prototyping workshop in Rwenjeru farm

A workshop about ideation and prototyping was held at Rwenjeru Agro-Tourism Demonstration and Training Farm in Biharwe, Mbarara City, on 10th-11th March, 2025. conducted as part of this year's work plan activities for subproject three (P3). The workshop targeted students under the disciplines of software development, mechanical engineering, electrical engineering, and agriculture and livelihood, attracting 25 of these students. Dr. Johnes Obungoloch, the P3 team leader, gave the opening remarks about P3's key target objectives as well as the workshop's targets. Mr. Kananura Martin, director of Rwenjeru Farm and retired headteacher, described the mission of the farm and its core values. He mentioned youth/community employability, skilling programs (teaching the community about irrigation practices, solar systems, and biogas production), and giving back to the community by buying them grass choppers, giving them access to free water supply, and giving them crop and animal breeds. Rwenjeru Farm had recently won the medal as best farmer of the year in Uganda and won fifty million Ugandan shillings in grant support from the government of Uganda. Guiding questions to be answered in this workshop were, what challenges are we observing? What could be the possible cause of these challenges? Who is affected by these challenges? What is being done to cope with these challenges? What can we do to improve these challenges? The problem identification session began with students surveying farm agricultural mechanisms and energy production. Then came the ideation and presentation session, which included a business model canvas and proposed

solution presentations. performing teams who were promised further support in the development of their prototyped solution



product.

Group photo of the trainees, trainers and some participants



Photo of Director and Codirector Rwenjeru Farm training students on key agricultural challenges, Dr Imelda speaking to the students



Photo of Mr. Mumbere training on solar systems and Mr. Douglas on farm Machinery

Mr. Kato and Dr. Manasseh guiding different student groups on the business model canvas



Dr. Johnes and Mr. Martin during and after awarding participation certificates to students.

Stories for Subproject 4 AP3 – January 2025

P4 Goal: Improved sexual and reproductive health rights and maternal, newborn and child healthcare

Activity 1-4: PhD scholar (Dr. Turigye Brian's) data collection

During the month of December 2024, Dr. Brian Turigye embarked on a data collection venture as part of his research for his PhD. The exercise aimed to assess the readiness of health facilities, conduct geospatial mapping, and carry out key informant interviews to support research assistants. Additionally, patient chart reviews and data extraction focused on maternal records. The activity was successfully completed within the planned time frame. The collected data will support further analysis and inform healthcare interventions in the districts.



Stories for P4 – AP3 – March 2025

P4 Goal: Improved sexual and reproductive health rights and maternal, newborn and child healthcare

Activity 2-4: Infrastructure support for health facilities

Fetals, dopplers, blood pressure machines, and television screens were among the equipment used to support the infrastructure.



Photo: P4 team members (Prof. Ngonzi on the left, Mr. Oloro on the right and Kamugisha 3rd from the left) delivering a TV screen to Bundibugyo General Hospital. The midwife (center), Bugoye Health Center III, and the DHO (right) Kasese District receiving fetal dopplers and BP machines from the P4 team. Here is the link to the news clip for the activity: <https://youtu.be/nxUtG5UZp5E>

Stories for P4 – AP3 – May 2025

P4 Goal: Improved sexual and reproductive health rights and maternal, newborn and child healthcare

Activity 3-4: Dr. Brenda's PhD scholar data collection

Dr. Brenda Ainomugisha, PhD scholar's data collection exercise is ongoing. This phase of the study aims to study the effect of point-of-care contraceptive provision on modern methods uptake among women delivering by cesarean section at Mbarara Regional Referral Hospital. The activities in phase 1 include obtaining informed consent, participant enrollment, data collection through questionnaires, data management, and participation in study meetings. Structured questionnaires were administered to 430 participants in accordance with the study protocol.



