



# Strengthening Rwanda Research & Innovation Ecosystem through Training, Coordination and Collaboration

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**PREAMBLE:** This issue highlights the launch of a new project focusing on boosting technology transfer, research commercialization, and academia-industry collaboration. It also features capacity-building initiatives, including strategic leadership training and resource mobilization workshops which was designed to equip innovators with tools to turn ideas into market-ready solutions. In addition, a snapshot of Rwanda’s participation in international peer learning events, collaborative platforms, and efforts to enhance funding partnerships via NCST is highlighted. This edition reflects the NCST’s holistic approach to building a knowledge-driven, inclusive, and resilient future by honoring our history during Ukwibuka 31.

## INSIDE THIS ISSUE:



Nyamagabe: 4 beneficiaries who received support from NCST and its stakeholders



Mrs Agnes receiving the Certificate during the awarding ceremony in Egypt



All participants who attend the kick of session of the project strengthening Rwanda Research and Innovation Ecosystem through Training, Coordination and Collaboration

# Strengthening Rwanda Research and Innovation Ecosystem through Training, Coordination and Collaboration: Project Kick Off Workshop and Next Steps

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Participants during kick-off meeting of the project

## 1. Introduction/Background

The National Council for Science and Technology (NCST) in collaboration with the University of Rwanda (UR) secured a grant to implement a project titled **“Strengthening Rwanda’s Research and Innovation Ecosystem through Training, Coordination, and Collaboration.”** The project is funded through the Research and Innovation Systems for Africa (RISA fund). The project follows the successful implementation of the previous project that developed the Rwanda Technology Transfer and Commercialization Strategy.

The project aims to build nationwide capacity through Training of Trainers (ToTs) to boost research, entrepreneurship and innovation skills, and to foster collaboration between academia and industry to drive market-relevant innovations. The project is expected to contribute to the enhancement of National Innovation system to enable effective technology and knowledge transfer that supports Rwanda’s econo-

my growth.

Specifically, the project has the following objectives:

- i. Enhance research to commercialization pathway, skills and talents for innovation through technology and knowledge transfer,
- ii. Strengthen research and innovation systems partnerships and co-operation between entrepreneurs (from industries) and researchers (research institutions), and
- iii. Develop a national online centralized repository and database

to enhance evidence-based decision-making and policy formulation for research and innovation to promote product commercialization

To support the implementation of the project and engage stakeholders, the UR and NCST organized a one-day workshop on 2<sup>nd</sup> May 2025 at the UR Headquarters. The purpose of the kick-off meeting was to orient stakeholders to the work at hand, discuss how everyone will be involved in collaboration and establish common understanding of the project goals for a successful implementation.





*Discussions on the new ways to strengthen Research and Innovation Ecosystem in Rwanda*

## 2. Kick-off workshop proceedings

The kick-off project workshop convened national key stakeholders to present the project objectives and discuss the roles and responsibilities of each stakeholder towards successful implementation of the project.

The kick-off workshop employed a participatory approach, including welcome and opening remarks, interactive presentation of the project objectives and expected outcomes, stakeholders' roles and responsibilities, followed by open discussions for successful project implementation and recommendations. Participants included researchers from higher learning institutions, government representatives, policymakers, innovators, and ICT experts, ensuring an inclusive and comprehensive approach to project implementation.

### 2.1. Welcome and Opening Remarks

The kick-off workshop was officiated by Prof. Kayihura Muganga Didas, Vice-Chancellor of the University of Rwanda, who delivered welcome remarks, and officially opened by Dr. Eugene Mutimura, Executive Secretary of NCST.

Prof. Kayihura welcomed participants and emphasized the importance of collaborative efforts across sectors by highlighting the will from the Univer-

sity of Rwanda's readiness to support the implementation of the project, and stressed the need for inclusivity by involving all chambers in the project. He explained that the project is rooted in Rwanda's newly developed technology transfer and commercialization strategy and will adopt a training-of-trainers

approach to enhance local capacity. He also urged better coordination and collaboration across institutions to create a more integrated and effective system, and that the impact of the project highly depends on close collaboration between academia, industry and government.



*VC UR delivering remarks during the kick off meeting*



*NCST ES delivering remarks during the Kick off meeting.*

Dr. Eugene Mutimura, the Executive Secretary of NCST, officially opened the workshop and presented the broader vision of the project. He emphasized alignment with Rwanda's Vision 2050, the National strategy for Transforma-

tion (NTS2: 2024-2029), and the role of project in driving socio-economic development, and noted key project goals, including cascading the national strategy on technology transfer and fostering academia-industry collaboration, and developing national research repository. Importantly, he emphasized on how the project outcomes leading to capacity to develop more innovation will contribute to national global innovation index, specifically increasing innovation outputs.

Dr. Mutimura said that while Rwanda has made progress in research, turning ideas into market-ready products is still a work in progress: "We are making progress, but we are not yet where we need to be in terms of turning research into market-ready products," he said. Dr. Mutimura said that out of the 126 projects supported by National Research and Innovation (NRIF) through NCST, about more than 30 projects show potential for national impact. Yet, researchers often struggle to focus on the final steps, and monetizing their innovations. He added that "This isn't just about research only, but it's about jobs, competitiveness, and building a stronger economy".

He concluded his remarks by calling for strong collaboration to bring our strengths together and move Rwanda forward.

## 2.2. Key project presentation highlights

The project team presented to the participants key highlights of the project including rationale and objectives, and implementation plan with roles and responsibilities of each stakeholder.

