



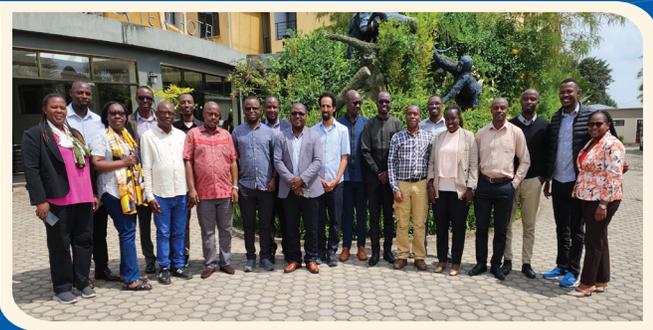
# Advancing Innovation and Strategic Leadership in Technology Transfer, Research, and Commercialization in Rwanda

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**PREAMBLE:** In this issue, we showcase Rwanda’s innovation ecosystem, with a special focus on advancing technology transfer, strategic leadership, and research impact. Key highlights include the completion of the National Technology Transfer and Commercialization Strategy, aimed at bridging the gap between research institutions and industry to enable better Rwanda’s socio-economic growth. The newsletter also features insights from a Strategic Management and Leadership Workshop, which equipped researchers and innovators with essential leadership skills to drive the country’s innovation agenda.

In addition, we provide updates on the Monitoring, Evaluation, and Learning (MEL) field visits, tracking the progress of selected funded projects geared towards commercialization, and share the outcomes of the Rwanda Research and Innovation Repository workshop, which lays the groundwork for a digital platform to enhance research visibility and collaboration. There are exciting developments shaping Rwanda’s journey towards becoming a leading knowledge-based economy.

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Rwanda Technology Transfer and commercialization strategy development team



Group work during the strategic management and leadership workshop



NCST and ACTS Team during Monitoring and Evaluation



Group photo during research and innovation repository development

# Rwanda Technology Transfer and Commercialization Strategy

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## Background

The National Council for Science and Technology (NCST), in collaboration with its key stakeholders successfully developed a Technology Transfer and Commercialization Strategy. The strategy guides and facilitates the translation of research and innovation outputs into products or systems for industrial applications. Additionally, the strategy shall foster enterprises that contribute to the country's socio-economic growth and societal impact. Its primary goal is to bridge the existing collaboration gap between research institutions and the private sector, enhancing Rwanda's competitiveness in the global market by ensuring the transfer of innovative technologies from academia and research institutions into practical, high-impact commercial applications. After an extensive and inclusive development process, the strategy is now complete, with dissemination already conducted.

## Collaborative and Inclusive Process

The strategy was developed through participatory workshops where key actors in technology transfer and commercialization were involved. Participants included stakeholders from government institutions, private sector, higher learning institutions, development partners and financial institutions.

The goal was to develop a transfer strategy that guides and facilitates the commercialization of the research and innovation outputs to ensure improved research performance and industrial growth boosting the country's economy.

## Objectives of the Strategy

The National Technology Transfer and Commercialization Strategy is structured to:

1. Enhance the national knowledge and skills in technology transfer and commercialization,

2. Establish infrastructure and funding schemes that enable effective technology transfer and commercialization and improve on infrastructure ranking and
3. Establish a sound governance for technology transfer and commercialization

## Development to Implementation

The development of the strategy started in October 2024 and its validation took place in January 2025, and a dissemination workshop on 21 March 2025. The strategy was developed through the following process: **Kickoff meeting** to introduce stakeholders to their roles in the development of the strategy, **stakeholders meeting** to define the vision, mission, and objectives of the strategy, **a workshop for drafting the strategy** and the **validation workshop** to collect the inputs and recommendations on the strategy.