Dr. Brenda Ainomugisha interviewing midwives during her data collection activities

Stories for P5 – AP3 – February 2025

P5 Goal: Increase youth employability through skilling, innovations, experiential learning and technology

Activity 1: Digital Marketing Bootcamp Empowers Students at MUST & guest lecturer

From February 18th to 22nd, 2025, Mbarara University of Science and Technology (MUST) came alive with creativity, collaboration, and digital innovation. Through Subproject Five (P5) of the MUST/IUC UCoBS project, working in collaboration with partners from VUB, Vlirous, Howest, and StartHub Africa, the Uganda Industrial Research Institute held a five-day Digital Marketing Skills Bootcamp to equip the student youth at MUST with real-world marketing skills for business and employability. This bootcamp brought together 39 passionate students and aspiring entrepreneurs, eager to learn how to boost their businesses' online presence. Through hands-on sessions, they explored how to map customer journeys, create content that connects, use artificial intelligence in marketing, and run targeted paid ads. One of the highlights was the 20K Ad Challenge, where teams used 20,000 UGX to run actual ads and test their strategies in the real market. From *Crafty Shop* to *Rent Easy* and *Magara Wellness*, the participants didn't just learn—they built, tested, and improved their digital products. Throughout the week, the energy was contagious. From power poses and energizers to storytelling and reflections, the bootcamp wasn't just about skills; it was about building confidence, creativity, and community. At the end of the week, every participant walked away with more than just a certificate—they left with a clearer vision, stronger skills, and new networks to grow with.



Photos; The Bootcamp exercise and the winning team receiving their award

In the same month, February 2025, the MUST/IUC UCoBS Subproject 5 hosted a guest lecture by Lector Thijs Martens from Howest University. The guest visited Mbarara University of Science and Technology and was welcomed by the Dean faculty

of business at MUST (Dr. Fredrick Nsambu Kijjambu) and the deputy vice chancellor (Prof. Tushabomwe-Kazooba Charles). This visit brought together students, lecturers, entrepreneurs, and international partners for a conversation that was as inspiring as it was practical. The theme for the lecture was **“From Start-Up to Scale-Up” and “How to Motivate Teams Using Self-Determination Theory.”** Martens elaborated on the journey of growing a startup into a scalable business, and he shared what it means to move from building prototypes to actually selling products. He also discussed the importance of planning, listening to customer feedback, and celebrating small wins along the way. Dean (Opleidingsmanager Bedrijf en organisatie) Randy Lamiere, also from Howest, unpacked the psychology behind why people stay engaged at work and how leaders can create environments that foster autonomy, competence, and connection. The message was clear: motivated teams build strong businesses. The alumni of the UCoBS Project 5 entrepreneurship bootcamps also shared their stories; i) Daphine Akampurira, founder of *Give a Skill Uganda*, spoke about how a 50K challenge at a community bootcamp helped her gain the courage to market her homemade wine. Today, she’s received a \$5,000 grant from UNICEF to train women in refugee camps. ii) Ssewanyana Ernest, co-founder of *Eco Fair Packaging*, shared how the training and mentorship helped him grow his startup into two branches employing others and creating eco-friendly products for businesses in Kampala and Mbarara. These stories lit up the room—proof that the skills shared through the UCoBS project are sparking real change in communities. As the Deputy of the Faculty of Business at MUST (Dr. Baguma Muhanga Kule) closed the session, he emphasized that the upcoming MUST Entrepreneurship Center would be a continuation of this impact, providing even more space for young people to dream, build, and thrive.



Photo: P5 Ugandan team with P5 Flemish team, Group photo after the bootcamp, Thijs Martens, the P5 Flemish leader guest lecture

Stories for Subproject 5 AP3 – April 2025

P5 Goal: Increase youth employability through skilling, innovations, experiential learning and technology

Activity 2: Bootcamp at Nyamitanga Technical Institute & The Flemish Internees' experience in Uganda

