RESEARCH CALL: Development of Digital Solutions in Horticulture value chains

<u>CALL GUIDELINES</u>

APPLICATION PERIOD: 13 August - 27 August 2024
FUNDING PERIOD: 9 months

1. GENERAL BACKGROUND

The Science Granting Councils Initiative (SGCI) was launched in 2015 and it seeks to strengthen the capacities of Science Granting Councils (SGCs) in Sub-Saharan Africa (SSA) to support research and foster evidence-based policies that will contribute to economic and social development. The first phase of this initiative lasted for 5 years (2015-2020). In July 2018, the Swedish International Development Cooperation Agency (SIDA) and IDRC on a new 5-year partnership to deepen and sustain the SGCI from 2018 to 2023, referred to as the second phase of the initiative.

In the new and current phase, the SGCI has agreed on two new partnerships -- with the Norwegian Agency for Development Cooperation (NORAD) and with the UK's Foreign, Commonwealth and Development Office (FCDO) with additional funding from Canada's International Development Research Centre (IDRC) to be implemented over a period of 48 months (January 1, 2022 – December 31, 2025). The partnerships will further deepen and extend SGCI's work in areas that are complementary to the activities supported under existing SGCI partnerships with the Swedish International Development Cooperation Agency (SIDA), IDRC, the UK's Foreign, Commonwealth & Development Office (FCDO), South Africa's National Research Foundation (NRF) and the German Research Foundation (DFG). It will continue to focus on enhancing the roles of Science Granting Councils as key intermediary or bridging organizations within national science systems.

Under this new and current call, the NCRST secured funding to invest on research projects that are responding to Namibia's national priorities. These includes Artificial Intelligence, Water Security and Sanitation as well as development of a Psychometric instrument. It is against this background that the call below is issued.

2. RESEARCH CALL ON EMERGING TECHNOLOGIES AND DEVELOPMENT: DEVELOPMENT OF DIGITAL SOLUTIONS IN HORTICULTURE VALUE CHAINS

2.1   Background

Increased domestic production of fruits and vegetables and less reliance on imports of fresh horticulture produce are the main goals of the horticulture industry in Namibia. In response, the Namibian Agronomic Board (NAB), in collaboration with the Ministry of Agriculture, Water, and Forestry (MAWF), developed the National Horticultural Development Initiative (NHDI) in 2002. A deliberate intervention in Namibia's horticulture industry resulted in Fresh fruit and vegetables eventually being gazetted as restricted items in 2002 under Section 2 of the Agronomic Industry Act, 1992 (Act 20 of 1992).

The production and delivery of food have been completely transformed by technological advancements and digital solutions, which have revolutionized the agrifood industry. The digital revolution has also impacted smallholder farmers, who can leverage technology and digital solutions to enhance their operations through timely identification of pests and illnesses, market access, and training. Precision farming techniques, food processing technologies, refrigeration systems, packaging innovations, mobile money, and e-commerce platforms can all boost economic growth, sustainability, efficiency, and value chain performance. However, there are obstacles to implementing technological breakthroughs for small and medium-sized businesses (SMEs), farmers, and access to appropriate technology, infrastructure, and maintenance services.

Digitization and automation offer great opportunities for horticulture. Robotics, innovative sensor-controlled solutions, data management systems and artificial intelligence can increasingly fulfil complex tasks in the control and management of production systems and help to make horticultural production more competitive and sustainable. Thus, digital methods are essential for horticultural production, their development and use are still in the early stages of development. To accelerate the integration of these 4.0 technologies in horticulture production, the National Commission on Research, Science and Technology (NCRST), through the Science Granting Councils Initiative, has secured funding towards the development of SmartTech solutions for Horticulture. The call seeks to support a project that will develop and promote digital innovations for the Namibian horticultural sector.

One of the main goals of the second National Programme for Research, Science, Technology, and Innovation (NPRSTI 2), is to increase research capacity in Namibia, including human resources and

infrastructure for the creation, use, and governance of artificial intelligence. The initiative aims to hasten Namibia's readiness and entry into ethical AI research and innovation to address societal issues like environmental management, agricultural production, and health.

This call is issued by the National Commission on Research, Science and Technology within the framework of the Science Granting Councils Initiatives.