After the strategy completion, the University of Rwanda in Collaboration with the National Council for Science and



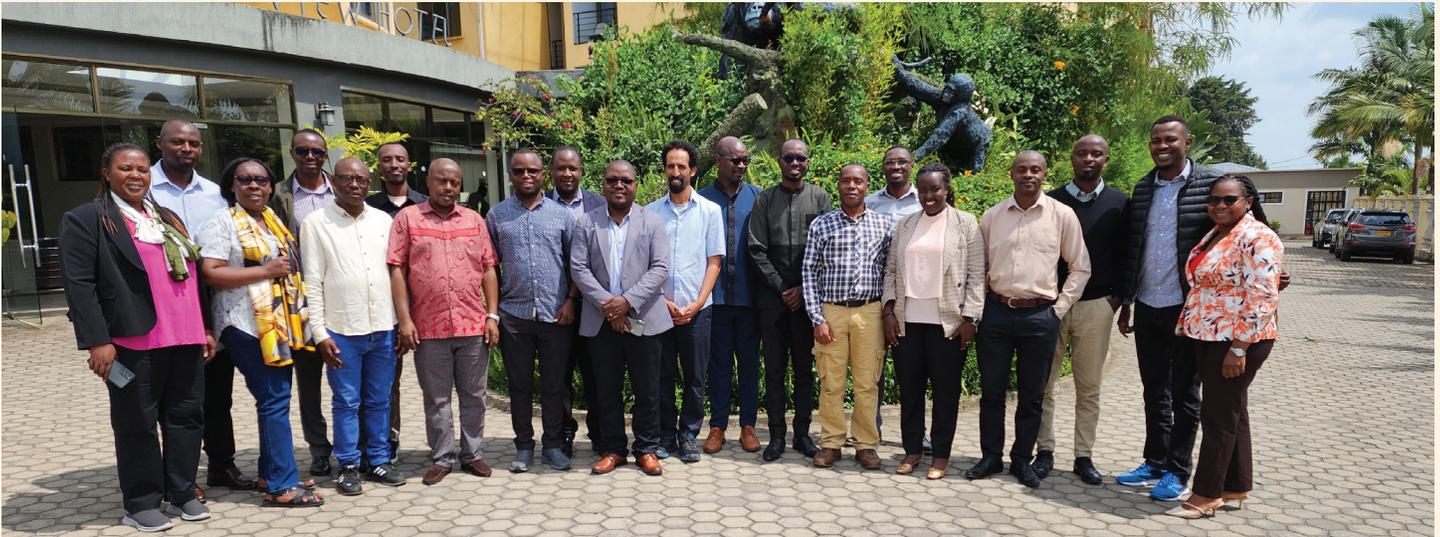
Group work on the development of the National Technology Transfer and Commercialization (NTTC) Strategy/ Musanze

Technology conducted the dissemination of the strategy, which took place on 27<sup>th</sup> March 2025 at the University of Rwanda Headquarters. The dissemination workshop brought together high-level staff from the Ministries and other stakeholders' institutions, including technical staff whose responsibilities are related to technology transfer and commercialization.

The objective of the dissemination workshop was to ensure that all relevant actors are well informed about the strategy and their respective roles in its execution. Monitoring and evaluation will be conducted to track the progress and the impact of the strategy. NCST and other stakeholders are committed to providing the necessary institutional and financial support to drive forward the strategy forward.

## Expected Impact

The Technology Transfer and Commercialization Strategy is expected to enhance Rwanda's innovation ecosystem. By creating linkages between academia and industry and this will increase number of technologies transferred and increase Rwanda's global competitiveness, attract investment, and generate employment opportunities.



*Group photo of the key stakeholders that participated in the development of the Strategy*

## Dissemination Workshop for the Rwanda Technology Transfer and Commercialization strategy

A workshop was organized and conducted to disseminate the developed strategy for technology transfer and commercialization. In this regard, the University of Rwanda and NCST convened a one-day workshop on 21<sup>st</sup> March 2025. The aim of the workshop was to gather key stakeholders and present to them the key components of the strategy document as well as its implementation roadmap and the needed collaboration and coordination between stakeholders within the national innovation system.

### a) Objectives and rationale of the dissemination workshop

The development of the Technology Transfer and Commercialization Strategy is essential for improving the socio-economic impact of research and innovation.

This strategy will serve as a framework to enhance the transfer of research outputs and innovation to industry and society, fostering innovation-driven growth. The purpose of the dissemination workshop was to share with the wider community of stakeholders the produced strategy and invite them to contribute in its implementation.