In April 2025, 35 first-year students joined a transformative entrepreneurship bootcamp under UCoBS Project 5 at Nyamitanga Technical Institute (NTI). What began as a gathering of curious minds quickly evolved into a powerful journey of self-discovery, teamwork, and bold innovation. Welcomed by Mr. Kakuru James, Deputy Principal of NTI, and Dr. Imelda Kemeeza from the UCoBS team, the students were encouraged to look beyond textbooks and see themselves as problem solvers and change makers. The week was filled with hands-on sessions, vibrant discussions, and mentorship from a passionate team of facilitators and Flemish interns (Lien & Sam). One unforgettable moment came from Justice Atwijukire, founder of *Khan Kora Honey Ltd.*, who reminded participants that success isn’t about where you come from, but about mindset and consistency. Her words lit a fire in the room: “Your friend could be your first customer.” By Day 5, the transformation was visible. Once-shy students were confidently pitching real-world business ideas to a panel of judges. Their projects tackled issues like *soil degradation, hospital caregiving challenges, and safe construction*. The winning teams were i) Analysts—foldable caregiver beds for health facilities, ii) Dream Composite—eco-friendly manure to improve soil health, and iii) Expert Builders—durable, risk-reducing construction bricks. In his remarks, Mr. Ezra Atuhairwe, the Mbarara City Education Officer, reminded everyone that *“mindset change is the beginning of every solution.”* He urged the youth to equip their minds first because everything else follows. Mr. Gilvazio Bafaki, Principal of NTI, brought the bootcamp to a close with deep gratitude to the students, facilitators, and UCoBS team, calling it a week of real impact and renewed hope for youth-driven innovation. This wasn’t just a training; it was the beginning of something bigger. A reminder that when young people are empowered, they rise to the occasion and then rise even higher.



Photos: Dr. Kule (Deputy Dean, MUST FOBMS), Tumuhimbise (UCoBS TL), Mr. Ezra (Mbarara City Education Officer), & Mr. Gilvazioilvazio (Principal, Nyamitanga Technical Institute). A photo of winning teams, a group photo after the bootcamp, and students during a session with Ms. Nuriat.

In the same month of April 2025, two Flemish internees completed their 3-month stay in Uganda and are able to tell their story. i) **Sam Vanderbenden's story;** During a period of three months, I, together with my colleague Lien, had the privilege to do an internship at Mbarara University of Science and Technology, Uganda. In collaboration with members from the UCoBS, specifically from sub-projects 1 and 5, I worked on the development of a tourism product for ACCCA (Ankole Cow Cultural Conservation Association). I have learned a lot about the process of starting up a tourism product and the tourism sector in Uganda in general. Besides the work, I also had the chance to experience the local culture. I tasted traditional dishes, such as matooke and Rolex, and learned some words in the local dialect. The hospitality of the people in Mbarara made my stay especially enjoyable. This internship not only enhanced my professional skills but also enriched my perspective on life. I am grateful for the opportunity to be part of a community that is so resilient and welcoming. Mbarara will always have a special place in my heart.

ii) **Lien Gommers Story;** Hello! My name is Lien Gommers, and I am a business student from Belgium. From February to April 2025, I spent three months as an intern with the UCoBS projects at MUST University. I worked with the teams on Project 1 (Conservation and Tourism) and Project 5 (Youth Employability). During my internship, I had the chance to work both independently and together with other team members and stakeholders. This gave me the perfect balance between working on my own and being part of a group. Besides working, Sam (my fellow intern) and I explored the country. We visited places like Kampala, Jinja, Kisoro, Fort Portal, and many more. Taking public transport was an adventure—sometimes five or six people would sit in a row made for three, or we would wait by the road for a taxi with space to stop. Even with the challenges—like finding things to do in Mbarara, getting used to a new work culture, or searching for good cheese—I will always remember these three months. My internship was full of bootcamps, trying new foods, and discovering more about myself. I learned to adapt, work with different people, and step out of my comfort zone. This experience has helped me grow, both personally and professionally.



Stories for P6 – AP3 – December 2024

P6 Goal: Improved institutional and community ICT capacity to access and utilize information

Activity 1: Building Cybersecurity Capacity at MUST: A Hands-On Workshop with Thomas More University (2nd–5th December 2024)