2.2   Call objectives

The objectives of the call are:

- To develop research and innovation products/ services that address local challenges in horticultural production
- To build local skills of Namibian researchers in the development and application of Artificial Intelligence technologies in horticulture
- To strengthen linkages between Universities, Industry, IT Firms, Start-Ups and small holder horticultural farmers in co-creation of solutions to enhance food security

The proposals can be woven around any one or more of the following subdomains related to horticulture and allied sectors, but not limited to:

- Supply Chain Management
- Soil, Water & Energy Conservation
- Horticultural Education Management
- Prediction and Intelligence Services
- Post-harvest Management (including development of value-chains)
- Fruit and Vegetable Health Management
- Production Mechanization
- Market access

2.3   Expected results

- Developed horticultural production digital solutions that enhance food security;
- Use of artificial intelligence in the horticulture production value chain encompassing but not limited to the areas listed in 2.2;
- Improved decision making in the horticultural production value chains;
- Increased adoption and applicability of resilient horticultural farming techniques;
- Enhanced market access of horticultural farmers

2.4 Area of funding

Proposals must employ artificial intelligence to address challenges faced by local horticultural farmers in Namibia in terms of production value chain such as Supply Chain Management, Soil, Water & Energy Conservation, Horticultural Education Management, Prediction and Intelligence Services, Post-harvest Management (including development of value-chains), Fruit and Vegetable Health Management, Production Mechanization and market access, etc.

Applicants must explicitly state the issue(s) that they would like to address within the project focus areas responding to expected results and call objectives above.

3. FUNDING INFORMATION

The total amount of N$ 1,231,761.50 (@ 12 April 2023 exchange rate) is available for funding this call, inclusive of all project related costs. At least one project under Artificial Intelligence will be funded for a duration of 9 months.

3.1   Allocation of funding

- 70% for direct research and development related activity costs;
- 25% for workshop or conference travel and accommodation and subsistence allowance;
- 5% indirect costs.

3.2 Student capacity building

- A maximum N$ 300,000 (N$ 50,000 per student) should be reserved to not more than six MSc and/or Doctoral students for their field research activities within the capacity building component;
- The above mentioned should be budgeted under direct research activities.

3.3   Funds disbursements

Funds will be disbursed according to the table below.

Initial disbursement	Upon signature of agreement
Second disbursement	Upon approval of first technical and financial report *(covering the first four (4) months of work)*
Final disbursement	Upon approval of second technical and financial reports

3.4 Payment of funds

- Funds will be paid into the accounts belonging to the organisations/ institutions of the Principal Investigators (PIs)

4. WHO MAY APPLY?

- The is a closed call open only to Faculty members or researchers from local RUFORUM member universities, IUM, NUST and UNAM.

- The proposal may be developed in partnership with any registered Industry / IT Firms /IT Start-Ups/T-VET Institution and involve a horticultural community. This partnership is key for commercialisation.

- Proposals demonstrating strong inter-university collaborations will be given priority consideration.

- Principal Investigator (PI) must apply and submit the proposal on behalf of the project team. The PI must be an expert in the field and be in possession of a PhD degree preferably in Agriculture, Computer Science, Artificial Intelligence, or related fields. PI in possession of a Masters degree may be considered based on relevant experience.

- PI will be responsible for the overall project coordination and reporting (technical and financial)

- Masters and Doctoral students / research scholars, with at least 30% female representation working in relevant area from the academic institution, shall also be part of the development team as Project Associates, over and above the core team.

- Each university shall submit a full research project proposal with an IT, clearly identifying the collaborating institutions and targeted horticultural community to be involved, with at least 30% female participation.

- The project overall implementation must include a component of capacity building and for that reason, the project team must include MSc and/or Doctoral students (not more than six) and an early career researcher as co-researcher/ investigator and/or an innovator(s) if deemed necessary.

4.1 Eligibility criteria and submission procedure

a. Namibian citizens or Researchers with a valid work or study permit or permanent residence in Namibia may apply.

b. The call is a closed call open only to researchers affiliated to the following RUFORUM member universities:
    - Namibia University of Science and Technology
    - University of Namibia
    - International University of Management

c. Non-Namibians working under a contract with any of the above institutions are eligible to apply. However, the project must include a Namibian co-researcher/ investigator who is permanently working on the project from any institution in the country, well-versed with the project, to ensure its completion in the event the contract is no longer valid.

d. The applicant's service contract must be valid during the period of the proposed project and contractual documents must be furnished as proof of employment for the period.

e. Projects funded through this call should be located and carried out in Namibia

f. Principal Investigators may participate in any number of NCRST-funded projects at the same time but can only *lead* one (1) project at a time unless otherwise agreed on with the NCRST.

g. The applicant should ensure gender equity and inclusivity within the project team.

For additional information, consult NCRST's Grant Management Rules and Procedures document, available at gms.ncrst.na.

