

Advancing National Research Priorities through Strategic Funding: Insights from the (SGCI)-Phase II

Synthesis Report Submitted to International Development Research Centre (IDRC)

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Synthesis Report
March 2026

ACKNOWLEDGMENT

The African Centre for Technology Studies (ACTS) sincerely appreciates the support of its funding partners: International Development Research Centre (IDRC), the UK's Foreign, Commonwealth & Development Office (FCDO), South Africa's National Research Foundation (NRF), the Swedish International Development Cooperation Agency (Sida), Deutsche Forschungsgemeinschaft (DFG) - German Research Foundation, and the Norwegian Agency for Development Cooperation (Norad).

We also thank the leadership and staff of the Science Granting Councils (SGCs) for providing the information that formed the basis of this synthesis and for their commitment to strengthening evidence-based national innovation systems. Appreciation is extended to the Collaborating Technical Agencies (CTAs) for their expertise in policy, monitoring and evaluation, research management, gender inclusion, science communication, and innovation, which greatly supported capacity building within the SGCs. We also acknowledge the researchers, innovators, policymakers, and private sector actors whose contributions demonstrate the impact of Science Granting Councils Initiative (SGCI) in advancing African science for sustainable development.

Finally, we thank the research team for their dedication in compiling this synthesis and its key lessons.

EXECUTIVE SUMMARY

The Science Granting Councils Initiative (SGCI-2) played a pivotal role in strengthening research ecosystems across 12 African countries by funding projects aligned with national research priorities (NRPs). These projects have contributed to scientific knowledge, capacity building, infrastructure development, and policy advancements. This synthesis report evaluates the contributions of SGCI-2 between 2020 and 2023, focusing on research outputs, technological advancements, and alignment with national, regional, and global development agenda, including the Sustainable Development Goals (SDGs) and the African Union's Agenda 2063.

KEY FINDINGS

Finding 1: Alignment with National Research Priorities

The SGCI-2 projects were tailored to address pressing national challenges while leveraging opportunities for long-term socioeconomic transformation. The identified NRPs varied across countries but commonly focused on agriculture and food security, health and biotechnology, renewable energy, climate change, and digital innovation. The projects were aligned with national policies such as Rwanda's National Strategy for Transformation, Malawi's National Research Agenda, and Botswana's Vision 2036, among others.

Finding 2: Capacity Building and Research Strengthening

SGCI-2 significantly contributed to human capital development by supporting postgraduate students, early-career researchers, and research institutions. Across the 12 participating countries, over 100 students, including PhD, MSc, and BSc candidates, benefited from training programs. Additionally, SGCI-2 facilitated mentorship programs, industry collaborations, and interdisciplinary research engagements, strengthening national innovation systems.

Finding 3: Research Outputs and Innovation

The initiative generated numerous research outputs, including scientific publications, policy briefs, and innovative prototypes. Countries such as Senegal and Rwanda reported over 25 peer-reviewed publications each, while Uganda and Zambia developed commercially viable prototypes, including herbal-based medicinal products and bioenergy solutions. The introduction of new technologies, such as solar drying techniques in Malawi and Mozambique, and digital health platforms in Burkina Faso, demonstrated the projects' impact on technology adoption and commercialization.

Finding 4: Infrastructure Development and Research Grants Management

Several countries made significant progress in enhancing research infrastructure through SGCI-2. Senegal established a genomic surveillance unit, while Malawi and Zambia secured advanced laboratory equipment. Rwanda successfully implemented a Research and Innovation Grants Management System (RIGMS) to improve funding allocation and monitoring.

Finding 5: Policy Influence and Additional Funding Mobilization

SGCI-2 facilitated policy advancements by supporting the development of research agendas and strategic frameworks. Countries like Malawi operationalized a Science and Technology Fund, securing over MK 450 million in government research grants. Rwanda mobilized over 1 billion Rwandan francs to support national research and innovation efforts.

CONCLUSION AND RECOMMENDATIONS

SGCI-2 has significantly advanced national research priorities, capacity building, and innovation across Africa. However, challenges such as funding sustainability, research commercialization, and regional collaboration need further attention. Moving forward, countries should:

- ▶ Strengthen multi-sectoral collaboration between academia, industry, and government.
- ▶ Enhance research commercialization to ensure greater societal and economic impact.
- ▶ Expand funding mechanisms to support long-term research sustainability.
- ▶ Invest in digital transformation and open-access research data systems.

STRATEGIC INSIGHTS FOR THE FUNDER

The Science Granting Councils Initiative Phase Two demonstrates strong and credible progress in strengthening research and innovation systems across twelve African countries. The initiative is delivering value beyond individual projects by building institutional capacity, strengthening governance systems, and influencing national research ecosystems. The evidence confirms that the investment is both relevant and impactful.

A key achievement of the initiative is its strong alignment with national research priorities and major development frameworks, including the Sustainable Development Goals and the African Union Agenda 2063. Funded projects are concentrated in priority sectors such as agriculture, health, energy, and industrial development. This alignment ensures that resources are directed toward areas with the greatest potential for socioeconomic impact.

The initiative has made significant contributions to human capital development. More than one hundred and twenty students have been trained, alongside researchers, technical staff, and community actors. This investment is strengthening the pipeline of skilled professionals and enhancing the long term sustainability of research systems across participating countries.

SGCI Phase Two has also generated a broad range of research outputs, including scientific publications, policy briefs, and innovative prototypes. These outputs demonstrate strong progress in knowledge generation and applied research. However, most innovations remain at early stages, highlighting the need for stronger support to move from research to scale and real world application.

In addition, the initiative has strengthened research infrastructure and governance. Investments in laboratory facilities, equipment, and digital grant management systems have improved the efficiency, transparency, and accountability of research processes. These system level gains are essential for sustaining performance beyond external funding cycles.

The initiative is also contributing to policy influence and domestic resource mobilization. Several countries have taken steps to operationalize national research funds and increase government investment in science and innovation. This reflects growing national ownership and signals progress toward sustainability.

Despite these achievements, key challenges remain. Research commercialization is limited, and engagement with the private sector is not yet strong enough to translate innovations into market ready solutions. There are also variations in institutional capacity across countries, and monitoring and evaluation systems need to be strengthened to better capture long term impact.

There is a clear opportunity to build on the progress achieved. Future support should focus on strengthening commercialization pathways, enhancing regional collaboration, improving monitoring and evaluation systems, and deepening policy engagement. Targeted investment in these areas will help ensure that research outputs translate into scalable and sustainable development outcomes.

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ACRONYMS AND ABBREVIATIONS

| | |
|-----------------|--|
| 4IR | 4th Industrial Revolution |
| AI | Artificial Intelligence |
| AU | African Union |
| AUDA | African Union Development Agency |
| CAD | Canadian Dollar |
| COSTECH | Tanzania Commission for Science and Technology |
| COVID-19 | Coronavirus disease |
| FNI | Fundo Nacional de Investigacao, Mozambique |
| GESI | Gender Equality and Social Inclusion |
| HIV/AIDS | Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome |
| IAPs | Invasive Alien plants |
| ICT | Information Communication Technology |
| MEL | Monitoring, Evaluation & Learning |
| NCDS | Non-communicable Diseases |
| NCRST | National Commission on Research Science and Technology |
| NCST | National Council for Science and Technology, Rwanda |
| NCST | National Commission for Science and Technology, Malawi |
| NCST | National Science Technology Council of Zambia |
| NEPAD | New Partnership for Africa's Development |
| NRF | National Research Foundation South Africa |
| NRP | National Research Priorities |
| PPP | Public-private-partnerships |
| R&D | Research and Development |
| R2C | Research-to-Commercialization |
| RCZ | Research Council of Zimbabwe |
| RGC-MInT | Research Grant Council at the Ministry of Information and Technology, Ethiopia |
| SADC | Southern Africa Development Cooperation |
| SDGs | Sustainable Development Goals |
| SGCI | Science Granting Councils Initiative |
| STEM | Science, Technology, Engineering and Mathematics |
| STI | Science, Technology, and Innovation |
| STISA | Science Technology and Innovation Strategy for Africa |
| TVETS | Technical and Vocational Education & Training |
| UN | United Nations |
| UNBS | Uganda National Bureau of Standards |
| UNCST | Uganda National Commission for Science and Technology |

1. INTRODUCTION

1.1 Background information

National Research Priorities (NRPs) are strategic areas of research identified by a country to focus its research efforts and resources, aiming to address its most pressing societal challenges, drive innovation, and promote sustainable development. The National Research Priorities serve as a strategic tool for guiding research investments, fostering innovation, and ensuring that scientific advancements translate into tangible socioeconomic benefits. By aligning these priorities with national, regional, and global development agendas, African countries are strengthening their research ecosystems and enhancing their capacity to address complex development challenges.

