



Request for Proposals (RFP)

Grant Title	Management of Collaborative Research and Innovation Grants in Rwanda and Malawi: Application of Artificial Intelligence (AI) and Internet of Things (IoT) in Manufacturing processes for industrial growth
Grant No:	NCST-RW/NCST-MW/2024
FUNDERS:	The NRF South Africa awarded a grant to Rwanda National Council for Science and Technology and Malawi National Commission for Science and Technology to manage Collaborative Research and Innovation grants. The Councils will co-fund this grant
Contacts for Enquiries:	<p>Rwanda NCST E-mail: research@ncst.gov.rw Tel: + 250 0781 030 798</p> <p>Malawi NCST E-mail: directorgeneral@ncst.mw Tel : +265 888 379 201</p>
Number of Grants	Five (5) bilateral Research Projects will be funded through this grant.
Budget per project	Each project will be supported by both NCST Rwanda and NCST Malawi. NCST Rwanda will provide support amounting to Sixty-Five Million Rwandan Francs (Rwf 65,000,000) whereas NCST Malawi will provide a support amounting to Seventy-Seven Million Five Hundred Fifty -Eight Thousands, Eight Hundred Seventy One Kwacha (MWK 77,558,871) per each project.
Project duration	The project period is Thirty-Six Months (36 Months)
Languages	English

Funding Purpose	<p>The purpose of this grant is to provide funding to researchers and innovators to carry out bilateral and collaborative research in Rwanda and Malawi; broadening opportunities for collaboration between academia and private sector focusing on use of emerging technologies for innovation towards industrial manufacturing. The main goal is to support the most creative scientists in Rwanda and Malawi to implement bilateral research projects that foster innovation and promotes collaboration in solving the most common critical challenges in Rwanda and Malawi.</p>
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1. BACKGROUND AND CONTEXT

Development of science, technology, research and innovation are universally regarded as an engine of economic growth and fundamental to achieving sustainable development. Specifically, this program aims to support bilateral research projects between Rwanda National Council for Science and Technology (NCST_RW) and Malawi National Commission for Science and Technology (NCST-MW). This will strengthen existing programs to solidify collaborations between universities and research institutions (academia), public institutions and private sector partners (industry) to identify and mutually implement studies that address unique challenges affecting Rwandan and Malawian societies in the area of manufacturing and industrialization through applications of emerging technologies such as artificial intelligence (AI), robotics, drone technology and 3D printing - to improve the sectors of manufacturing and industrialization, resulting into findings that lead to innovation. NCST -RW and NCST-MW will ensure that funded research projects address and promote linkage between public and private sector actors, and ensure gender equality and inclusivity throughout the project period.

The purpose of this grant is to provide funding to researchers and innovators to carry out collaborative research in Rwanda and Malawi; broadening opportunities for collaboration between academia and private sector focusing on use of emerging technologies for discovery and innovation towards manufacturing and industrialization in Malawi and Rwanda. The main Goal is to support the most creative scientists in Rwanda and Malawi to implement research that fosters innovation and promotes collaboration in solving the most critical development challenges in Rwanda and Malawi.

2. Focus and Priority areas

Malawi and Rwanda's STI based development ambitions are in consonant with regional and international commitments such as adoption of the United Nations (UN) Sustainable Development Goals (SDGs), the African Union (AU) Science, Technology and Innovation Strategy for Africa (STISA 2034), the Africa Agenda 2063. At Africa level, the African Union (AU) Agenda 2063 commits to speed-up actions in the areas including the Transformation, Growth and Industrialization of economies through beneficiation and value addition of natural resources. In line with the above commitment, Rwanda Vision 2050 underscores the need for promoting research and development (R&D) and innovation as key drivers of industrial development for economic transformation. In addition, one of the objectives of Rwanda STI policy is to promote research and innovation in new and emerging technologies. Similarly, Malawi domesticated AU Agenda 2063 and developed a long-term vision known as Malawi 2063 that has three pillars and seven enablers. The second pillar, industrialization aims to contribute to the development of a vibrant knowledge-based economy with a strong manufacturing industry that is driven by productive and commercially vibrant agricultural and mining sectors, including research on viable public-private partnership models.

Rwanda's and Malawi's visions aim at building resilient infrastructure, promoting sustainable industrialization and fostering innovation for national development. In response to the above, several strategies have been employed by various countries and regions around the world to boost manufacturing. For example, the UN SDG 9.5 highlights the need to enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, particularly in developing countries such as Malawi and Rwanda.

Rwanda and Malawi, like many other African countries, face the challenges in the field of manufacturing and industrialization which needs research and innovation-based solutions.