The main objectives of the dissemination workshop are to:

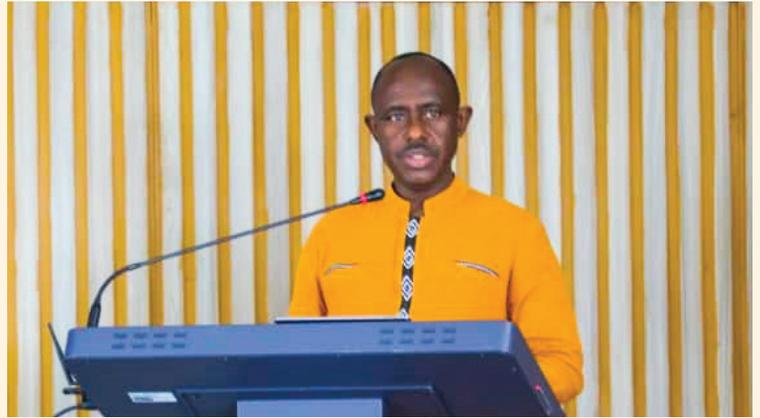
- Communicate to the stakeholders the main components for Technology Transfer and Commercialization strategy.
- Discuss with stakeholders the roadmap for implementation of the strategy for Technology Transfer and Commercialization.

### b) Event proceedings

The dissemination workshop was officially launched by the leadership of the University of Rwanda (UR) and the National Council for Science and Technology (NCST). Participants were welcomed and encouraged to contribute actively, particularly during the Q&A session, by sharing their insights on how to support the implementation of the newly launched Technology Transfer and Commercialization Strategy.



*UR-Deputy VC Finance delivering her opening remarks during the launch of Strategy*



*Executive Secretary delivering welcome remarks during the launch of the Strategy*

In her welcome remarks, the UR representative highlighted the importance of this strategy in strengthening Rwanda's status as a knowledge-based economy. She emphasized that the strategy is crucial for higher learning institutions like UR, which aim to maximize their contribution to Rwanda's socio-economic development by translating research outputs and innovative ideas into market-ready products and services.

UR and NCST leadership emphasized the significance of the strategy in consolidating existing initiatives, ensuring that research and innovation lead to entrepreneurial projects that generate jobs and drive economic growth. They highlighted Rwanda's progress in fostering academic-industry collaboration and reiterated the government's commitment to increasing support for commercialization efforts. Institutions were urged to focus on research that addresses societal challenges rather than research for publication alone, and the strategy team was thanked for their hard work.

Presentations by Assoc. Prof. Theophile Niyonzima from UR, Dr. Louis Sibomana, and Dr. Esperance Munganyinka from NCST outlined the strategy's background, rationale, strategic direction, implementation plan, and monitoring and evaluation framework. The session concluded with a productive Q&A, where participants discussed how they could contribute to the strategy's success.



*Prof. Theophire Niyonzima outlining the Strategy/ Background and Situation Analysis*



*Dr. Louis Sibomana outlining the Strategy/ Strategic direction*



*Dr. Esperance Munganyinka outlining the Strategy/ Implementation Plan and the M&E Framework*

### c) Recommendations

The Stakeholders within the national innovation system who participated in the dissemination workshop are aware of the National Technology Transfer and Commercialization Strategy and ready to contribute to its 5 years implementation.

The following are key recommendations from the workshop:

1. Participants commended the effort used to develop the strategy that comes at the right time and also proposed some changes to

be made to the strategy before it is published.

2. Additional frameworks and guideline documents should be developed for the implementation of the strategy.
3. Before the implementation of the strategy, there is a need to develop clear details and responsibilities of the Technology Transfer coordination committee.
4. Scientific research methodology used to develop the technology

transfer and commercialization strategy is a point of assurance for the successful implementation of the strategy.

5. The strategy will address the issue of Rwanda injecting high inputs and less output as published in the Global innovation index ranking
6. The Government of Rwanda shall continue to play a big role in funding R&D and innovation towards industrialization growth.



Panel discussion on projects with potential to commercialization



Audience during the launch of the Strategy



Group photo during the launch of Strategy



Exhibition on the use of drones in pesticide spraying

# Training Workshop on Strategic Management and Leadership

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## Introduction

The National Council for Science and Technology (NCST) recently organized a three-day training workshop on Strategic Management and Leadership in Musanze at University of Rwanda, College of Agriculture, Animal Sciences and Veterinary Medicine (UR-CAVM) from January 19-31, 2025. The main goal of this training was to equip researchers, grant managers and NCST staff with strategic management and leadership skills through the following objectives:

- Enhance participants' understanding of strategic planning, implementation and management principles and their application for realizing long-term success of business organization, as a team, and as individuals.
- Enhance entrepreneurial leadership skills of researchers and innovators to create resilient and visionary leaders with commitment to work (with self-motivation), ethics and integrity, clear institutional long-term vision, willing to take and manage risks in business towards contributing to an achieving economically sustainable Rwandan society.
- Equip participants with tools and frameworks to design and implement effective strategies for leadership and management in the context of scaling up research and innovation outputs, and strengthening national innovation system (NIS) excellence.