National research priorities enable countries to guide research expenditure, promote science, technology, and innovation, stimulate human resource development for research, foster collaboration, and negotiate with partners for targeted funding and long-term efforts (Montorzi et al., 2010). According to Dogan et al. (2017), five criteria could define which research areas deserve funding and prioritization: public needs, scientific quality of the research, potential for scientific progress, portfolio diversification, and research that helps to develop infrastructure (e.g. human capital, facilities, and equipment).

These priorities are tailored to the country's specific context, taking into account historical developments, current realities, and future aspirations. National policies and frameworks that define and guide NRPs are designed to meet immediate development needs while fostering long-term strategic growth. In Africa, NRPs are heavily influenced by global trends, economic conditions, political landscapes, and the continent's developmental goals, as outlined in frameworks such as the African Union (AU) Agenda 2063 and the Sustainable Development Goals (SDGs).

NRPs cover diverse domains such as economic development, technological innovation, health and healthcare, mining and industry, climate change, environmental sustainability, education, employment, workforce development, national security, and social equity. These priorities not only reflect a nation's research capabilities but also provide a diagnostic, predictive, and prescriptive approach to national development. Although countries differ in their specific research priorities, common themes are emerging across Africa, including agriculture, health, climate change, and technological innovation. These themes align with regional, continental, and global strategies, ensuring that research contributes to both national and international development goals.

Under the AU Agenda 2063, research-related priorities emphasize strengthening research and development (R&D) capabilities, promoting science and technology as drivers of economic growth, and leveraging research and innovation to improve infrastructure and energy access. The Science, Technology, and Innovation Strategy for Africa (STISA) has evolved from STISA-2024, which prioritized agricultural research for food security, health research to combat infectious diseases, renewable energy development, and the strengthening of research institutions. The current STISA-2034 focuses on five key sectors—health, energy, ICT, agriculture, and environment—while addressing six cross-cutting priorities: industrialization, human capital and capacity building, private sector engagement, frontier technologies, gender and youth inclusion, and science diplomacy. Additionally, the African Union Development Agency (AUDA-NEPAD) has established the African Science, Technology, and Innovation Indicators (ASTII) initiative, which monitors investments in R&D and fosters collaboration across priority sectors such as climate change, ICT, agriculture, and health.

Several key research areas have emerged within NRPs across Africa. In science, technology, and innovation (STI), research efforts focus on innovation commercialization, artificial intelligence (AI), biotechnology, public-private partnerships, technology transfer, e-commerce, and intellectual property protection. In education and workforce development, there is a strong emphasis on improving education systems, enhancing industry-academia relations, and equipping the workforce with skills for the Fourth Industrial Revolution (4IR). Technical and Vocational Education and Training (TVET) institutions, as well as digital learning tools, are becoming integral to national research agendas.

In agriculture and food security, research is centered on increasing agricultural productivity, reducing post-harvest losses, developing drought-resistant crops, improving nutrition through crop diversification and value addition, and adopting climate-smart farming techniques. As agriculture remains the backbone of most African economies, research in this area is crucial for ensuring food security and rural development. Health and healthcare research remains a major priority, focusing on infectious diseases, non-communicable diseases (NCDs), healthcare delivery systems, biotechnology, vaccines, public health, and mental health. With the rise of pandemics and emerging health threats, investment in medical research and healthcare innovation has become increasingly significant.

Climate change and environmental sustainability research has expanded beyond renewable energy and biodiversity conservation to encompass health, peace and security, transportation, and foreign policy dimensions. The effects of climate change on livelihoods and ecosystems have made adaptation and mitigation strategies an urgent research focus. Similarly, gender, equality, and social inclusion research is gaining prominence, particularly in identifying and addressing disparities in wealth, education, healthcare, and employment. Intersectionality studies have provided deeper insights into how multiple forms of discrimination intersect, shaping policies for a more inclusive society.

Infrastructure and urban development research is increasingly focusing on sustainable urbanization, smart cities, e-mobility, and resilience in utility infrastructure such as water, sanitation, drainage, and waste management. As Africa's population grows, urban centers are facing new challenges that require innovative research and policy interventions. Ethics and regulation in research have also gained attention, particularly in areas like responsible AI, human rights, data privacy, and ethical considerations in genetic engineering and biotechnology. The regulation of emerging technologies is crucial to ensuring that scientific advancements align with societal values and legal frameworks.

Finally, international collaboration and partnerships in research have grown, with an emphasis on tackling global challenges such as climate change, health pandemics, and peace and security. Cross-border, interdisciplinary, and multi-sectoral research collaborations are becoming more prevalent, facilitating knowledge-sharing and fostering diplomacy through research. With a growing emphasis on research-sharing platforms and infrastructure, African countries are increasingly positioning themselves as active contributors to global scientific advancements.

1.2 Purpose and Scope of the Report

The purpose of this synthesis report is to evaluate and document the contributions of the Science Granting Councils Initiative (SGCI) 2 project to strengthening research and science, technology, and innovation (STI) ecosystems across Africa. SGCI has played a crucial role in advancing research capacity, fostering collaboration between academia, industry, and the private sector, and aligning national research priorities with broader development goals. The central mission of SGCI is to enhance the capacity of participating science granting councils to support research and evidence-based policies that contribute to economic and social development. By positioning science granting councils and the research community at the forefront of STI, SGCI has significantly contributed to the national research agendas of African countries, as well as to continental development objectives.

This synthesis report has collated and analyzed information on the contributions made by SGCI, specifically through the funded research projects under SGCI-2, to the national research agendas and development plans of the countries involved, and by extension, to the continent.

1.3 Research Questions

This synthesis report was guided by the following four key research questions:

- 1.** How have SGCI 2-funded projects aligned with the national research priorities of participating African countries?
This question examines the extent to which SGCI-funded research addresses each country's strategic research needs and policy frameworks. It includes an analysis of STI policies, National Research Priorities (NRPs), and relevant reference documents.
- 2.** What sectors were prioritized for funding by SGCI 2, and how have these projects contributed to national, regional, and continental development goals, including SDGs and AU Agenda 2063?
This question assesses how SGCI funding targeted key sectors and evaluates the broader impact of funded projects on Africa's development trajectory.
- 3.** How has SGCI 2 contributed to the capacity building of researchers, and what impact has this had on enhancing the research competencies of African scholars, including senior researchers, early career academics, and postgraduate students?
This question explores SGCI's role in strengthening human capital and fostering a new generation of researchers equipped to address Africa's unique challenges.
- 4.** What have been the key research outputs and infrastructural developments of SGCI-funded projects, and how have these contributed to knowledge generation, innovation, and institutional research capacities in Africa?
This question evaluates the tangible results of SGCI-funded projects in fields such as biotechnology, healthcare, and agriculture. It also examines how SGCI-supported research infrastructure—including tools, equipment, and facilities—has strengthened research capabilities within participating institutions.

2. METHODOLOGY

2.1 Research Approach

This study employed a **desk review methodology** to assess the contribution of SGCI-funded projects to national research agendas in African countries. The desk review involved systematic identification, evaluation, and synthesis of relevant secondary data sources, including project reports, policy documents, and research outputs. This approach allowed for a comprehensive examination of how SGCI initiatives align with national and regional priorities. The desk review process was structured into three main stages: document identification, data extraction, and data synthesis. In the document identification stage, relevant documents were sourced from SGCI project repositories, national research councils, and publicly available policy documents, including project reports, funding guidelines, and capacity-building records. During data extraction, key data points were systematically drawn from the identified documents, focusing on project objectives, implementation strategies, and reported outcomes. Finally, the data synthesis stage involved analyzing the extracted information to identify trends, patterns, and areas of impact, particularly concerning alignment with national and continental research priorities.