Mbarara University of Science and Technology (MUST), in collaboration with Thomas More University of Applied Sciences, hosted a transformative four-day cybersecurity workshop as part of the IUC-UCoBS program from December 2nd to 5th, 2024. Facilitated by Gunther Van and Liesbeth Kenens, the training brought together 15 participants, including MUST ICT staff and postgraduate students, for an intensive, hands-on experience in modern cybersecurity tools and techniques. The workshop aimed to strengthen cybersecurity capacity at MUST, focusing on practical skills in areas such as firewall configuration, IP management, DNS security, and traffic shaping. Participants were introduced to **OPNsense**, an open-source firewall and routing platform, and guided through the process of installing and configuring it using **VirtualBox**. Though the installation process proved challenging for those with slower or incompatible machines, the learning experience was rich and rewarding. A significant portion of the training involved real-time simulations, including interface configurations, virtual IPs, NAT setup, and firewall rules. Discussions explored current network setups at the university's Kihumuro campus, with facilitators offering insights into issues like NAT-ing, future IPv6 adoption, and the structure of public-facing servers. The group also examined DNS-related vulnerabilities, exploring advanced topics such as DNSsec, DOH/DOT/DOQ, and DNS-based cyberattacks, which account for nearly 90% of online security incidents.

Participants learned to implement **traffic shaping**—controlling bandwidth usage based on IP addresses, port numbers, and traffic direction—using OPNsense's Firewall Shaper tools. The importance of DNS blacklisting was also demonstrated, including the use of services like **PhishTank** to block malicious domains. Beyond technical configurations, Liesbeth led a session on **intelligence creation**, showing how to track and manage malicious URLs and IP addresses, further equipping participants with threat detection skills. The workshop also explored **Layer 2 and Layer 3 network designs**, touching on protocols like LAGG and VLANs for robust local area networking. The workshop not only enhanced technical capacity but also laid the groundwork for future improvements in MUST's digital infrastructure, contributing to a safer and more secure university environment.



Photos: Gunther, after creating the NAT network; Liesbeth presenting on intelligence creation, showing how to blacklist a DNS, a presentation from Liesbeth;

Stories for Subproject 6 AP3 – January 2025

P6 Goal: Improved institutional and community ICT capacity to access and utilize information

Activity 2: Gender and ICT Workshop; MUST sexual harassment policy

In January 2025, a workshop was conducted at MUST under the UCoBs sub-project 6. The workshop convened 30 participants and was coordinated by Dr. Deborah Natumanya and Mr. Kenneth Baguma. The purpose of the workshop was to

understand the MUST sexual harassment policy and AP University (Belgium) policy as presented by Ms. Kelly Casal and provide recommendations to strengthen the two policies. Two groups were formed, and further brainstorming was held, raising the following remarks: recommendations were given that case management be handled with almost confidentiality, digital tools for harassment, stakeholder involvement in the design, utilization of social media for sensitization, reporting and case management, and regular sensitization.



Stories for Subproject 6 AP3 – January 2025

P6 Goal: Improved institutional and community ICT capacity to access and utilize information

Activity 3: ICT Infrastructure Boost for MUST through VLIR-UOS Partnership

Mbarara University of Science and Technology (MUST), through UCoBS, received a significant consignment of ICT equipment aimed at strengthening the university’s infrastructural development. The shipment, which arrived safely from Vrije Universiteit Brussel (VUB) in Belgium, includes servers, desktop computers, and other essential ICT electronics. This valuable equipment is a major step forward in enhancing the university’s capacity for teaching, research, and data management under Subproject 6 of the IUC-UCoBS program. It will play a vital role in supporting ICT-related activities and improving digital access across various faculties and departments at MUST. Sincere appreciation goes to our partners and funders at VLIR-UOS, with special thanks to the Subproject 6 team leaders—Mr. Rudy Gavaert and Dr. Fred Kagga—for their tireless coordination. Gratitude also goes to Mr. Amos Baryashaba, the local coordinator; Prof. Charles Tushabomwe Kazooba, the coordinator; and the entire Project Support Unit (PSU) for their unwavering commitment and dedicated efforts in ensuring the timely and safe delivery of the equipment.



Photos: equipment upon delivery, the ICT team verifying the equipment on arrival at MUST.