The expected outcomes and result of the projects include:

- ToTs for 45 researchers and innovators from institutions involved in research and innovation
- Developed (cascaded) institutional technology transfer and commercialization strategies at 3 different public research institutions
- Academia-industry roundtables for strengthened collaboration
- Developed and operationalized of national research repository
- Developed Entrepreneurial institution maturity framework

## 2.3. Key outcomes of the kick-off workshop

During the kick-off meeting, participants discussed the project benefits, objectives, planned activities and expected outcomes, and commended the initiative and underscored the importance for stronger collaboration towards success of the project implementation.

The following are key takeaways and recommendations from stakeholders during the kick-off workshop.

- **Private sector engagement:** the project team should develop approaches to engage private sector through, for example, organizing a breakfast/dinner with representative from the private sector for pitching research and

innovation outputs; investigating why the private sector often imports technologies despite local capabilities; conducting sector-specific needs assessments and market analysis; and involving end-users early in the technology development cycle.

- **Project implementation and coordination:** the project team should ensure collaboration and participation of all sectors and chambers; develop a robust marketing, communication and outreach strategy; and map and share resources across institutions to promote synergy.
- **Sustainability and Communication:** the project team should develop a structured and sustainable communication plan; launch awareness and Public Relations (PR) campaigns to foster a Research and Development (R&D) culture within industries; and design and implement a clear Monitoring, Evaluation, and Learning (MEL) framework.

## 2.4. Closing remarks



*Prof. Ignace Gatare delivering closing remarks during the Kick off meeting.*

Prof. Ignace Gatare, the Principal of UR's College of Science and Technology, called for researchers to stay grounded in the realities of Rwanda's economic needs. He said that "We must move away from the ivory tower mentality

and focus on the needs of micro, small, and medium-sized enterprises (MSMEs), which are the backbone of Rwanda's economy." He also urged for better assessment of Rwanda's research capacity, not just in terms of quantity but also quality and tracking the tangible impact of research, as well as keeping in mind that "After this project, what changes have we made compared to before?". In short Prof. Ignace Gatare commended participants for the interactive and engaging session; reiterated the importance of collaboration, quality, and measurable impact; emphasized the need for continuous engagement and input beyond the workshop; and finally stressed that developed technologies should aim for global competitiveness.

## 3. Conclusion

The kick-off workshop successfully launched the project and provided a platform for stakeholders' discussions on strengthening Rwanda's research and innovation ecosystem. Key recommendations included:

- **All partners led by PIs:** Emphasis on inclusive coordination, stakeholders' engagement, quality assurance, strategic communication, and sustainability planning.
- **The project leaders/ PIs:** Develop a plan to engage key private sector partners, specifically those who can fund innovation ready for commercialization through hosting working dinner with key private partners as part of the project's goals to network and build tangible academia-industry collaborations.
- **Project leaders and NCST:** It was agreed that the office of the Executive Secretary of NCST and National Research and Innovation Fund Department of NCST work with CEO of Private Sector Federation (PSF) to develop a plan to match existing funded innovations ready for commercialization with specific private partners.

# Strengthening Skills through Capacity Building: Training and Workshops for NCST Staff and Stakeholders

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## Training Workshop on Fundraising and Resources Mobilization for Projects Ready for Commercialization

### 1. Background

In line with its mandate, NCST manages the National Research and Innovation Fund (NRIF) by developing and implementing funding schemes and instruments that offer competitive, merit-based opportunities aimed at enhancing national research and innovation capacity and productivity. Furthermore, the NRIF supports and promotes basic and applied research as well as experimental development programs aligned with the national priority areas in the National Research and Innovation Agenda (NRIA). In this regard, the NRIF program has supported grants to researchers and innovators in 6 priority areas, namely a) Sustainable Energy; b) Food Security and Modern Agriculture; c) Life and Health Sciences; d) Local Production and Value Addition; e) Digital Services, Products and Lifestyles; and f) Resilient Environment and Climate Change.

There are promising preliminary information and insights from some of the

funded projects showing readiness for commercialization and others demonstrating substantial outputs that require more funding for scaling up and creation of startups for tangible impact on the market and job creation. However, Researchers and entrepreneurs often face several challenges when trying to scale and commercialize their products and innovations due to several barriers including mainly:

- **Insufficient Mentorship & Networks and Lack of Technology Transfer and Commercialization Skills:** Researchers often excel at technical innovation work but lack business development skills necessary for scaling. Furthermore, investors prefer proven models and market ready products. This makes it hard for researchers and innovators to secure the capital they need to grow.
- **Limited skills capacity on mobilizing fund for scale up and**

**commercialization:** The researchers and innovators lack skills capacity for mobilizing funds to scale up and commercialize their products and innovations (e.g., development of business plans, etc.).

- **Limited Access to Funding and Market Access Barriers:** Scaling requires substantial investment, but early-stage funding including grants, promoters' funds, seed funding and venture capital, etc. is often scarce.

Therefore, effective scaling will require knowledge/mentorship and strong partnerships and removal of barriers related to funding, and skills capacity that may hinder the scaling process. In light of these, researchers and innovators with scalable and market-ready innovations, prototypes, or products, need to be upskilled in fund mobilization and business plans development to enhance resilience and competitiveness of their startups.

### 2. The workshop

From May 14 - 16, 2025, the National Council for Science and Technology (NCST) conducted a training workshop on "Fundraising and Resources Mobilization for Projects Ready for Commercialization" in Musanze at the University of Rwanda's College of Agriculture, Animal Sciences and Veterinary Medicine (UR-CAVM).



Opening Remarks of the workshop by the NCST Executive Secretary

The workshop aimed to strengthen the capacity of researchers, innovators, and NCST staff in mobilizing resources to scale promising innovations funded under NRIF. The initiative comes in response to the growing need to convert high-potential research outputs into viable businesses, create startups, and attract private investment.