2.2 Data Sources

To ensure a comprehensive analysis, multiple secondary data sources were utilized. The study reviewed SGCI project documentation, including project reports, funding proposals, implementation plans, and feedback reports from national funding councils. These documents provided insights into the objectives, funding allocations, and key research themes of SGCI-funded projects. Additionally, national research agendas were analyzed to assess how SGCI-funded projects contribute to national research priorities and strategic goals. This involved reviewing national research policies, science and technology strategies, and development plans for the 12 African countries engaged in SGCI (Malawi, Uganda, Rwanda, Zambia, Mozambique, Tanzania, Zimbabwe, Botswana, Senegal, Cote d' Ivore, Namibia and Burkina Faso). Key documents reviewed included national research and innovation strategies, science, technology, and innovation (STI) policies, and national development plans.

To evaluate alignment with broader regional goals, the study examined key continental frameworks, such as STISA-2024 (Science, Technology, and Innovation Strategy for Africa 2024) and the AU Agenda 2063, which outlines long-term socio-economic development objectives for the continent. These frameworks served as benchmarks for assessing the impact of SGCI-funded initiatives on regional research and policy landscapes. Furthermore, the study reviewed research outputs from SGCI-funded projects, including academic journal articles, conference papers, policy briefs, and technical reports. The review of research outputs helped determine the extent to which SGCI-funded research contributed to scientific knowledge and policy formulation.

2.3 Data Analysis

A combination of **qualitative, comparative, and thematic analysis techniques** was applied to synthesize the findings. The qualitative analysis involved a content analysis approach, where documents were systematically reviewed and interpreted to identify key themes and narratives within project reports and policy documents. The study assessed the extent to which SGCI-funded projects addressed national and regional research priorities and evaluated the effectiveness of policy recommendations and their practical implementation. Comparative analysis was used to examine SGCI-funded projects across the 12 different countries to identify variations in research investment priorities, common challenges, and success factors in project implementation. The comparative approach helped highlight best practices and lessons learned from different project implementations.

Thematic analysis was employed to categorize findings into major areas of impact. The study identified themes related to research outputs, capacity building, infrastructure development, and research sector focus. Research outputs were assessed based on their contributions to scientific knowledge and policy recommendations, while capacity-building initiatives were examined in terms of strengthening research institutions and human capital development. Infrastructure development was analyzed to determine investments in research facilities and technology, and research sector focus explored key domains addressed, such as agriculture, health, energy, and ICT. By identifying recurring themes, this analysis provided a structured understanding of SGCI's role in advancing research and innovation in Africa.

2.4 Limitations of the Synthesis

While the interim and technical reports from councils are sufficient to generate such a synthesis report, the assignment can yield better results with access to individual projects technical reports. This will allow for more contextualization and provision of specific examples and project case studies. Some data may be lost as councils synthesize individual project reports to develop council technical reports. Such data may be important for characterization e.g., gender disaggregated data. The synthesis report is not an impact assessment and therefore does not attribute any outcomes to the sole influence of the funded research and innovation projects. To achieve this causal linkage, extensive triangulation from a wider secondary data complemented with primary data will be necessary. **Nonetheless, the synthesis report is complete and reliable as a source of evidence and insight on what has been achieved thus far.**

3. FINDINGS

The findings section is structured into key thematic areas for the 12 countries supported under SGCI 2 project. The section begins with analysing the National Research Priorities; followed by establishing the alignment of the SGCI-funded projects with the national research priorities across 12 countries. The next sub-section examines how SGCI-supported projects contribute to regional, continental and global developmental agendas like SDGs and AU Agenda 2063. The sub-section on capacity building of researchers assesses the impact of SGCI funding on researchers at different career stages. The sub-section on research outputs summarizes key publications, innovations, and policy contributions. The research infrastructure sub-section highlights acquired tools and their role in strengthening institutional research capacity. The section concludes with a synthesis of findings, emphasizing SGCI's role in advancing national and regional research agendas.

3.1 Alignment of SGCI 2 Projects with National Research Priorities

Finding 1: *A key finding from the analysis of the National Research Priorities (NRPs) across the 12 African countries under the SGCI project is the varied approach to research planning. 41.67% of countries (Malawi, Rwanda, Tanzania, Uganda, and Zimbabwe) have clear, well-defined NRPs, prioritizing sectors such as sustainable agriculture, climate resilience, industrialization, and public health. 50% of countries (Botswana, Mozambique, Burkina Faso, Cote d'Ivoire, Senegal and, Namibia) rely on broader STI and Research policies, focusing on innovation, technology transfer, and socio-economic development. The remaining 8.33% (Zambia) lacks formal NRPs and depends on national development plans, often prioritizing agriculture, health, and economic growth. This highlights diverse approaches to research governance in Africa.*

The analysis of the National Research Priorities (NRPs) across the 12 African countries under the SGCI project reveals a varied and comprehensive approach to research and innovation planning (Table 1). Of the 12 countries, **5 countries (41.67%)**—Malawi, Rwanda, Tanzania, Uganda, and Zimbabwe—have clear, well-defined NRPs. These countries have established comprehensive documents that outline specific research priorities, aligning with their national development goals. The NRPs focus on areas such as sustainable agriculture, industrialization, climate resilience, digital transformation, and public health. This formalized approach provides a structured and coordinated framework for research, which enhances the countries' capacity to address socio-economic challenges effectively and drive progress in critical sectors.

In contrast, **6 countries (50%)**, including Botswana, Mozambique, Namibia, Burkina Faso, Cote d'Ivoire and Senegal rely on broader Science, Technology, and Innovation (STI) policies and strategies rather than formal NRPs. While these countries lack specific research priority documents, their STI policies address key issues such as innovation, technology transfer, and socio-economic development. These policies align with national development agendas and prioritize areas like technology, industrial growth, and agricultural advancement. Although less formalized, these policies still provide a guide for steering research and innovation efforts towards sustainable growth.

Meanwhile, **1 country (8.33%)**—Zambia—either lacks clearly defined NRPs or do not explicitly outline their national research priorities. Countries like Zambia rely on broader national development plans or sectoral policies, which can sometimes lead to a less structured approach to research. While still prioritizing critical sectors such as agriculture, health, and economic development, the absence of formalized NRPs may present challenges in coordinating and monitoring research efforts effectively.

The diversity in how African countries approach research prioritization—whether through formal NRPs, STI policies, or broader national development plans—reflects varying degrees of formalization and structure in their research planning processes. While many countries have formal frameworks to guide research, others still depend on broader policies, and some lack clearly defined research priorities. This variability

illustrates the different approaches to research governance across the region, each with unique opportunities and challenges for enhancing research impact.

From the analysis of the SGCI-2 supported research projects, it is evident that the research efforts in these countries align with their NRPs, focusing on key areas such as agriculture, health, renewable energy, climate change, industrialization, and digital innovation. These projects aim to strengthen national research ecosystems, support socio-economic transformation, and enhance innovation, particularly in sectors that are crucial for sustainable development.

Agriculture, Food Security, and Agro-Processing

Agriculture continues to be a priority sector for many countries, impacting food security, employment, and economic growth. All the 12 councils funded projects focusing on agriculture. SGCI-2 research projects focused on biotechnology, post-harvest management, and climate-smart agricultural innovations. For example:

- ▶ **Malawi** funded biotechnology research on nitrogen-fixing bacteria to improve groundnut production and developed genetic improvement programs for aquaculture.
- ▶ **Mozambique** funded projects that developed solar drying technology for food preservation, reducing food waste and increasing the market value of perishable produce.
- ▶ **Zimbabwe** funded projects focusing on bio-fertilizers and irrigation optimization technologies to enhance agricultural productivity.
- ▶ **Uganda** funded projects that worked on alternative animal feed sources, such as cricket-based feed, to improve livestock productivity.
- ▶ **Tanzania** funded the development and commercialization of sunflower oil mini-refinery plant and avocado oil mini-extraction plant to enhance productivity and quality of sunflower oil and avocado oil in Tanzania.