This Request for Proposals (RFP) specifically focusses on the integration of artificial intelligence (AI) and use of IoT into manufacturing and industrialization processes. In addition, The RPF will also focus on project proposals in the area of application of emerging technologies in one of the six (6) identified national key priority areas as they are described in the STI policy and National Research and Innovation Agenda (NRIA) of Rwanda, 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. This is also in line with the Malawian National Research Agenda (NRA) which identifies 10 Research and Innovation Pillars of which Agricultural productivity and Commercialization, Industrialization, Urbanization, mind-set change, enhanced public sector performance, effective governance institutions, human capital development, private sector dynamism, economic infrastructure and environmental sustainability are among key areas.

The following are the research areas of focus to be considered:

2.1 Artificial Intelligence (AI):

- **Quality Control:** AI-powered image recognition and machine learning algorithms are used for real-time quality control and defect detection during manufacturing.
- **Process Optimization:** AI algorithms can optimize manufacturing processes by adjusting parameters in real time, reducing energy consumption and improving production efficiency.
- **Demand Forecasting:** AI analyzes historical data to predict future demand, helping manufacturers plan production schedules and inventory levels more accurately.

2.2 Internet of Things (IoT):

- **Quality and Process Control:** IoT devices enable real-time monitoring and control of processes, ensuring consistent product quality and reducing waste.
- **Energy Management:** IoT systems help optimize energy consumption in manufacturing facilities by monitoring and controlling equipment and lighting.
- **Supply Chain Visibility:** IoT provides real-time visibility into the supply chain, helping to track goods, optimize logistics, and improve overall efficiency.

3. Approach for the Collaboration between Researchers in Rwanda and Malawi

This Call for Proposal adopts an approach on collaboration between Researchers in Rwanda and Malawi as per the following guidelines.

- **The Project Proposal is bilateral in nature**, meaning that a Principal Investigator (PI) in Rwanda and a PI in Malawi will need to collaborate and submit a joint proposal.
- **A PI in Rwanda will identify his/her team in his/her country and likewise a PI in Malawi.** The two PIs will need to agree on the research area and prepare a joint proposal in any of the identified research focus areas mentioned in 2.1 and 2.2 above. The co-creation of the proposal will be led by the two PIs through identification of a common problem area and the solution for the delivery of their research work.

4. Funding

NCST – Rwanda and NCST – Malawi will fund successful proposals. The funding will be directed to bilateral research projects which will be implemented in both countries of Rwanda and Malawi aiming at solving common challenges in both countries.

5. Eligibility Criteria

What We Are Looking for (Research work and Student engagement):

We are looking for bilateral research projects that meet the stated objectives above, and applicants abide with the following eligibility criteria:

- i. Are led by a Principal Investigator (PI) with scientific excellence in a relevant field, based and working in an applicant's country (Rwanda and Malawi). A PI leading a research team in Rwanda must identify another PI with his/her research team in Malawi to work with on the same project and topic and vice versa.
- ii. The applicants must demonstrate their affiliation with national host institutions and are encouraged to collaborate with and demonstrate strong engagement with Private industry sector. Applicant(s) must provide support letter from their primary institution where the research project will be carried out. The letter shall state a) support by the head of institution, b) justification of employment to applicant PI.
- iii. Applications from women-led PIs are encouraged. Moreover, as a general rule of thumb, the composition of each project team must comprise at least 30% women;
- iv. Demonstrate that the project will be implemented in both countries to deliver on project Milestones and solve a common challenge. The activities to be conducted in each country have to be clearly budgeted for and must be well detailed.
- v. Applicants must provide support letters from each research team in the applicant's country as well as in the counterpart project team country
- vi. The proposed research project should have the potential to lead to product or service development, and the potential for scaling up and commercialization of products or services.
- vii. The research project should describe clear community outreach activities or strategy for dissemination so that wider Rwandan/ Malawian/African community understands the project and its findings e.g. through Radio, TV and newsletters, Publications etc.
- viii. The research project should be able to support postgraduate students through research. Research projects should make allowance for supporting postgraduate (Master and Doctoral) students (for up to 2 years for Masters' and up to 3 years for Doctoral).

6. Evaluation Process and criteria

▪ Administrative screening

NCST-Rwanda and NCST-Malawi will constitute screening teams to do preliminary administrative evaluation of applications. Applications that do not meet the eligibility criteria outlined will be removed from the list whereas applications that meet eligibility criteria will be forwarded to the external peer review stage.

▪ **Independent/ External Review**

NCST-Rwanda and NCST-Malawi shall identify reviewers to constitute an independent review team. Each proposal will be sent to at least 3 reviewers with broad expertise and a track record of accomplishment in research, innovation and technology development in the areas highlighted in this call.

Through the online system, the appointed and independent reviewers shall be anonymous to provide opportunities for better objectivity in the review process. The reviewers will provide quantitative scores and qualitative information describing rationale for the scores provided to each grant, which will be shared through the online system to each of the applicants. The aspects to be considered in the selection include:

- i. **Alignment to priorities in both Rwanda and Malawi** shall be required to maximize potential for impact
- ii. **Feasibility** (work plan, project organization, project scheduling and timelines)
- iii. **Scientific merit of the proposal** (including the literature review, objectives, methodology, novelty, scientific contribution, multidisciplinary aspects, industry collaboration)
- iv. **Experience and competence of the PI and project research team** shall demonstrate experience in carrying experimental research studies.