- Develop leadership skills necessary for driving innovation and fostering a collaborative organizational culture for NCST staff and their stakeholders.



Group photo during the Strategic Management and leadership workshop



Strategic Management and Leadership Training workshop

## Workshop Structure and Key Activities

The workshop was meticulously designed to cover critical aspects of Strategic Management and Leadership:

- Discussions on Foundations of Strategic Management, Environmental scanning, Entrepreneurial and business leadership.
- Detailed discussions on the Role of Leadership in Strategic Planning and Implementation, essential skills and approaches for strategic leadership (Games, group works, etc.)
- Discussions on how to Lead through Excellent Communication, the role of leadership in management of innovation, and Developing Proactive Leadership Strategies,
- Individual work sessions, plenary presentations, and final remarks from the Executive Secretary of NCST.



*Group work during the Strategic management and leadership workshop*

## Key Recommendations

- Strengthen inter-sectoral and academia-industry collaboration to boost R&D outputs and innovations.
- NCST shall continue funding opportunities for research projects with potential for commercialization.
- NCST to link researchers with advanced industries and research institutions to gain hands-on skills and refine products for the market.
- Companies to allocate a percentage of funds to R&D activities.
- NCST to support mature/profitable companies to create an R&D fund to increase the national research and innovation budget.
- Conduct socio-economic studies on the acceptance and viability of the blended potato powder for sustainable industrialization.
- Develop a sustainability plan to maintain cost-effectiveness of research outputs and ensure sufficient distribution and client satisfaction.
- Conduct concrete studies on market ready products and engagement of potential companies for knowledge sharing and commercialization.
- NCST to prioritize capacity building through training, mentoring, and skill development activities.
- Connect technical teams from both NCST and host institutions to facilitate project implementation.
- NCST to organize training for university officials on leadership and strategic management for better collaboration with project PIs
- Train university leaders on accountability and compliance with signed grant agreements
- NCST to mediate PIs and Co-PIs when needed and invite them for discussions on progress and challenges
- Consider real Rwandan challenges in future training and recalibrate efforts toward specific national issues.
- Organize training for legal and finance staff to facilitate project implementation.
- Provide incentives to personnel supporting project implementation to encourage commitment
- Develop leadership and management resources (slides, booklets, etc.) for researchers at different levels.
- Foster a leadership mindset in research projects.
- Apply learning to research collaboration.
- Develop emotional intelligence in research leadership.
- Engage in continuous learning and seek feedback for self-improvement.

## Conclusion

This training demonstrated NCST's commitment to enhancing Strategic Management and Leadership in grant management practices in Rwanda. By implementing the recommendations and insights gained, NCST and partner institutions shall significantly improve project outcomes, ensuring effective

Strategic Management and Leadership to drive research and innovation in the country. The collaborative efforts and shared knowledge from this workshop will undoubtedly contribute to the sustained growth and development of Rwanda's scientific and technological landscape.



Training session by Ms. Edwick Murungu/ALU

# Rwanda Innovation Survey (2022-2024): A Key to Advancing Rwanda's Innovation Ecosystem

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## Background

Innovation is a crucial driver of economic growth and competitiveness in today's globalized world. Recognizing this, the National Council for Science and Technology (NCST) in collaboration with the Ministry of ICT and Innovation (MINICT) has initiated the Rwanda Innovation Survey 2022-2024. This survey aims to assess the state of innovation in Rwanda, measure its impact on socio-economic development, and guide future policy interventions.

## Purpose and Objectives

The Rwanda Innovation Survey is designed to provide a comprehensive assessment of innovation activities across key sectors, including business enterprises, government institutions, higher education, and private non-profit organizations. The survey will generate critical data on innovation performance, identify challenges, and propose actionable strategies to enhance Rwanda's innovation ecosystem.

- The specific objectives of the survey include:
- Identifying different types of innovations and their implementation across various sectors.
- Assessing innovation expenditures and determining funding sources.
- Evaluating barriers to innovation and their impact on business and institutional performance.