These projects contribute to food security, climate resilience, and agribusiness growth, with cross-country collaborations enhancing knowledge-sharing on sustainable farming solutions.

Renewable Energy and Climate Resilience

Countries such as **Mozambique, Malawi, Zambia, Rwanda, Botswana,** and **Namibia** prioritized renewable energy and climate adaptation, focusing on sustainable energy solutions and climate-smart technologies.

Key projects included:

- ▶ **Mozambique, Malawi,** and **Zambia** developed biogas generation projects using invasive alien plants to provide clean energy while tackling environmental degradation.
- ▶ **Rwanda** funded mobile solar-powered cold storage systems to reduce agricultural post-harvest losses.
- ▶ **Botswana** supported solar mini-grid projects to improve energy access in rural communities.
- ▶ **Namibia** researched water resource management to enhance drought resilience, integrating modern hydrology with traditional conservation practices.

These efforts promote clean energy, environmental sustainability, and rural electrification, significantly improving access to renewable energy across the region.

Health and Biotechnology Innovations

Public health and biotechnology research were emphasized in **Burkina Faso, Cote d'Ivoire, Mozambique, Namibia, Senegal, Uganda,** and **Zambia,** focusing on disease prevention, herbal medicine, and public health interventions. Key research initiatives included:

- ▶ **Uganda** developed herbal-based pharmaceutical products, such as essential oil-infused cough mixtures.
- ▶ **Mozambique** and **Zambia** conducted anti-SARS-CoV-2 research, screening medicinal plant compounds for antiviral properties.

- ▶ **Senegal** established a genomic surveillance unit for monitoring infectious diseases.
- ▶ **Namibia** integrated traditional medicine research into national healthcare policies.

These projects have enhanced local pharmaceutical innovation, disease prevention strategies, and biotechnology research capacity, strengthening public health systems.

Industrialization, Technology, Research Infrastructure, and Digital Innovation

Several countries focused on industrialization and digital transformation, aligning research with national strategies for economic growth. Notable projects included:

- ▶ **Botswana** researched industrial waste recycling for sustainable manufacturing.
- ▶ **Senegal** developed bio-fertilizer technologies for commercial use, boosting agribusiness sustainability.
- ▶ **Zambia** optimized biogas purification and bottling, supporting clean energy commercialization.
- ▶ Tanzania funded the development of Gypsum Processing Technologies for Small-Scale Industries in Tanzania.

These projects enhanced digital infrastructure and research governance, strengthening national science, technology, and innovation ecosystems, supporting industrial growth, and fostering job creation.

Table 1: Number of countries with National Research Priorities

| Category | Number of Countries | Percentage (%) |
|--|---------------------|----------------|
| Countries with clear NRPs | 5 | 41.67% |
| Countries relying on STI policies and strategies | 6 | 50% |
| Countries with unspecified or no clear NRPs | 1 | 8.33% |
| Total | 12 | 100% |

These findings highlight the significant progress made by some countries in formalizing research priorities while others still depend on broader policies (Table 2). SGCI-2 supported research projects demonstrate that aligning national research priorities with sectors like agriculture, health, renewable energy, and industrialization contributes to socio-economic transformation and sustainable development in Africa.

Table 2: National Research Priorities for the funded African Countries under SGCI 2 Project

| Country | Priority Areas | Reference Documents |
|----------------------|---|---|
| Botswana | <p>Sustainable socio-economic development of Botswana and foster collaborative scientific research among academic, scientific institutions and the private sector.</p> <p>Research, technology development and transfer, innovation and development of technology driven and knowledge intensive industries.</p> <p>Participation in research and integration of S&T into all sectors of the economy and nurture creativity.</p> <p>To promote the establishment of collaborations, partnerships and linkages among stakeholders, private sector and international science, research and development community</p> <p>To build a national culture of innovation and integration of traditional knowledge into modern science.</p> | <p>National Research Guidelines</p> <p>National Development Plan 2017 https://botswana.un.org/sites/default/files/2020-10/NDP%2011%20full%202017.pdf</p> <p>National Research, Science, Technology and Innovation Policy (NRSTIP) 2011 https://unctad.org/system/files/official-document/dl1tkd2023d1_en.pdf</p> |
| Burkina Faso | <p>research in agricultural and environmental sciences;</p> <p>research in applied sciences and technologies;</p> <p>health sciences research;</p> <p>research in the human and social sciences;</p> <p>geological and mining research;</p> <p>biotechnology/biosecurity;</p> <p>innovation and the valorization of research results</p> | <p>National research and innovation policy</p> <p>Research and Innovation Sectoral Policy (PS-RI) 2018-2027 https://drive.google.com/file/d/1COYON7tQx0TeleMA8yWAI5843e8REEdE/view?usp=share_link</p> <p>FONRID Strategic Plan (2019-2023)</p> <p>National Strategy for the Development of Technologies, Inventions and Innovations (SNVTII) 2020-2024</p> |
| Cote d'Ivoire | | <p>National Development Plan 2021-2025</p> |
| Malawi | <p>Sustainable Agriculture</p> <p>Sustainable Economic Development</p> <p>Human Capital and Social Development</p> <p>Sustainable Environment</p> <p>Demography</p> <p>Governance, Peace, and Security</p> | <p>Malawi National Planning Commission: Research Agenda https://npc.mw/wp-content/uploads/2020/08/Research-Agenda-for-Malawi-2020.pdf</p> |
| Mozambique | <p>Strengthen agricultural R&I to eradicate hunger and malnutrition</p> <p>Foster health research and innovation</p> <p>Harness STI to combat climate change and secure clean energy</p> <p>Build a sustainable Blue Economy</p> <p>Strengthen R&I capacities for natural resource management or Bio-diversity</p> <p>Enhance or promote inclusive innovation</p> <p>Promote the transfer of technology Programmes.</p> <p>Promote human resource development at all levels in the areas of science, technology and innovation.</p> | <p>Mozambique National Science Technology and Innovation Policy https://docs.google.com/document/d/1-KxE4p894QJyJXATEmluoJ26Vn6-1Qfogyj76b49Pjk/edit?usp=share_link</p> <p>Mozambique Strategy of Science, Technology, and Innovation</p> <p>National Research Agenda http://www.ist-africa.org/home/default.asp?page=doc-by-id-print&docid=4317&</p> |
| Namibia | <p>Enhancing food and nutritional security</p> <p>Securing health and wellbeing</p> <p>Making a just transition to clean energy security</p> <p>Enhancing water security and sanitation</p> <p>Combating climate change</p> <p>Building a sustainable Circular Blue Economy</p> <p>Conservation and sustainable use of biological diversity</p> <p>Promoting sustainability-oriented innovation in mining</p> <p>Combating land degradation and desertification</p> <p>Mainstreaming gender in STI and promoting inclusive innovation</p> <p>Strengthening innovation in industrial manufacturing</p> <p>Responsibly harnessing Artificial Intelligence</p> <p>Strengthening biotechnology and genomics capabilities</p> <p>Strengthening nanotechnology and nanoscience capabilities</p> | <p>National Action Plan (NAP) for Namibia's Science, Technology and Innovation Policy https://docs.google.com/document/d/17zsk-rZ422WjeYVAy3ryNh5T-f48Wm3fc0--iLqA9eU/edit?usp=share_link</p> <p>National Programme for Research, Science, Technology and Innovation II (NPRSTI II) https://docs.google.com/document/d/14UxilojCgHJ6xn91X7lTtmewZ9i3RvunEwUgEN_jig/edit?usp=share_link</p> <p>National Science, Technology and Innovation Policy (NSTIP) of Namibia https://www.ecb.org.na/wp-content/uploads/2022/07/NDP5.pdf</p> <p>Research, Science and Technology Act</p> <p>Public Sector Innovation Policy</p> |