5. SUPPORTED ACTIVITIES

Under this call, research projects in the area of water security and sanitation will be funded. The following specific activities under the project will be funded:

- Data collection through laboratory, desk or field research, payments to people who gather data or provide casual labour;

- Consumable goods, for example laboratory reagents/supplies and non-capital equipment for projects;

- Reference materials, for example books and articles related to the project;

- Stakeholders' consultations and field visits (in country travel);

- Exchange visits in case of meetings, research visits and exchange of scientists, personnel and experts, as well as reciprocal visits undertaken as part of research and the attendance of seminars, symposia and other meetings funded under this call;
- Subsistence allowance for workshops and seminars, local or international, subject to the percentage limits provided;
- Equipment rentals for seminars and conferences and printing, and any other activity necessary for a proper implementation directly related to the proposed research project in consultation with the NCRST;
- Project indirect cost, which may include stationery, and telecommunications, stipend and benefits of personnel supporting the project, such as Secretaries, Clerks and Accountants;
- Contingency: contingency reserve not exceeding 5% of the project cost may be included in the budget

The following costs are not eligible under this call:
- Purchases of fixed assets;
- Currency exchange losses;
- Direct or indirect taxes, including VAT;
- Overheads;
- Tuition fees;
- Salaries and continuous stipend

6. EVALUATION CRITERIA

The evaluation of the research proposals will be organised by NCRST. The following will be considered:

Criteria	Score
1. Scientific quality and innovativeness of the research proposal	15

2. Feasibility of the research proposal
    a. Practicality, realistic, feasibility and consistency of the proposed activities with the objectives of the call
    b. Clarity and feasibility of the methodology provided
	15

c. Addressing contemporary challenges		
3. Added value and capacity to be expected from the collaboration	10	
4. Gender consideration and inclusivity within the project team	15	
5. Competence, expertise and experience of the principal investigators and scientists/researchers involved;	10	
6. Clear deliverables	10	

7. Relevance and impact of the research
 	
    a. Industrial development;
 	
    b. Capacity building (institutional and/or human);
 	
    c. Commercialization of research results;
 	
    d. Potential impact on the end-use (market needs).
 	
    e. Technology capability (is there a prototype, or proof of concept that is illustrated and has been proven to work).
	15	

8. Budget
 	
    a. Consistency to budget ratio or percentage given by the call guideline
 	
    b. Does the proposed expenditure reflect the true cost of the proposed activities?
	10	

TOTAL SCORE	100	

7. PROJECT REPORTING

Progress technical and financial reports will be submitted to NCRST every six (6) months. The project's initial fee of 30% of the total budget will be paid upon contracting. Thereafter, disbursements will be done upon progress and completion of identified project milestone. Failure to submit reports will result in the withholding of further disbursements and be construed as violation of the contract. A final technical and financial report will be submitted to NCRST by the Principal Investigator at the end of the project. A format will be provided for this purpose.

Whereas disbursement of fund will be after every four months, flexibility will be provided for shorter duration where agreed milestones are realised before four months.

8. INTELLECTUAL PROPERTY

- Intellectual Property Rights (IPR) means any and all patents, patent applications, know how, unregistered and registered trademarks, trademark applications, trade names, registered designs, unregistered design rights, semiconductor topography rights, copyright, database rights or any other similar intellectual or commercial rights in Namibia or anywhere in the world;
- Intellectual Property will be dealt with in accordance with the provisions made in the contract agreement between the funding institutions and the grant recipient.

9. HOW TO APPLY

- Go to www.ncrst.na.
- Applications must be submitted via the online NCRST Grant Management System at https://gms.ncrst.na. A guide on how to use the system is available on the NCRST website www.ncrst.na.
- Applications that are not submitted via the online application system shall not be accepted.
- It is advisable that applications be endorsed by the research office or its equivalent authority at higher education or research institutions / departments or centres;
- The NCRST will not be held responsible for non-submission;
- No submission of hard copies will be accepted

10. SUBMISSION DATE AND ACCEPTANCE OF THE GRANT OFFER

- Proposals should be submitted not later than 23h59 on 26 August 2024 onto the NCRST grant management system.
- Applications received after this date will not be considered.
- The successful applicant must accept the grant offer within one week after notification of award and start with the project within one (1) month.

The table below indicates the timeline of this project.

Key milestones	Date
Deadline for submission of Application Form	26 August 2024
Notification of award	10 September 2024
Contract signing	15 September 2024
Disbursement of first instalment	20 September 2024
Project completion	31 July 2025

CONTACT DETAILS

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