The workshop was open by Dr. Eugene Mutimura, Executive Secretary of NCST: Emphasis was put on the purpose and objectives, expected outcomes of the workshop which represents a critical step toward transforming Rwanda's research ecosystem into a dynamic engine of entrepreneurship contributing to economic growth.

Over 35 participants took part in the hands-on training, including project Principal Investigators (PIs), industry partners, and NCST staff. The participants represented a wide range of innovation areas, from clean energy and agri-tech to biotech and digital solutions. Key objectives of the training included: equipping researchers with the skills to develop investor-ready business plans, understanding innovation and market readiness levels, and guiding NCST staff to support fundraising strategies and strategic partnerships.

The training was delivered through participatory methods including case studies, breakout sessions, and tailored feedback. Each project team was supported to refine their business plans and investor pitches. Example projects included the production of phytomedicines, lithium battery recycling, a smart attendance management system. These projects and others demonstrated potential for commercial viability and societal impact, but required stronger funding strategies and clearer investor targeting.

Breakout sessions focused on building business narratives, identifying investor evaluation criteria, and addressing gaps in commercial viability and IPR management. Teams were challenged to present investment rationale, market strategies, risk assessments, and financial projections.



Trainers included Dr. Raymond Ndikumana (UR), Mr. Juvenal Kalema (agribusiness finance expert), Ms. Esther Kunda (MINICT), Ms. Miriam Nsekonziza (INK-JUBEIT), and Dr. Didacienne Mukanyiligira (NCST) on topics including: proposal development, business model design, intellectual property rights (IPR), strategies for resource mobilization and partnerships, technology readiness assessment, and private sector engagement.

In parallel, NCST staff developed a draft resource mobilization strategy, enhancing their ability to guide future grantees and forge sustainable public-private partnerships.

The workshop concluded with presentations of revised business plans and a reflection on lessons learnt with a roadmap for action. Participants emphasized

the need for continued post-training mentorship, institutional support for IP registration, and improved access to seed and venture capital.

### 3. Way forward

Moving forward, NCST plans to build a pipeline of commercialization-ready innovations by leveraging funding through various schemes including: Excellent Research Grants, Innovation and technology development (ITD) grants, Capacity Building in research and Innovation grants, Funding Infrastructure and strategies for research centers, Special talents and innovative start-up grants, Implementation Research for up-scale and commercialization of innovations. Furthermore, such training model shall be expanded to other cohorts of research and innovation projects.



Participants at the workshop

This initiative was supported by the project **“Strengthening the Capacity for Management of Research and Innovation Programs in Rwanda”** funded by IDRC.

# SGCI Peer Learning Activities, DFG-NRF Partnership with the SGCI, Bonn Germany

## 1. Introduction

The German Research Foundation (DFG) and the South African National Research Foundation (NRF) hosted the peer learning Activities from 7<sup>th</sup> to 10<sup>th</sup> April 2025 which aimed at understanding the successes and challenges of councils in management of funded research and innovation projects towards broader funding opportunities. The convening has provided a platform for participants to engage in discussions on various science, technology, and innovation (STI) themes and engage with other councils and funders to reflect on key topics such as: **expectations of societal and economic impact, a Value Proposition for Equality, Diversity and Inclusivity (EDI) in a post-2025 Era, Research impact and partnerships, Research infrastructure as an enabler, curiosity driven research, and Funding partnerships**

The overall objective of the peer learning activities was to explore good practices in other research systems regionally, but also internationally, exchange on trends and practices across the various areas of research management that will enable participating institutions to learn about requirements to benefit from future funding for research and Innovation and practices for better management of grants. In addition, the objective was to feed into the current discussions on the upcoming SGCI-III Phase including measures for a continued DFG/NRF Partnership on what topics should be addressed in shaping SGCI-3 which will be a new SGCI phase for funding Research and Innovations

## 2. Significance and rationale

The Science Granting Councils Initiative in sub-Saharan Africa (SGCI) was launched in April 2015 with the aim to

strengthen the capacities of Science Granting Councils (SGCs) in sub-Saharan Africa in order to support research and evidence-based policies that will contribute to economic and social development. The Initiative is jointly funded by the United Kingdom's Foreign, Commonwealth and Development Office (FCDO); Canada's International Development Research Centre (IDRC); South Africa's National Research Foundation (NRF); the Swedish International Development Cooperation Agency (Sida); the Norwegian Agency for Development Cooperation (NORAD) and the German Research Foundation (DFG).

Various funding Phases of SGCI have been implemented. Specifically, SGCI-1 (2015-2020) focused on strengthening the ability of the Councils to: i) manage research; ii) design and monitor research programs, and to formulate and implement policies based on the use of STI indicators; iii) support knowledge exchange with the private sector, and; iv) establish partnerships among Councils and with other science system actors. During the second phases (SGCI 2& SGCI 2+) 5-year phase of the SGCI (SGCI-2; 2018-2025), Rwanda National Council for Science and Technology (NCST) received funding for 5 grant projects, namely:

- *Support for Research call management in Rwanda: **about Frw 422,000,000;***
- *Management of Research and Innovation Programs in Rwanda: **about Frw 475,000,000;***
- *Support and Manage Innovation Projects for commercialization: **about Frw 280,000,000.***
- *Scaling and Knowledge Translation Support to the Science Granting Councils: **about Frw 43,800,000***

- *Management of collaborative research projects by NCST Rwanda and NCST Malawi: **about Frw 634,000,000.***

This funding collaboration supports new dimensions on research excellence under various themes, namely:

- Support and increase the proportion and quality of relevant funded research projects
- Strengthening the ability of NCST in research management, Monitoring and evaluation learning systems
- Strengthening capacity building of researchers and innovators in research management,
- Supporting strategic communications, uptake of knowledge outputs and networking;
- Strengthening the Capacities of NCST in gender equality and inclusivity.
- Promoting partnerships through multilateral collaborative grants

In this regard, participation of NCST in this conference was important for sharing the current status and outcome of research and innovation projects funded and proposed new funding areas of interest by Rwanda NCST. This was an opportunity for forging and fostering collaboration and partnerships with other councils, funders and partners which will enhance the effectiveness of research in Rwanda through funding impactful research and use of generated knowledge/ developed products and services to address current and future pressing challenges. This will be achieved partly through strengthening existing collaborations of SGCI and Rwanda through NCST, and exploring other available funding opportunities

within SGCI networks for leveraging additional funding and scaling research outputs for maximum impact.

### 3. Proceedings

The peer learning activities took place from Monday 7<sup>th</sup> to Thursday 10<sup>th</sup> April 2025, and key highlights from it include:

**Equality – Diversity – Inclusivity:** An emphasis was why is it important to maintain a focus on EDI in the science system: the participants discussed key factors that should guide EDI in countries research and innovation ecosystem: Improved Innovation and Creativity: Equitable Representation and Fairness, Better Outcomes for Society, Building Trust and Credibility, Attracting and Retaining Talent.

**Expectations of societal and economic impact:** This session was guided by reflections on impact. Discussion were around different perspectives on impact: scientific, societal and economic impact.

Impact comes in different forms:

- Advancement of knowledge (scientific, intellectual, academic) impact
- Development of societies (societal impact)
- Fostering innovation (economic impact)

#### **Research impact and partnership:**

The discussions focused on understanding and differentiation of Individual project impact and funding portfolio impact, Impact Pre-award, and Research Impact Post-award: Documentation & Evaluation: How evaluation project is being used, and the role of communication. The DFG's Press and Public Relations Department shared their practices on how they create societal and political impact with communication about research?

#### **Funding partnerships: Developing and Stewarding Partnerships for Research:**

The DFG shared practices on how they promote research of the highest quality. The focus is on funding projects developed by the academic community itself in the area of knowledge-driven research and the DFG acts in a research-driven manner in all its procedures. Excellent research requires a broad spectrum of ideas and pluralistic debate; for this reason, the DFG takes particular care to promote international cooperation, early career researchers gender equality and diversity in science and the humanities.

#### **Research infrastructure as an enabler:**

The DFG and NRF shared their practices on Sharing of Research Infrastructures to support world class research through the purchasing; upgrade or development of state-of-the-art research equipment. To ensure sharing of research infrastructures, there is a need to have infrastructure data bases. For the case of DFG, there is National Research Data Infrastructure and National Research Infrastructure Platforms for NRF.

**Curiosity-driven research (CDR):** The discussions focused on Value Proposition for CDR in the SGCI member countries. The emphasis was on funding basic research in a very specific way. This should be purposely funded research which is informed by diverse research, creativity, resource intensity to seek answers and discovery.

#### **New Multilateral Research Programme:**

The discussions focused on working together in Co-Creation to Address current and future Global Challenges and showcasing Funding Opportunities for Collaborative Research.

The highlight of the meeting was the need for intra and inter-countries collaborations, private sector involvement in research enterprise, equitable collaboration that encourage trust and transparency.

## 4. Recommendations and Way Forward

Participation of Rwanda as one of the 17 participating countries of the SGCI has facilitated valuable learning and exchange with other councils and international funders on funding research for impact and generate, document and communicate research impact, develop and steward partnerships for research, good practices in sharing of research infrastructure, a value proposition for curiosity driven research in all research systems, and a value proposition for equality, diversity and inclusivity.

The participation has increased the visibility of NCST and the potential for continued benefit from SGCI in terms of increasing R&D investment .

The following were key outcomes and recommendations from the peer learning activities in Bonn, Germany:

- i. **Increased funding for R&D through SGCI:** Opportunities to launch a new Phase SGCI \_3. The SGCI-Phase 3 will be guided by principles including a) Building on the achievements and lessons of previous SGCI phases b) Strategic gradual shift from capacity strengthening to research and innovation, c) Putting Councils in the driver's seat, d) Greater emphasis on promoting the use of research,
- ii. **Support Multilateral Programmes: The future SGCI funding focus will consider aspects of mutual learning and co-creation.** Support collaborative efforts to address global and common challenges and focus on
- iii. **Capacity Building:** Continued support from DAAD. There is a need to explore opportunities for supporting jointly researchers through mobility grants



All 17 SGCI Representatives with Germany Research Foundation (DFG), Bonn, Germany (7-10 April 2025)

## Training on Leadership Development and Decision-Making Techniques



Trainees and Trainers first day of the training

The *Leadership Development: Decision-Making Techniques* training, organized in collaboration with the Egyptian Ministry of Foreign Affairs and hosted at

the headquarters of the Arab Institute for Leadership Development (AILD) at the Arab Academy for Science, Technology and Maritime Transport, Mi-

ami-Alexandria Campus, was designed to strengthen the decision-making capabilities of high-level delegations from various African countries. Targeting middle and senior management as well as emerging leaders in the public and governmental sectors, the program combined theoretical frameworks, practical case studies, decision-making models, self-assessment exercises, and group activities to build essential leadership competencies. Although she was out of the country, the Dean of the Institute, Dina Fadaly, warmly welcomed participants virtually.