| Country | Priority Areas | Reference Documents |
|-----------------|--|--|
| Rwanda | Sustainable Energy Food Security and Smart Agriculture, Life and Health Sciences Local Production and Value Addition Digital Services, Products and Lifestyles Resilient Environment, Natural Resources and Climate change | National Research and Innovation Agenda (NRIA) https://ncst.prod.risa.rw/fileadmin/user_upload/NCST/Publications/Policies/NCST-National_Research_and_Innovation_Agenda-FINAL_10_06_2021.pdf |
| Senegal | Agriculture and Food Security Health Energy, Water and Sanitation Social and Human Sciences Mines and Geology Environment and Natural Environment Transport, construction and others | National Science, Technology and Innovation Policy (PNSTI) of the Republic of Senegal https://docs.google.com/document/d/1vQqoRlDcQTuuJGvPYSkUmIVUB4JOeiqT0jcAADFpiz8/edit?usp=share_link |
| Tanzania | Human Capital Development And Quality Livelihood: Education, Health, Food Safety, Quality & Nutrition, water sanitation and hygiene, land management, human settlement and demographics Building A Strong and Competitive Industrial Economy: Bio-economy (Green and Blue economy), energy, industry and manufacturing, transportation, extractives, agriculture, domestic, regional and global trade National Tourism and Heritage: Tourism, national heritage Sustainable Natural Resources and The Environment: Forestry and bee keeping; wildlife Cross-cutting areas: governance and accountability, climate change, disaster and risk management, leveraging technologies for development, information and Communication technology, local content, gender, entrepreneurship, policies and legislation | Tanzania Commission for Science and Technology: National Research Priorities 2021/22 - 2025/26 https://costech.or.tz/Files/Documents/1684597511.pdf |
| Uganda | Boosting household incomes and microenterprises Commercializing agriculture Supporting private sector growth Industrial development and investment Small and medium enterprise development | Uganda National Priorities https://statehouse.go.ug/national-priorities/ |
| Zambia | Climate smart agriculture | National Science and Technology Project (NSTP) https://www.mots.gov.zm/wp-content/uploads/2022/06/National-ScienceTechnology-and-Innovation-Policy-A4_Print-Ready.pdf |
| Zimbabwe | Social Sciences and Humanities; Sustainable Environmental and Resource Management; Promoting and Maintaining Good Health and National Security of Zimbabwe. | National Research Priorities of Zimbabwe, RCZ-NRPs 2012 Medium-Term Plan (MTP) 2011-2016 Zimbabwe Agenda for Sustainable Socio-Economic Transformation (ZimAsset) 2013-2018. |

3.1.1 Alignment of Funded Projects with Regional and Continental Development Agenda

SGCI-2 played a crucial role in advancing research and innovation across African countries by aligning national research priorities as well as the **Sustainable Development Goals (SDGs)** and the **African Union's Agenda 2063**. The supported projects focused on various sectors, including agriculture, food security, renewable energy, health, climate change and adaptation, industrialization, minerals technology, biotechnology and manufacturing. These initiatives were instrumental in addressing national challenges while contributing to Africa's long-term development vision. This section explores how SGCI-funded research aligned with global and continental priorities, highlighting specific country examples.

3.1.2 Sustainable Development Goals (SDGs) and Research Contributions

Finding 2: *SGCI-2 projects demonstrated strong alignment with global development priorities, with SDG 2 (Zero Hunger) emerging as the most targeted goal, addressed in 75% of countries (9 out of 12), reflecting a widespread focus on food security and agricultural innovation. SDG 3 (Good Health and Well-being) followed closely, addressed by 67% of countries, showing commitment to public health and biotechnology research. SDGs 7 (Affordable and Clean Energy) and 9 (Industry, Innovation, and Infrastructure) were each targeted in 58% of countries, illustrating efforts in renewable energy and sustainable industrialization. SDG 17 (Partnerships for the Goals) appeared in 5 countries (42%), underlining collaborative research and regional integration. These findings highlight SGCI's role in advancing a broad range of development targets through research.*

Food Security and Agricultural Innovation (SDG 2 – Zero Hunger)

Food security remains a top priority for many African countries, with SGCI 2-funded projects supporting agricultural research, climate-smart farming, value addition and post-harvest loss reduction. Countries such as **Burkina Faso, Malawi, Mozambique, Namibia, Senegal, Tanzania, Uganda, Zambia, and Zimbabwe** have implemented projects focusing on sustainable agriculture and smallholder farmer support.

In **Malawi**, researchers developed **drought-resistant maize varieties** to help farmers cope with erratic rainfall patterns, thereby enhancing food security and resilience to climate change. Similarly, **Mozambique** introduced a **solar-powered drying system** that extends the shelf life of perishable goods, reducing food waste and improving market access for farmers. These projects align directly with **SDG 2**, which aims to eradicate hunger and ensure sustainable food production systems.

In addition, **Senegal** pioneered **bio-fertilizer research using nitrogen-fixing bacteria**, an innovation that enhances soil fertility and reduces reliance on chemical fertilizers. Likewise, **Botswana** has launched a **livestock disease prevention initiative** focused on controlling tick-borne diseases, improving animal health, and boosting agricultural productivity. These efforts contribute to both **SDG 2** and the broader goal of promoting sustainable agriculture under **Agenda 2063**. **Tanzania** supported the improvement of yield and quality of meat from slaughter cattle in Tanzania through innovative feeding packages. Through this support, four cost effective innovative feeding packages for indigenous cattle breeds were formulated.

Renewable Energy and Industrial Growth (SDG 7 – Affordable and Clean Energy, SDG 9 – Industry, Innovation, and Infrastructure, SDG 12 – Responsible Consumption and Production)

Countries such as Botswana, Cote d'Ivoire, and Tanzania prioritized industrial development and clean energy adoption, aligning their research with SDG 7 (Affordable and Clean Energy), SDG 9 (Industry, Innovation, and Infrastructure), and SDG 12 (Responsible Consumption and Production).

In **Botswana**, research efforts focused on **solar-powered irrigation systems**, which enhance agricultural efficiency while reducing reliance on fossil fuels. **Tanzania**, on the other hand, has invested in **recycling industrial by-products for construction materials**, promoting sustainability and reducing environmental waste. These projects align with **SDG 12**, which promotes responsible consumption and sustainable production practices.

Zimbabwe pioneered **biogas technology research**, converting agricultural waste into clean energy for rural

households, thus contributing to **SDG 7 and SDG 13 (Climate Action)**. Meanwhile, **Mozambique** has collaborated with Malawi and Zambia on a **regional renewable energy initiative**, ensuring that clean energy solutions reach underserved communities. These initiatives reflect a broader commitment to sustainable industrialization, a key objective under **Agenda 2063's Goal 1 (A Prosperous Africa)**.

Health and Biotechnology Research (SDG 3 – Good Health and Well-being)

Health research was major focus for several SGCI-supported countries, particularly **Burkina Faso, Cote d'Ivoire, Mozambique, Namibia, Senegal, Uganda, and Zambia**, where projects addressed infectious disease control, biotechnology, and public health system improvements.

Uganda made notable strides in herbal-based pharmaceutical research, including the development of **essential oil-based cough and cold treatments**, which provide affordable alternatives to conventional medicine. Similarly, **Senegal** implemented a **genomic surveillance initiative** aimed at early detection of infectious diseases such as Hepatitis E, improving public health interventions. In collaboration with Zambia, Mozambique supported the Geo-spatial epidemiological modelling of selected climatic and environment factors that may shape COVID-19 pandemic. These projects directly support **SDG 3**, which seeks to promote good health and well-being through medical advancements.

In addition, **Cote d'Ivoire** prioritized **water sanitation and hygiene research (SDG 6 – Clean Water and Sanitation)**, investing in technologies that improve access to clean drinking water, thereby reducing waterborne diseases. Likewise, **Namibia** integrated **traditional medicine research** into its national health strategy, validating indigenous healing practices through scientific methods.

3.1.3 Alignment of SGCI-2 projects with the AU Agenda 2063 Goals

Finding 2: Over 90% of countries (11 out of 12) aligned their SGCI-2 projects with Goal 7 (Cultural Identity and Indigenous Knowledge), highlighting the growing integration of traditional knowledge into scientific research. Goal 3 (Healthy and Well-nourished Citizens) was addressed by 83% of the countries, reflecting a strong health and nutrition research focus. Additionally, Goal 1 (A Prosperous Africa) appeared in 58% of the countries, signaling a shared commitment to economic development and industrialization. Notably, Goal 20 (Africa as a Strong Global Partner) was reflected in 4 countries (33%), emphasizing regional and global collaboration in R&D. These patterns underscore SGCI-2's support in operationalizing Agenda 2063 through country-specific priorities (Table 3, Figure 1,2).