- Measuring innovation outputs, including new products and processes, knowledge transfer, and collaboration trends.

## Methods and Data Collection

To ensure accuracy and international comparability, the survey follows the methodology outlined in the Oslo Manual (2018), a globally recognized standard for innovation measurement.

The data collection process is digitalized using REDCap, a digital data capture tool, and will be conducted through Android tablets to enhance efficiency and real-time reporting.

A census approach will be used for the government and higher education sectors, while a stratified sampling method will be applied to the business enterprise and private non-profit sectors. The sample includes 799 business enterprises, 86 government institutions, 47 higher education institutions, and 279 private non-profit organizations. This strategic approach ensures comprehensive coverage and representation of Rwanda's innovation landscape.

## Key Areas of Focus

The survey aims to provide insights into various aspects of innovation, including:

- **Innovation Investment:** Total expenditure on research, development, and innovation activities across sectors.

- **Innovation Outputs:** Number of new and improved products, services, and processes introduced to the market.
- **Innovation Collaboration:** Partnerships between businesses, government institutions, and academia to drive innovation.
- **Barriers to Innovation:** Challenges hindering innovation adoption, such as financial constraints, regulatory hurdles, and skill shortages.
- **Environment and Digital Innovation:** Role of innovation in promoting sustainability and digital transformation.

## Significance

The Rwanda Innovation Survey is a crucial initiative that will provide data-driven insights for policymakers, businesses, and academic institutions. The findings will serve as a benchmark for evaluating the country's innovation progress and will guide evidence-based decision-making to enhance Rwanda's Innovation System (NIS).

Furthermore, the survey aligns with Rwanda's Vision 2050, which emphasizes the importance of innovation in achieving economic transformation. The results will also contribute to global rankings such as the Global Innovation Index (GII), helping Rwanda position itself as a leading innovation-driven economy in Africa.

## Expected Outcomes

The survey is expected to generate a detailed Innovation Report 2022-2024, which will be published by NCST. Key outcomes include:

- A detailed analysis of innovation trends across sectors.
- Recommendations for boosting innovation investments.
- Strategies for overcoming barriers to innovation.
- Insights into the impact of innovation on business growth and national development.

## Conclusions

Innovation is a vital engine for Rwanda's economic development and global competitiveness. The Rwanda Innovation Survey 2022-2024 is a significant step toward understanding and strengthening the country's innovation ecosystem. By leveraging the insights from this survey, policymakers, businesses, and research institutions can work together to foster a culture of innovation that drives sustainable growth and development.

Stay tuned for the final Innovation Report, which will shape the future of Rwanda's innovation landscape.



*Training of enumerators of Innovation Survey conducted at NCST led by Prof. Innocent Ngaruye/UR*

# Joint Monitoring, Evaluation, and Learning Field Visits by NCST & ACTs to five Funded Projects Towards Commercialization

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## Purpose of the Field Visit

The monitoring, evaluation, and learning (MEL) field visits for the five (5) funded projects in Rwanda occurred from 17-19 February 2025. The MEL field visit in research and development projects instills accountability while ensuring that the results are accurately reported, analyzed, and shared. This process is essential for both internal and external/ donor reporting and accountability. Additionally, it works to ensure that the investment translates into sound research outputs/ outcomes and shared learning.

The purpose of this exercise was to document how MEL activities are structured, approached and executed for the *five funded projects*. The general purpose or intention for MEL was to assess whether activities, outputs, and outcomes are linked in an impact pathway, showcasing how the activities ultimately are leading to the end goal, as well as the identified risks and assumptions along the pathway. The activities, outputs, outcomes indicators and data sources should help in tracking project progress and help to mirror how the intended project outcomes/ impact will be realized at the close out of the project.

## Project 1: Nutrifarm Project (Rwanda cricket farming project)

The project has made notable progress in research and product development. Key achievements include: a) Establishment of an experimental cricket farm using shipping containers, which provides a cost-effective and controlled environment for cricket rearing, b) Conducting initial trials on cricket growth performance using different feed formulations c) Launching the first phase of experimental tests, including the Cup Test and Crate Test, to analyze cricket flour production quality d) Preliminary findings indicate that crickets reared in controlled conditions can produce flour with enhanced nutritional value, aligning with project goals.