The training was held at the Miami Campus of AASTMT in Alexandria from 19 to 24 April 2025, bringing together 19 participants from 13 African countries, namely: Zimbabwe, Kenya, Somalia, Ghana, Zambia, Malawi, Mozambique, Rwanda, Chad, Equatorial Guinea, Sierra Leone, Senegal, and Burkina Faso.



*English Speakers team following the course*

Led by Professor Eiman Negm, Head of the Department at the Arab Institute for Leadership Development, the program focused on strengthening participants' competencies in strategic leadership,

emotional intelligence, effective communication, decision-making under pressure, and organizational strategic planning.

The key topics covered, the main insights gained, and the action plans developed as a result of the training are summarised below;

### 1. Objectives and Key Learnings

The training program aimed to strengthen participants' leadership and decision-making capabilities across a range of contexts. In Module 1, participants explored diverse leadership styles and conducted self-assessments to identify personal strengths such as strategic thinking and resilience as well as areas for growth like emotional intelligence and stakeholder engagement. Module 2 focused on structured, evidence-based decision-making processes, introducing practical frameworks and the Maslow Hierarchy of Needs to illustrate how human motivations influence organizational decisions. Modules 3 and 4 deepened understanding of decision-making competencies by integrating emotional intelligence, risk analysis, and decision tools like SWOT analysis and cognitive dissonance. Participants also examined their decision-making styles through Rowe and Boulgarides' Decision Style Theory and reflected on adapting their approach to different organizational contexts. Module 5 addressed leadership in urgent situations, equipping participants with skills to prioritize, motivate teams, and communicate effectively under pres-



*Prof. Eiman delivering her course on the second day and taking a group picture with the entire group*

sure. Overall, the training reinforced that leadership and decision-making are dynamic, learnable skills that require continuous development and contextual adaptability.

## 2. Action Plan

Post-training, participants expressed a strong commitment to applying the knowledge and skills gained throughout the program. They pledged to leverage their personal leadership strengths while actively working on identified development areas. Participants also committed to consistently applying struc-

ture decision-making frameworks, enhancing emotional intelligence to navigate complex stakeholder environments, and seeking regular feedback to refine their decision-making abilities. Additionally, they emphasized the importance of promoting inclusive and participative decision-making processes to foster team buy-in and drive innovation. Strengthening strategic planning skills to ensure alignment between daily actions and broader organizational goals was also highlighted as a key focus moving forward.

## 3. Conclusion

The *Leadership Development: Decision-Making Techniques* training provided rich theoretical and practical tools to strengthen leadership effectiveness. By applying the acquired models and insights, from classical leadership theories to modern decision-making styles, participants are well-positioned to drive strategic, informed, and inclusive decisions within their organizations.

The training concluded with a certificate awarding ceremony led by the Vice President at the Arab Academy for Science, Technology and Maritime Transport



*Agnes and Marie Chantal being awarded their certificates by the VP Alaa A. Abdel Bary*

This program also laid a strong foundation for building a new generation of African leaders equipped with the skills necessary to navigate complexity, foster collaboration, and lead transformative change across sectors.



*Trainees with VP: Alaa A. Abdel Bary and AASTMT staff*

# Monitoring, Evaluation, and Learning Activities for Quarter 4: Progress and Insights

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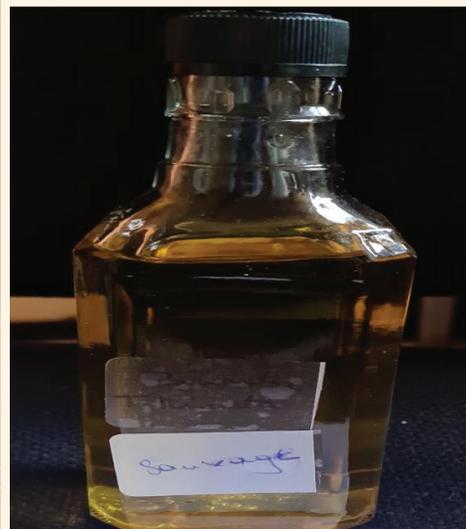
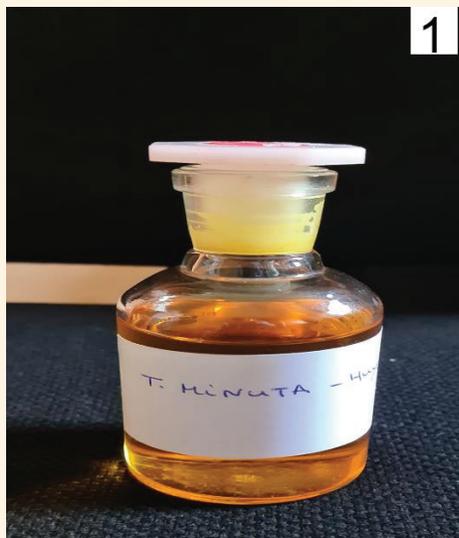
## 1. Background

The National Council for Science and Technology (NCST) manages the National Research and Innovation Fund (NRIF) to support research and technology development aligned with national priorities. To ensure compliance with grant agreements and effective implementation, NCST has established a Monitoring and Evaluation (M&E) Field Visit Team. This team reviews quarterly technical and financial reports and conducts site visits to assess project progress. M&E activities focus on result-based management, tracking outcomes, and ensuring projects contribute to their intended goals.

Monitoring helps identify and address potential issues early, while evaluation assesses project effectiveness and impact. During the May 2025 M&E cycle, the team visited 11 host institutions over five days (May 5–9), covering 16 projects. Site visits included laboratories and research fields to verify activities and use of resources.