Economic Development and Regional Collaboration (Goal 1 – A Prosperous Africa)

Under **Agenda 2063's Goal 1**, the SGCI-supported projects contributed to industrialization, technology transfer, and economic growth in **Botswana, Mozambique, Namibia, Tanzania, and Zimbabwe**. In **Mozambique**, a trilateral partnership with Malawi and Zambia resulted in a **large-scale renewable energy initiative**, providing sustainable power solutions to rural communities. Similarly, **Zimbabwe** implemented **community-based solar mini-grids**, ensuring that off-grid areas benefit from clean and affordable electricity. These projects exemplify Africa's commitment to economic sustainability through innovative research. **Zambia** also made significant contributions to economic research by developing a **policy framework for public-private partnerships in R&D**. This initiative strengthens the link between academia, industry, and government, reinforcing Africa's industrial growth strategy under **Agenda 2063**.

Environmental Sustainability and Climate Resilience (Goal 6 – Blue/Green Economy, Goal 7 – Cultural Identity and Indigenous Knowledge)

Several SGCI-supported projects aligned with **Goal 6 (Environmental Sustainability)** and **Goal 7 (Cultural Identity and Indigenous Knowledge)** by integrating climate resilience and traditional knowledge into research strategies.

Tanzania developed smart irrigation systems using sensor-based technology to optimize water use in agriculture, supporting both climate adaptation (Goal 6) and sustainable farming (Goal 5 – Modern Agriculture). Similarly, Cote d'Ivoire launched a marine ecosystem conservation initiative, promoting sustainable fishing and coastal biodiversity protection.

In the area of indigenous knowledge, **Mozambique** documented **medicinal plant species for traditional healing**, integrating scientific validation with local practices. Likewise, **Namibia** researched **indigenous water conservation techniques**, combining modern hydrology with traditional methods to enhance water security. These projects demonstrate how African research can leverage cultural heritage while advancing scientific innovation.

Table 3: Alignment of SGCI 2 Funded Projects with Sustainable Development Goals (SDGs) and AU Agenda 2063

| Country | Sustainable Development Goals (SDGs) | African Union Agenda 2063 |
|---------------|--------------------------------------|----------------------------|
| Botswana | SDGs 7, 9 and 12 | Goals 1,5 and 7 |
| Burkina Faso | SDGs 1,2 3 8 and 13 | Goals 1, 3,4, 5 and 20 |
| Cote d'Ivoire | SDGs 3,6, 7, 9, 12, 13 and 15 | Goals 3, 4, 6, 7 and 10 |
| Malawi | SDGs 2, 7, 9, 17 | Goals 1, 3, 4, 5, 7, 20 |
| Mozambique | SDGs 2, 3, 7 and 13 | Goal 1, 3 and 7 |
| Namibia | SDGs 2,3, 6 and 13 | Goals 1, 3, 5 and 7 |
| Rwanda | SDGs 7, 9, 17 | Goals 3, 4, 5, 7, 20 |
| Senegal | SDGs 2, 3, 6, 7, 12, 13, and 16 | Goals 3, 4, 5, 6, 7 and 10 |
| Tanzania | SDGs 2, 4, 8, 9 12 and 17 | Goals, 1, 6, 7 and 10 |
| Uganda | SDGs 1, 2, 3, 5, 9, 17 | Goals 1, 3, 4, 5, 17, 20 |
| Zambia | SDGs 2, 3, 5, 7, 9, 17 | Goals 3, 4, 5, 7, 17, 20 |
| Zimbabwe | SDGs 2,4,7,8 9, 12.14, 15 and 17 | Goals 1,5,6, 7, and 10 |

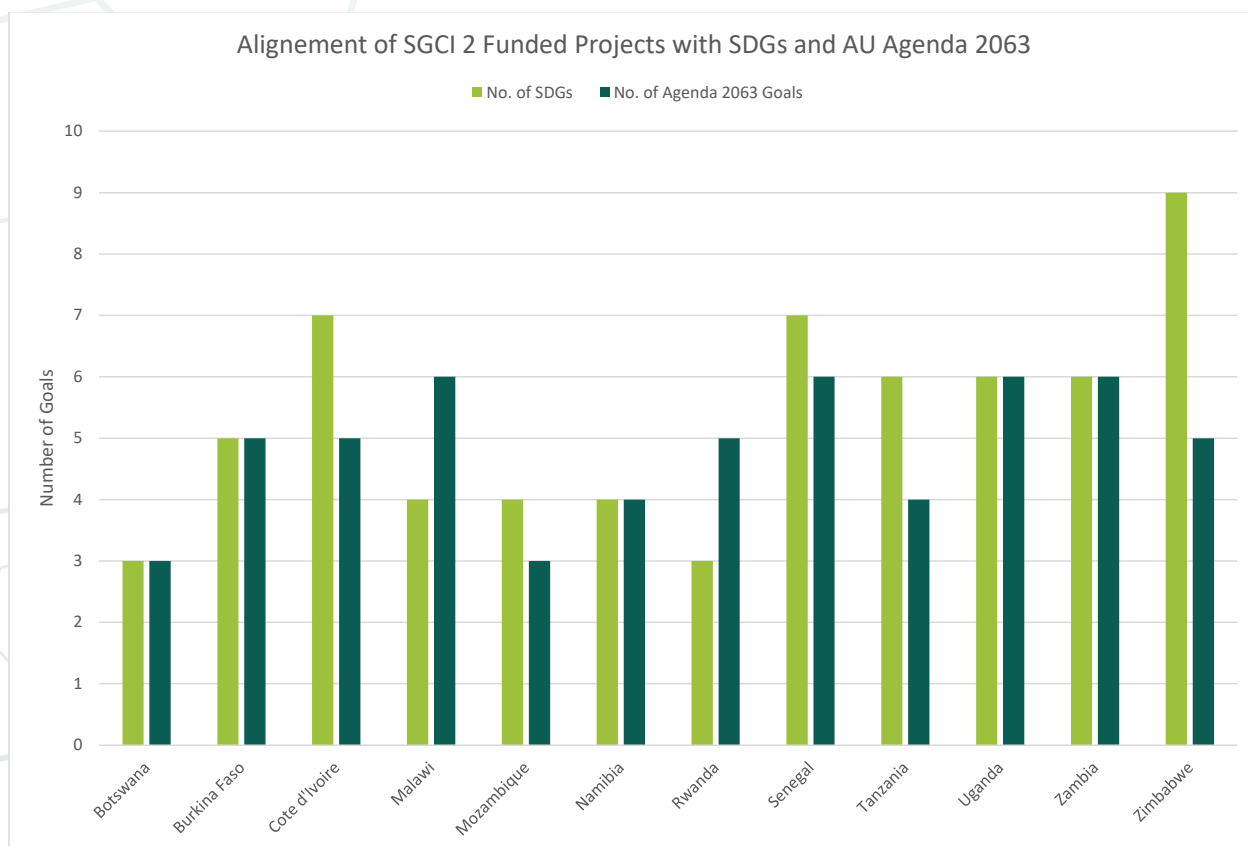


Figure 1: Percentage of countries aligning projects with AU Agenda 2063 goals.