ACTs and NCST Joint Monitoring & Evaluation

## Project 2: Enhancement of Production Technology, Quality and Competitiveness of Rwanda Banana Beverage Products

This project aims to improve the banana value chain by developing a local, cost-effective yeast starter culture for banana beer production. The project has made commendable progress in IP protection, with a patent for the developed yeast starter culture successfully secured. A manuscript detailing the product's development is in progress and will serve as an essential academic and industry reference. The team is preparing to launch the product in the market, which will significantly improve the quality and competitiveness of banana beverages in Rwanda.



Presentation of yeast starter culture for banana beer production



Cricket Powder

Cookies made with addition of cricket powder

Muphins made with addition of cricket powder



Banana beer produced with using the yeast starter

### Project 3: Scaling up the Production and Use of Entomopathogenic Nematodes (EPN) for Improved Food Security and Safety

The project has achieved several key milestones, including the successful mass production and maintenance of local EPN isolates. Research and field trials evaluating the efficacy of EPN formulations against *Tuta absoluta* and Fall Armyworm (FAW) were conducted in Rubona and Musenyi, with promising preliminary results in pest control. The

project has conducted rigorous field trials to fine-tune EPN formulations for efficacy against target pests. Laboratory results indicate that two formulations, Canola oil and Alkyl polyglycoside polymeric surfactant (Glucopon), show virulence against *Tuta absoluta*, while Carboxymethyl Cellulose (CMC) gel and Xanthan gum (Kalzan T) polymer exhib-

it effectiveness against FAW. Ongoing trials in Rubona and Musenyi are further evaluating these formulations.

A key component of the project is securing IP rights for Rwandan EPN strains. A consultation meeting was held with RAB's Legal Officer and RDB's IP Officer to discuss registration requirements



Field visit to the garden sprayed with Entomopathogenic Nematodes (EPN) at RAB

### Project 4: Adjustable Multi-Grain Seeding Machine (Engine Power Tiller)

The project team has made substantial progress in implementing key activities. The engineering design of the power tiller has been finalized, incorporating the specific needs of Rwandan farmers. Currently, the final product is approximately 70% complete, with ongoing refinements based on feedback from field trials. A significant milestone has been the establishment of a manufacturing facility dedicated to large-scale production. Additionally, the project has received regulatory certification from the Rwanda Inspectorate, Competition, and Consumer Protection Authority (RICA), which certifies



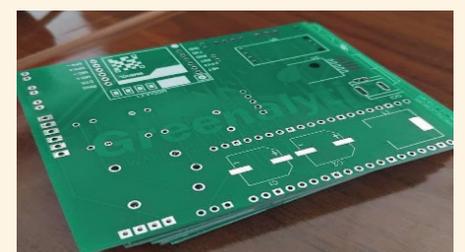
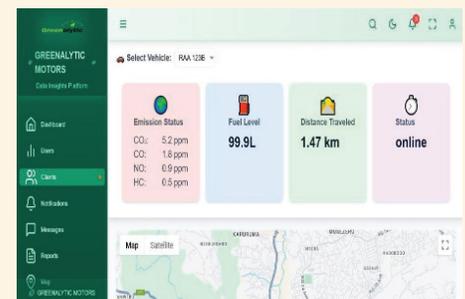
Presentation of Adjustable Multi-grains Seeding Machine

### Project 5: Vehicle Pollution Monitoring System

The project has made significant strides in both technical and operational aspects. The following key achievements were observed during the M&E visit: a) Workshop Setup and Equipment Installation: A dedicated workshop has been identified, equipped, and fully operational with specialized machinery b) Procurement and Installation of Equipment: The team has successfully acquired and installed essential production equipment, including a pick-and-place machine, high-speed mixer, and reflow oven c) PCB (Printed Circuit Board) Manufacturing: A consultant has been hired for PCB design and manufacturing, with the production process already in progress d) Dashboard Development: The online data platform is under development, with initial structures and functionalities already in place e) Intellectual Property and Regulatory Compliance: The project has secured a utility model certification and has been officially recognized as a data

controller in Rwanda, ensuring compliance with data management regulations.

These milestones indicate steady progress toward commercialization, with foundational elements now established for large-scale production and market deployment.