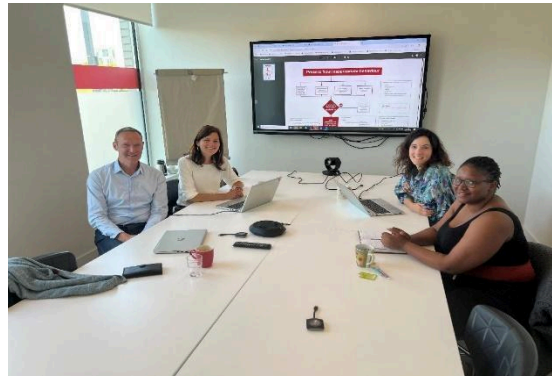
Stories for Subproject 6 AP3 – May 2025

P6 Goal: Improved institutional and community ICT capacity to access and utilize information

Activity 4: Five days of marking at selected Belgian universities

Dr. Natumanya Deborah conducted a 5-day benchmarking study of four Belgian universities in May 2025. The purpose of this exercise was twofold: a. i) to study best practices in addressing sexual harassment and transgressive behavior in higher education and education and ii) to explore initiatives and programs promoting female participation in ICT and international mobility. The selected institutions visited were i) Vrije Universiteit Brussel (VUB), ii) Ghent University, iii) AP Hogeschool, and iv) AP University (multiple visits). Some of the findings on transgressive behavior and sexual harassment policies were comprehensive: policy embedded in institutional culture, centralized reporting, trained psychologists, informal and formal complaint processes, and awareness through posters and communication campaigns (VUB). Developing two distinct policies

(for staff and students); mandatory staff training; student videos and orientation content; external prevention officer for case handling; emphasizes positive messaging and open feedback (Ghent University). Help desk team currently volunteering; structured reporting process supported by a detailed process flow; awareness through newsletters, campus screens, and bystander training; plans to formalize support systems (AP University). Some of the findings on female participation in ICT and mobility include the Women in ICT group organizing motivational talks and events. The CoderDojo initiative trains girls aged 6–13 in programming through storytelling and online resources (AP Hogeschool). Numerous Erasmus-funded international projects with interdisciplinary student teams; innovation hubs established; emphasis on applied research and entrepreneurship; observations on gender stereotypes in education and career paths (AP University). The benchmarking visit provided a rich and practical understanding of how European universities, particularly in Belgium, manage transgressive behavior and gender inclusion in ICT and mobility. The implementation of the above recommendations at MUST will contribute to creating a safer, more inclusive, and globally engaged academic environment where women can thrive in ICT and beyond.



Photos include a discussion on transgressive behavior with Sarah from Ghent University, a help desk team from AP Hoge School, and an update on ongoing international projects at the school.

Stories for Subproject 6 AP3 – May 2025

P6 Goal: Improved institutional and community ICT capacity to access and utilize information

Activity 4: Empowering Data Science Skills at MUST

From February 2nd to 7th, 2025, a week-long data science training was hosted by MUST under Subproject Six of the IUC-UCoBS program. The training attracted 21 enthusiastic participants (15 male and 6 female), with consistent engagement throughout the week. The training was designed to build foundational skills in R and Python programming, as well as introduce participants to data analysis and visualization techniques. Attendees, who included postgraduate students and ICT staff, were all required to install R Studio or equivalent software on their laptops and come with datasets for hands-on practice. For those without personal datasets, open data sources from [Kaggle](https://www.kaggle.com/) were recommended and utilized. The training was led by **Prof. Koen Vanhoof**, a seasoned expert in data science, and focused on building competence in **R and Python**, two of the most widely used programming languages for statistical computing and data visualization. Each day of the workshop was divided into two parts: morning theory sessions, which explained key concepts, and afternoon practical sessions, which allowed participants to apply what they had learned using real-world datasets. They were required to install R Studio or equivalent software and bring along datasets for practice. Those without personal data sources were guided to explore publicly available datasets from [Kaggle](https://www.kaggle.com/).

The training began with an introduction to data science, where participants explored the basics of R and Python syntax, data types, directory setup, object creation (`object <- function(arguments)`), and data manipulation using mathematical, string, and logical operations. Beyond the Basics, there was data visualisation where One of the most impactful components of the training was the in-depth exploration of data visualization techniques, learning that effective data visualization requires a clear understanding of the audience and the purpose of the data being presented. As Prof. Koen emphasized, “Color without a legend is useless”—a reminder that clarity and context are key.



photo for the data science participants and also during the sessions

Group

SUCCEED WE MUST