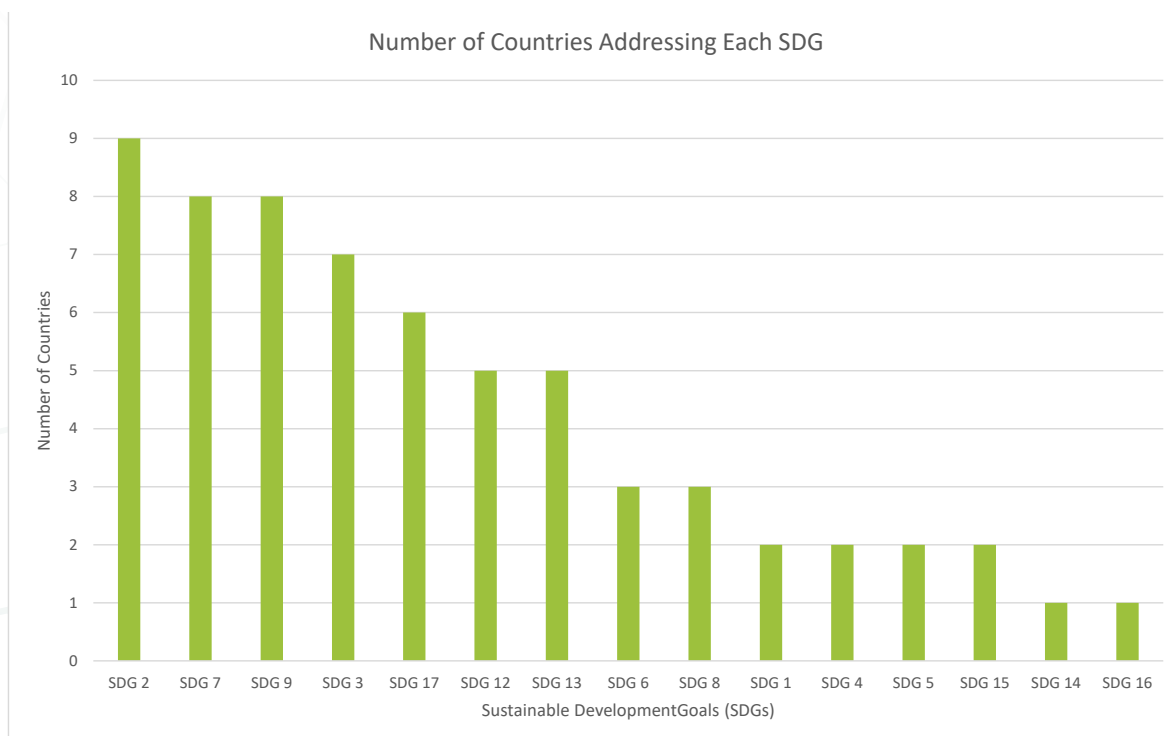


Figure 2: Distribution of Goal 1 and Goal 20 across SGCI-2 countries

3.2 Capacity Building of Researchers

Finding 3: *SGCI-2 significantly strengthened research capacity and human capital across Africa, with over 120 students trained across at least 8 countries, including Botswana, Côte d’Ivoire, Malawi, Mozambique, Rwanda, Uganda, Tanzania and Zambia. Notably, Zambia led with 47 students trained (3 PhD, 11 MSc, and 33 BSc) followed by Mozambique with 21 students (1PhD, 4 MSc, and 16 BSc). Researchers’ training was also notable—Malawi trained 46 researchers, while Senegal trained 50+ experts in advanced scientific techniques. Community engagement flourished, with Mozambique training over 100 community members (i.e., farmers, traditional practitioners, milk producers and resellers, fruit suppliers and women groups), and Uganda and Malawi expanding partnerships for technology transfer and innovation uptake (Table 4).*

The SGCI 2 project significantly contributed to capacity building across various African countries, strengthening human capital development, research expertise, and community engagement. The achievements recorded under this phase reflect investments in student training, researcher development, and institutional collaborations aimed at fostering knowledge generation and application.

3.2.1 Student Training and Research Capacity Development

Several countries made substantial progress in training students at different academic levels. In Botswana, three female Master’s students and four Ph.D. students were trained. Furthermore, cross-border collaboration with Zimbabwe was established, focusing on joint research in mining technology and value addition. Particularly, in **Zimbabwe** 11 Master’s students were trained in different programmes including Biostatistics, medicinal chemistry, food science and nutrition, Natural products and chemistry, Vaccinology, water resources management, communication engineering, crop science, Big data analytics, among others. In **Côte d’Ivoire**, five Master’s students benefited from training programs, enhancing the country’s research capacity. **Malawi** reported the completion of dissertations by eight Bachelor’s (three females, five male), one Master’s (male), and one Ph.D. (male) student. Additionally, three Master’s students successfully completed a one-year internship program at Mzuzu University.

Similarly, **Mozambique** trained 21 students, comprising one Ph.D., four Master's, and 16 Bachelor's students. **Rwanda** recorded mentorship and training for seven Master's and one Ph.D. student under SGCI-supported programs. In **Uganda**, four Master's students (three female, one male) completed their studies, while three female Bachelor's students graduated. **Zambia** reported academic training for three Ph.D. students (two male, one female), 11 Master's students (five male, six female), and 33 Bachelor's students (20 male, 13 female).

3.2.2 Training of Researchers and Institutional Capacity Strengthening

The SGCI-2 program facilitated research training initiatives aimed at improving technical expertise among researchers. In **Malawi**, 46 researchers received training in research proposal writing, and multiple capacity-building workshops were organized for the staff of the National Commission for Science and Technology (NCST) by SGCI Collaborating Technical Agencies (CTAs), including the African Academy of Sciences (AAU), Human Sciences Research Council (HSRC), and African Centre for Technology Studies (ACTS). **Senegal** recorded targeted research training, with 18 researchers benefiting from EPIVHE II Project training on PCR-based pathogen detection and bioinformatics tools. Additionally, 20 agricultural scientists received training in symbiotic nitrogen fixation and bio-fertilizer application under the Fertilisation Innovante par Rhizo-Inoculation project, while 12 chemists and food safety experts were trained in heavy metal analysis and iodine quantification under the Salt Quality Project.

The **Uganda National Council for Science and Technology (UNCST)** trained 19 staff members, including two in Prince2 project management, two in grants management, and 15 in translating Science, Technology, and Innovation (STI) policies into regulations. In **Zimbabwe**, 6 RCZ staff on staff development were trained on: Monitoring & Evaluation; Sustainable livelihood technologies; office management; accounting and corporate governance; purchasing and supply chain management; and information systems. Furthermore, **Tanzania, Namibia, and Burkina Faso** were involved in various capacity-building initiatives, though specific training data was not provided in the reporting period.

3.2.3 Community Training and Technology Transfer

SGCI-2 also emphasized knowledge dissemination and community engagement. In **Mozambique**, 31 traditional practitioners were trained in developing herbal remedies for commercialization in the local communities of Manica and Sussundenga. Additionally, 58 participants, including milk producers and resellers, received training in milk processing using native fruits such as *maphilwa* and *masala*, along with financial management skills. A group of 20 *masala* fruit suppliers (14 women) was trained in fruit quality assessment, and they were subsequently tasked with providing 250 kg of fruit each, following established quality criteria. Moreover, 40 participants (22 women) from the hospitality and agrarian extension sectors were trained in utilizing native fruit pulp and juice in cooking. In **Tanzania** livestock keepers were trained on cost-effective innovative feeding packages and to ensure the improvement of the yield and quality of meat from the indigenous cattle.

In **Uganda**, 22 bakers (13 males, nine female) were trained in implementing simplified baking standards, while 30 farmers (17 males, 13 female) received training on best agricultural practices. **Malawi** also established partnerships aimed at strengthening community-based research and technology transfer. These included collaborations between the **Natural Resources College (NRC) of Lilongwe University of Agriculture and Natural Resources (LUANAR)** and **ICRISAT Malawi**, as well as partnerships between **NRC, University of Ghent, and ISPA Research Institute in Italy**. Additionally, **Mzuzu University** partnered with the **Malawi Department of Fisheries** to support further research and enhance the uptake of research findings. Another partnership for technology transfer and commercialization of a vegetable solar drier was established between **Farmers' Cooperatives, German Technical Cooperation (Lilongwe), and LUANAR**.

3.2.4 Collaboration, Additional Funding, and Policy Impact

The implementation of SGCI-2 facilitated policy advancements and research funding mobilization. In **Malawi**, the operationalization of the Science and Technology Fund was accelerated, with **MK 291 million** allocated in the 2021/22 financial year and **MK 450 million** in the 2022/23 financial year by the national treasury. The development of a **National Research Agenda** further enhanced Malawi's research ecosystem, enabling researchers to secure approximately **MK 200 million** in government grants.