Presentation of Vehicle Pollution Monitoring System

# Engaging Stakeholders for the Development of Rwanda Research and Innovation Repository: Key Outcomes and Next Steps

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## Introduction

National Council for Science and Technology (NCST) in collaborations with national stakeholders facilitated a three-day workshop from February 26 to 28, 2025, at the University of Rwanda, College of Agriculture, Animal Sciences, and Veterinary Medicine (UR-CAVM) in Musanze District. The overall goal of the workshop was to develop user requirements for the Rwanda Research and Innovation Repository, a digital platform for online repository for scientific and research output in Rwanda set to transform the storage, dissemination, and accessibility of research and innovation outputs in the country.

## Objectives and Methods

The primary objectives of the workshop were to:

- Identify and document comprehensive user requirements for the repository
- Ensure broad stakeholder engagement in the repository's development
- Align the repository's design with Rwanda's national research and innovation priorities

The workshop employed a participatory approach, integrating expert presentations, focus group discussions, interactive sessions, and demonstrations of existing research repositories to benchmark best practices.

Participants included researchers from higher learning institutions, government representatives, policymakers, in-

## Key outcomes

Participants from the three-days' workshop commended the initiative and underscored the importance of developing a centralized and accessible re-

novators, and ICT experts, ensuring an inclusive and comprehensive approach to repository design.

pository to enhance research visibility, collaboration, and evidence-based policymaking.



Group photo during the development of Rwanda Research and Innovation Repository



Group discussions on the architecture, and system requirements of the repository

The following key features for User Requirements of the repository were highlighted:

#### i) **User Authentication and Security:**

- Implementation of a robust authentication system with Single Sign-On (SSO) integration
- Role-based access control to manage user permissions efficiently
- Encryption of user data to ensure secure storage and transmission
- Session timeout mechanisms for added security

#### ii) **Content Management and Publication System**

- A structured and categorized repository to store diverse file types, including journal articles, datasets, policy briefs, and innovations.
- Metadata categorization to enhance the organization and retrieval of research outputs.
- Workflow-based approval system for verifying and validating research content before publication.

#### iii) **Search and Discovery Features**

- Implementation of advanced search functionalities, including AI-driven metadata analysis.
- Inclusion of filters and classification options to refine searches.
- AI-based chatbot support to assist users in finding relevant research materials efficiently.

#### iv) **Integration with Other Research Platforms**

- Seamless integration with external research databases and institutional repositories.
- Open API access for third-party platforms to interact with the repository.
- Potential future integration with payment gateways for dataset monetization.

#### v) **Analytics and Reporting**

- Tracking of research output downloads and engagement metrics.
- Implementation of user feedback mechanisms to assess repository effectiveness.
- Automated reporting features to generate usage statistics and research trends.

#### vi) **Recommendations and Next Steps**

Participants put forward several recommendations to guide the repository's development and implementation:

1. Maintain the core technical team from the workshop to oversee repository design and execution.
2. Develop a phased implementation roadmap aligned with the documented user requirements.
3. Foster continuous stakeholder engagement through workshops, surveys, and feedback loops.
4. Design an awareness strategy, including incentives for researchers to contribute their work.
5. Finalize the terms of reference and initiate the repository's development phase with continuous monitoring and iterative improvements.

#### vii) **Challenges and Considerations**

While the repository's development presents numerous benefits, several challenges must be addressed:

- **Data Privacy Compliance:** Ensuring alignment with Rwanda's data protection laws and global best practices.
- **Sustainability and Funding:** Securing long-term funding and institutional support for repository maintenance.

- **User Adoption:** Encouraging widespread adoption through training, incentives, and usability enhancements.
- **Technical Scalability:** Building a system capable of handling growing research data volumes and future technological advancements.

### Next steps

Participants discussed on the next steps and way forward, and recommended NCST to lead collaboration and engagement with stakeholders on the following:

- Prepare Terms of references (TORs) for development of an online research and Innovation repository
- Engage potential external funding agencies to secure the required budget in collaboration with Ministry of Finance and Economic Planning (MINICOFIN)
- Engage CSM Technologies for the technical specifications and development of repository

### Conclusions

The workshop successfully laid the foundation for a robust, user-centered, and technologically advanced research repository. With NCST leading the initiative, Rwanda is set to enhance its scientific and innovation landscape by providing a sustainable platform for knowledge sharing and collaboration. The implementation of this repository will mark a significant step toward achieving Rwanda's vision of becoming a knowledge-based economy. Ongoing stakeholder engagement, continuous evaluation, and iterative improvements will be key to ensuring the repository's long-term success and impact.