Most projects were progressing well. NCST provided feedback and recommendations to address challenges where needed. Principal Investigators were encouraged to strengthen coordination, adhere to timelines, and enhance collaboration and communication to ensure project success.

## Capitalizing on Marigold Bio-Pesticide Properties to Leverage the Output of Natural Products Made in Rwanda



This project intends to harness marigold's properties to promote local, eco-friendly pest control solutions. The progress made in the project includes identifying and screening target species for their content in chemotypes mainly 3 main *Tagetes* species identified (*Tagetes minuta*, *Tagetes patula* and *Tagetes erecta*) with high seed germination, essential oil was extracted from

marigold, conducted bio-assays to assess the chemotypes mode of action and efficacy, refined and formulated bio-pesticides into commercial products as well as testing bio-pesticides on station and on-farm. The team continues to test product for safety and efficacy needs time due to replications of trials.

## Production of high-quality organic fertilizer through promotion of black soldier flies



The main goal of the project is to develop home grown solution by exploring the potential of producing and promoting the use of Black Soldier Fly Frass (BSFF) Fertilizer as a high quality and cheap organic fertilizer inputs to mitigate soil fertility challenges. The project has achieved significant milestones including building 4 garbage units (1,500kg each), installing BSF feed crusher (1 ton/hour capacity),

producing 300kg of BSF frass organic fertilizer as well as producing 200kg of BSF animal protein. The project also terminated eight BSFF fertilizer field trials for beans and maize in Bugesera and Nyamagabe. Preliminary results showed increased grain yields in bush beans (RWR 3194) and climbing beans (MBC23) with BSFF fertilizer exceeding compost, DAP, and control treatments. The project team developed extension

materials in English and Kinyarwanda and trained 27 TVET students (15 male, 12 female) on the benefits of BSF frass fertilizer for crop production. The team is continuing to set up French beans-BSFF fertilizer experiments, collect data, increase Black Soldier Fly and frass fertilizer production, and train farmers on its production and use.



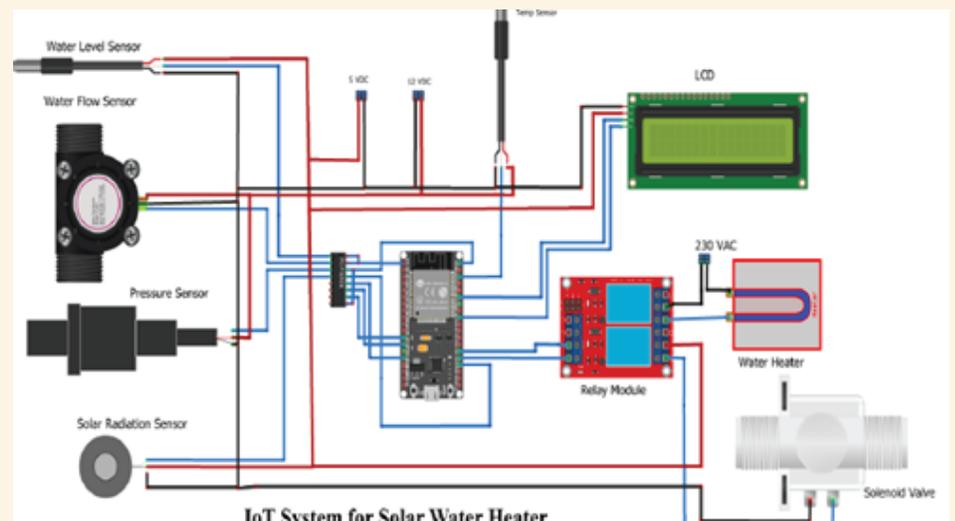
Garbage unit constructed and produced 300kg of BSF frass organic fertilizer and 200kg of BSF animal protein

### Design and Fabrication of Improved Solar Water Heater Adaptive to Rwandan Weather Conditions

The project team analyzed and compared simulation results to develop system performance. Training was conducted on the IoT system for an improved SWH, and technical specifications for key materials including tanks, solar collectors, and IoT components and prototype were developed. A comprehensive market survey was carried out to identify suitable materials for fabrication, followed by the finalization of the supply contract. Materials such as tanks and solar collectors have been received, while IoT components are in the procurement process. Purchase orders for all necessary materials were prepared, and the design of the staged solar tank and collector was completed. Among the tested insulation materials mainly; sawdust, glass wool, and fiber glass; glass wool demonstrated superior thermal performance, retaining heat

for up to three days and significantly reducing heat loss, making it the most efficient option for use in moderate climate conditions. The team also made comparison of insulations/Thermal performance mainly wood insulator, glass fiber and Wood at different degree

mainly 15, 25 and 30 degrees. Some Key activities are underway including the continued collection of data for research paper writing, solar water testing and data recording, conducting a cost analysis of the solar water heater, and the successful launch of the prototype.



IoT prototype developed

## Design and Performance Analysis of the Candela Model 1. A Novel Electricity Generating Biomass Cookstove

The project aims to develop an efficient, eco-friendly cook stove capable of generating electricity from waste fuel sources. This approach seeks to reduce the environmental impacts associated with conventional energy production methods. Key achievements include conducting water boiling and emission tests, with experimental data recorded. Improved cook stoves were upgraded with safety protection features to prevent electrical incidents. A questionnaire was drafted to gather citizen feedback, and manuscript preparation has begun. Essential research equipment was procured, including materials and tools for stove fabrication, lab testing devices, and safety gear. Experimental data was collected from four stove prototypes of varying heights and configurations, some equipped with crowns and/or fans, to evaluate safety, thermal efficiency. The team is following up on remaining project activities including emission analysis, quality tests on the cookstoves, validation and dissemination.