The final selection will be based on the recommendations of the review committee criteria underneath. Reviewers will consider each of the review criteria below and award scores equally to determine scientific merit of the following areas:

- i. Relevance and Significance (context)
- ii. Approach (feasibility of objectives and milestones)
- iii. Innovation (creativity of the project's approach and clear differentiation from existing approaches),
- iv. Investigators competence (track record of research team members conducting similar studies) and
- v. Research environment (current institutional equipment and physical resources to carry out this study).
- vi. Management of Intellectual Property Rights (IPR) from the collaborative project: The PIs in both countries have to clarify on how they will handle the IPR that may arise from the research project.

After the expert review process, all proposals along with the respective experts' comments will be submitted to the Award Committee for review and final selection of successful proposals.

Each application will be evaluated and rated based on criteria outlined below. The evaluation criteria listed are closely related and are considered as a whole in judging the overall quality of an application

Scoring criteria:

Assessment:	Marks
Relevance and significance: The proposal should demonstrate how the study will contribute to sustainable innovation and product and or service development. Statement of the problem and justification of the study should be well elaborated to justify the common challenge to be addressed in both Rwanda and Malawi as well as potential for innovation. Goals and objectives stated shall be clear and measurable, and the pathway to outcomes and impact for innovation shall be well defined.	10
The Research should demonstrate scientific and technological excellence and Innovation: The proposal should clearly define the uniqueness of the research idea, product or service to be developed addressing specific community scientific challenge or need in both Rwanda and Malawi countries and in a specified priority area. The proposal should clearly define the quality and originality/novelty of the innovative idea	20
Demonstrate the potential for product/service development and job creation: The proposed research shall be experimental development and demonstrate the ability for PI and Co-PIs to have product/service developed. The applicant shall demonstrate how the research will lead to product, process or service development, job creation and its potential for scaling and commercialization.	15
Demonstrate and define how the IP Rights will be handled: The applicant shall clearly indicate how the IP Rights will be handled between research teams in Rwanda and Malawi.	10
Investigator's capacity, qualification and record on previous grants, Partnerships and collaborations: Principal Investigators and their research teams must have and demonstrated expertise in the stated field through prior research experience and collaboration , and they must show the ability to undertake the research activities in their respective countries. The proposal must demonstrate the contribution of the participating institutions and clearly define the roles of each partner towards ensuring research excellence and innovation capacity development.	10
Quality and Feasibility of the project Idea: The project idea and feasibility is well developed, with details about how the project activities will be carried out and outcomes achieved. Indicate how ethical considerations and issues expected and arising from research (if any) will be addressed.	12
Budget and timeline: The project budget justification is detailed according to the activities to be implemented in each country. Costs are reasonable in relation to the proposed activities and anticipated results. The budget is realistic, accounting for all necessary expenses to achieve proposed activities within the set timeline. Using the provided template and guidelines should be respected.	7

Monitoring and evaluation plan: Applicants must demonstrate ability to measure the project success against key indicators and provide milestones to indicate progress toward goals outlined in the proposal. The project includes output and outcome indicators and shows how and when those will be measured across the countries.	8
Sustainability: Description of how the project will continue to have impact beyond the current funding. Project activities are likely to have a positive impact for both Rwanda and Malawi countries. The applicant must explain how this project will continue to have impact beyond this Fund support	8

7. Required documents

- i. The project team from Rwanda and the Project Team from Malawi shall submit their Collaborative proposals
- ii. Completed online application form
- iii. Complete Project Proposal
- iv. Complete Activity Plan
- v. Complete Proposed Budget using a given template
- vi. CVs of the PIs, Co-PIs and research team members
- vii. Statement of availability/Commitment letters of team members
- viii. Support letters for PIs and Co-PIs provided by head of institutions
- ix. Mutual co-creation and working agreement between the teams in Rwanda and Malawi

8. How to apply

Proposals shall only be in English language. Applications can ONLY be submitted online through the following website or online portal:

<https://rigms.ncst.gov.rw>

Only one application is accepted per each Project Investigator.

9. Grant Agreement contract

If a proposal is successful, a research grant agreement will be drawn between the Councils, the PIs and their host institutions (Three Tier Agreement). The agreement consists of the provisions that are to be fulfilled by the parties in regards with implementation of the project and the provision stating the partnership with each council.

10. Important Dates

Activities	Timeframe
Publish the call	December 31, 2024
Virtual Information session	15 January 2025
Deadline for submission of applications	February 28, 2025
Administrative screening	2-7 March 2025
External/ Independent Review	17-21 March 2025
Notify successful Applicants	4 April 2025
Due diligence	21-25 April 2025
Sign agreement with researchers	7 May, 2025
Funds disbursement	23 May 2025