## An Infrastructure for Remote and In-Situ Collection and Aggregation of Agricultural Data and Its Application to Yield Estimation



At CMU-Africa, the project “Infrastructure for Remote and In-Situ Collection of Agricultural Data” is deploying an Open Geospatial Data Platform hosted at Rwanda Space Agency to support yield prediction modeling, with significant progress made on model development and international academic publications. The objectives of the project are centered on enhancing access to and utilization of geospatial data in Rwanda. Specifically, the project aims to develop an Open GeoSpatial Data Platform (OGDP), hosted at the Rwanda Space Agency, to centralize and facilitate access to geospatial data from multiple sources. It also seeks to provide software solutions that promote the democratization of geospatial data, thereby empowering scientists and entrepreneurs to conduct applied research and innovation. Additionally, the project will develop and validate models for yield prediction, with a proof-of-concept model focused on potato yield forecasting, built using data integrated into the OGDP.

## IoT-AI Based Climate and Quality Monitoring System for Agricultural Value Chains. Case of Cassava Value Chain



The University of Rwanda is leading an IoT-AI initiative to monitor quality along the cassava value chain in Kinazi Factory. The project aims to comprehensively assess the cassava value chain by identifying its challenges, strengths, opportunities, weaknesses, threats, and market dynamics. It seeks to enhance cassava productivity and quality through the implementation of Integrated Cassava Quality Management Systems and Approaches (ICQMSA) across farming, transportation, processing, and marketing stages. Additionally, it focuses on developing digital tools including mobile and web applications, QR/barcode systems, and AI algorithms to support the value chain. Capacity-building initiatives will be undertaken to equip students, entrepreneurs, and policymakers with relevant knowledge and skills in agriculture and emerging technologies. The project also emphasizes the publication and dissemination of its findings to promote evidence-based decision-making. Achievements include device development, scholarly outputs, and student training.

## Enhancement of Production Technology, Quality and Competitiveness of Rwanda Banana Beverage Products



At NIRDA, research on enhancing the quality and market competitiveness of banana-based beverages has progressed with successful molecular characterization of indigenous yeasts and acquisition of advanced processing equipment. The project aims to enhance the banana value chain (BVC) in Rwanda by improving postharvest handling, transportation, and storage practices to ensure better raw material quality for banana beverage production. It also seeks to upgrade production technologies to meet national and international quality standards. A key focus includes identifying and characterizing yeast isolates that contribute to improved flavor and other quality attributes of banana beverages. Additionally, the project will investigate both intrinsic and extrinsic factors influencing consumer perceptions of product quality. Finally, it aims to foster a collaborative network for technology and knowledge exchange among stakeholders across the banana value chain. The team is preparing for product testing and stakeholder training, with a 3–6-month extension proposed to complete key commercialization activities.

## Scaling up the production and use of biological control products (entomopathogenic nematodes) for improved food security, safety and nutrition in Rwanda

RAB's project on entomopathogenic nematodes for eco-friendly pest control

has advanced with field trials, farmer training, and demonstration plots nationwide. The project aims to enhance sustainable pest control in Rwanda by improving the mass production of Entomopathogenic Nematodes (EPNs) using locally available inputs to ensure cost-effective biocontrol solutions. It seeks to develop and formulate EPNs specifically effective against key crop pests such as the fall armyworm (*Spodoptera frugiperda*) and tomato leaf miner (*Tuta absoluta*), aligning with the needs of Rwandan farmers. The project will also conduct efficacy trials, integrate EPN-based biocontrol into local farming practices, and prepare certification dossiers. In addition, it plans to disseminate the technology to farmers, private sector partners, and extension services, while also conducting a feasibility study for establishing a local mass production unit. Effective management, monitoring, and evaluation of the project's activities and outcomes are also integral objectives. Next steps include final data collection, dissemination activities, and registration processes. Delays were noted in IP registration and funding disbursements.



## Telegenetics and Genomic Testing in Rwanda Patients with Neurodevelopmental Disorders (TELEGERNE)



Under the Women in Science Grant, a groundbreaking project on telegenetics for patients with neurodevelopmental disorders is being implemented at CHUK and four district hospitals. A digital platform is operational, and DNA screening has begun. The project aims to strengthen genetic health services for individuals with neurodevelopmental disorders (NDDs) in Rwanda. It seeks to assess the current delivery of genetic services, including patient needs and provider capacity. A key objective is to design and implement a telegenetics platform that enables remote consultations, clinical assessments through video and images, and secure data storage. The project also focuses on identifying genetic variants associated with NDDs in Rwandan patients and establishing genotype-phenotype correlations. Additionally, ongoing monitoring and improvement of the platform are planned to ensure effective implementation and service delivery. Recommendations include strengthening collaboration with international partners and completing remaining bioinformatics analysis.

## Retrofitting of Internal Combustion Engine (ICE) Motorcycles to Electric Motorcycles

At UR-CST, the project on retrofitting fossil fuel motorcycles into electric ones has retrofitted and tested initial prototypes. The project aims to promote sustainable mobility in Rwanda by retrofitting approximately 10 fossil fuel-powered motorcycles into electric motorcycles. It further seeks to quantify the environmental, health, and so-

cio-economic impacts of the retrofitted motorcycles, providing valuable data to support broader adoption. In addition, the project will design a battery recycling strategy to ensure environmentally responsible disposal and reuse. A key component also includes educating and raising awareness among local technicians and taxi-moto drivers to build local capacity and support the transition to electric mobility. Training modules and awareness campaigns are planned. Delays in fund disbursement have impacted timelines, and enhanced documentation on expenditures was requested by NCST.



### Design and development of emergency ventilator

As part of its COVID-19 response funding, NCST visited IPRC Kigali on May 6, 2025, to monitor the progress of the project titled “Design and Development of an Emergency Ventilator”, led by Mr. Midas Adolphe Munyaneza. The project aims to integrate a user-friendly touch-screen interface to improve real-time control and monitoring of ventilator functions.

### Biogas monitoring system

On May 7, 2025, the National Council for Science and Technology (NCST) conducted a monitoring and evaluation visit to IPRC Ngoma for the “Biogas Monitoring System” project under the Sector Strategic Research Grants. The project aims to strengthen the biogas sector by first assessing its current state through qualitative research. It seeks to establish a biogas monitoring system to improve performance and reduce system malfunctions. Additionally, the project focuses on capacity building through training programs targeting both biogas users and technicians to ensure proper usage, maintenance, and sustainability of biogas technology. The visit assessed technical progress, teamwork, and financial performance. While key milestones such as system functionality, field deployment, and manuscript submission were achieved, challenges like slow implementation, equipment issues, and low budget utilization (56%) remain. NCST recommended urgent acceleration of project activities and improved documentation to meet the project’s final deadline of May 30, 2025.



### Artificial Intelligence (AI) Based Personalized Nutrition Assistant System for Available Food Products in Rwanda



At the University of Rwanda, the “AI-Based Personalized Nutrition Assistant System” project demonstrated solid progress, with about 75% of activities completed. The project aims to enhance nutrition services in Rwanda through a comprehensive, tech-enabled approach. Key objectives include establishing a national database of nutrients for locally available foods and products, and developing best practices for diet, physical exercise, and home sanitation tailored to the Rwandan context. It also seeks to create a user-friendly, affordable, and accessible e-platform supported by an AI-based algorithm to guide nutritional decisions. To ensure effectiveness, the project will conduct practical experiments and research to validate the guidelines, alongside capacity building and public awareness initiatives on adequate nutrition and the use of AI-driven mobile and web-based applications. The system is designed to combat malnutrition and stunting by offering personalized dietary recommendations based on AI analysis of locally available foods. With no major challenges reported, the team recommended a no-cost extension to complete the remaining 25% of activities, including final data collection, dissemination, and publication.

# Kwibuka 31 the 1994 Genocide against the Tutsi and Labor Day at NCST

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## Kwibuka 31: Honoring Memory, Promoting Unity, and Upholding Responsibility

On 23<sup>rd</sup> May 2025 the National Council for Science and Technology (NCST) staff, together with its stakeholders and community members, gathered at the Murambi Genocide Memorial Site to mark Kwibuka 31 a solemn moment to remember the victims of the 1994 Genocide against the Tutsi. The program included a guided tour of the memorial site, a testimony, a dialogue on Rwanda's history and resilience, and a flower-laying ceremony to pay tribute to the victims of the Genocide against the Tutsi laid in Murambi.



The objectives of the article center around commemorating the 1994 Genocide against the Tutsi and reaffirming Rwanda's commitment to remembrance, unity, and peace. Key goals include honoring the memory of over one million victims through memorial activities and supporting survivors with psychosocial and material aid, such as

NCST's donation of cows to four survivor families. The initiative also aims to educate the public particularly youth on the genocide's history to prevent its recurrence, and to combat denial and hate speech through open, truthful dialogue. Additionally, it seeks to promote national unity, reconciliation, and social cohesion, while reinforcing the

responsibility of public servants and institutions to uphold peace, justice, and human rights. Kwibuka 31 served as a moment of reflection and collective responsibility to ensure that such a tragedy never happens again. Kwibuka 31 was a time of reflection, responsibility, and reaffirmation of Rwanda's path toward a peaceful, inclusive, and united society to ensure that Never Again.



## Celebration of International labour day and selection of the best performer of the year 2024/2025

On 19th May 2025, NCST staff celebrated the international labour Day and selected the best performer of the year 2024/2025. Staff had a dialogue under the theme of **“Job creation, our shared priority”**. Normally, the work is the foundation of development, the Government of Rwanda, through Vision 2050, has set a goal to achieve an upper-middle-income economy by 2035, and a high-income economy by 2050, where all Rwandans will have attained economic prosperity and improved well-being. In this context, among others, all employees are actively encouraged to work professionally and strive for excellence in their responsibilities, so that the country can achieve these goals.

Participants were reminded of the essential qualities that define professionalism in the workplace. These include a strong sense of urgency, timely de-

livery, effective problem-solving, being results-oriented, thinking big, and fostering teamwork and collaboration. In addition to these professional traits, key values expected of every employee were emphasized, such as excellence, integrity, reliability, accountability, and genuine care for service beneficiaries. Other important values highlighted were neutrality, transparency, cooperation, and a commitment to working towards goals and achieving meaningful results.

## Selection of the Best Performer and Ethical employee of the year 2024/2025

In line with MIFOTRA guidelines, NCST staff selected the Employee of the Year for the 2024/2025 period. Ms. Anitha Nishimwe was recognized as the Best Employee of the Year, receiving a certificate of recognition, and her photo is now featured on the NCST website.

The meeting concluded with key resolutions aimed at improving NCST’s operational efficiency. These include

encouraging all staff to develop and apply innovative approaches in their daily work, regularly updating the NCST website with current content such as photos and short videos, completing the transition to the SMART Admin system to eliminate paper-based processes, and strengthening public awareness of NCST’s mandate through enhanced communication strategies.

In conclusion, the Executive Secretary thanked all staff for their participation and urged them to embrace innovation and leverage new technologies in fulfilling their responsibilities.