In **Rwanda**, the **National Commission for Science and Technology (NCTS)** mobilized over **1 billion Rwandan francs** to fund research and innovation efforts. Similar efforts were undertaken in other participating countries, highlighting SGCI-2's role in strengthening national research funding mechanisms and fostering collaborative networks among universities, research institutions, and industry stakeholders.

Table 4: Capacity Building Outputs for SGCI 2 funded Projects

| Country | Students Trained | Researchers Trained | Community Groups | Collaboration and additional funding |
|----------------------|---|---|--|--|
| Tanzania | 6 MSc students trained and graduated | 15 technicians and 6 engineers trained | | <p>An MoU signed between Sokoine University of Agriculture (SUA) and the Ministry of Livestock and Fisheries in knowledge sharing, expertise and technology.</p> <p>-Increased collaborations and interactions between Universities/R&D institutions and industry/private sector.</p> <p>- The Deputy Minister for Agriculture visited Sokoine University of Agriculture to explore the possibility to transfer the technology</p> |
| Mozambique | 21 students: 1PhD, 4 MSc. & 16 BSc. | | <p>- Solar drying technology disseminated to a group farmers</p> <p>- 31 traditional practitioners trained in the development of herbal remedies for commercialization</p> <p>-58 milk producers and resellers (36 women) trained in milk processing using native fruits (maphilwa and masala) and financial management.</p> <p>– 20 participants (14 women) small masala fruit suppliers trained in fruit quality criteria.</p> <p>.</p> <p>-40 participants (22 women) from hospitality and agrarian extension trained in the use of native fruit pulp and juice in cooking.</p> | |
| Botswana | 3 female Master's students and 4 Ph.D. students. | | | Cross-border collaboration between Botswana and Zimbabwe through joint research in mining technology and value addition. |
| Cote d'Ivoire | 5 Msc students | Capacity-building workshops conducted for early-career researchers and research administrators, focusing on grant writing, research management, and innovation systems strengthening. | Engagement with local agricultural cooperatives and small-scale producers through knowledge transfer activities, including training on improved production practices, value addition, and technology adoption. | <ul style="list-style-type: none"> Strengthened collaboration with national research institutions and regional partners under SGCI frameworks, including linkages with West African research networks. Development with government agencies and private sector actors to support research uptake and innovation scaling. |
| Namibia | Postgraduate students (including Master's level) were engaged through co-supervised, field-based research projects (e.g., OFULA project). | Researchers and grant managers trained through joint capacity-building initiatives with Mozambique (FNI), including proposal writing, ethics, and peer review processes. | Local communities engaged through projects integrating indigenous knowledge systems, including traditional practitioners contributing to biodiversity conservation and land management research. | <ul style="list-style-type: none"> Participation in regional platforms such as SANBio and Evipol for policy and research alignment. Implementation of the Open Grant Management System (OGMS) to strengthen research governance. |

| Country | Students Trained | Researchers Trained | Community Groups | Collaboration and additional funding |
|--------------|--|---|---|---|
| Senegal | | <p>EPIVHE II Project trained 18 researchers on PCR-based pathogen detection and bioinformatics tools .</p> <p>Fertilisation Innovante par Rhizo-Inoculation trained 20 agricultural scientists on symbiotic nitrogen fixation and bio-fertilizer application .</p> <p>Salt Quality Project trained 12 chemists and food safety experts on heavy metal analysis and iodine quantification .</p> | | |
| Burkina Faso | 8 students supported (5 MSc and 3 BSc) | 22 researchers and technical staff trained in research proposal development, project implementation, and monitoring and evaluation | <ul style="list-style-type: none"> · 50 smallholder farmers and local producers engaged in training on improved agricultural practices and value addition · 18 community-based actors (including cooperatives and extension agents) involved in knowledge dissemination and local innovation uptake | 3 institutional collaborations reinforced at national level (universities–research institutes–ministries) |
| Malawi | 8 BSc (3 F and 5M), 1 MSc (M), and 1 PhD (M) completed their dissertations. 3 MSc each completed 1-year internship program at Mzuzu Uni | 46 researchers trained in research proposal writing Several capacity building workshops and trainings for NCST staff by SGCi CTAs (AAU, HSRC, and ACTS) | | <p>The SGCi -2 project implementation stimulated the operationalisation of the Science and Technology Fund (In FY 21/22 MK 291M and in 22/23, MK 450M released by treasury)</p> <p>Development of a National Research Agenda</p> <p>Research grants of est MK200million secured by various researcher from the Malawi govt</p> <p>Partnership between Natural Resources College of Lilongwe University of Agriculture and Natural Resources (NRC) and ICRISAT Malawi.</p> <p>Partnership between NRC, University of Ghent and ISPA Research Institute in Italy</p> <p>Mzuzu University has entered into a partnership with the Malawi Department of Fisheries to support further research and uptake of research results</p> <p>Partnership for technology transfer and commercialization for vegetable solar drier with the Farmers Co-operative, German Technical Co-operation (Lilongwe) and Lilongwe University of Agriculture and Natural Resources was established.</p> |
| Rwanda | 7 masters and 1 PhD students mentored under this project | Capacity building and Mentorships of students and junior researchers | Training of end users of developed products or services | NCST has mobilized over 1 billion Rwf towards efforts on funding research and innovation |
| Uganda | 6 students trained (4 MSc and 2 BSc). 5 female and 1 male. | | Bakers were trained in the implementation of simplified cake and bread standards. | Collaboration with the Uganda National Bureau of Standards (UNBS) UNCST entered into cross border collaborations with NRF Kenya, FONSTI Cote d'Ivoire |

| Country | Students Trained | Researchers Trained | Community Groups | Collaboration and additional funding |
|----------|---|---|---|---|
| Zambia | 47 students trained (24 males and 23 females) 3 PhDs, 11 MScs, and 33 BScs | | | A framework for Public Private Partnerships (PPPs) in Research and Innovation (R&I) was developed to ensure effective identification and implementation of PPP in research and innovation |
| Zimbabwe | 12 students trained (2 PhD, 6 MSc, and 4 BSc) | 28 researchers and research support staff trained in proposal writing, research management, innovation, and knowledge translation | <ul style="list-style-type: none"> · 65 smallholder farmers and agri-entrepreneurs trained in sustainable production practices and value addition · 20 community-based practitioners engaged in technology adoption and dissemination initiatives | <ul style="list-style-type: none"> · 4 institutional partnerships established between universities, research institutes, and industry · Participation in 2 cross-border collaborations, including joint research with Botswana on mining and mineral value addition |

3.3 Research Outputs, Infrastructure, and Institutional Strengthening

Finding 4: *SGCI-2 catalyzed research productivity and innovation across Africa, with Botswana, Namibia, and Uganda developing over 25 innovative products and prototypes. Rwanda led in publications, with 25+ peer-reviewed articles, while Senegal advanced digital tools for food safety and epidemiological monitoring. Infrastructure gains included new labs, research equipment, and demonstration sites in Malawi, Senegal, Burkina Faso, and Uganda, enhancing national research capabilities. Rwanda's RIGMS system further improved grants transparency and governance.*

The SGCI 2 facilitated significant advancements in research outputs, infrastructure, and technology development across multiple African countries. These contributions supported knowledge generation, innovation, and commercialization while strengthening national research and innovation ecosystems.

3.3.1 Products and Prototypes

Several countries developed **innovative products and prototypes** under SGCI-2, contributing to technological advancements and commercialization potential. **Botswana** successfully developed three innovation products, alongside six completed technical reports, two policy briefs, and four research papers. Similarly, Namibia made substantial progress, developing six innovation products, seven technical reports, and three policy briefs, although five research papers remained incomplete at project closure. Uganda contributed significantly to prototype development, with two candidate wheat varieties, four potential commercial cricket feed prototypes, and five additional herbal-based products, including essential oils, a cough mixture, herbal jelly, and liquid soap. Furthermore, Uganda developed three shea butter-based products—Nilo Soap, Nilo Cream, and Nilo Body Lotion—as well as propolis-infused body cream and tea. Zambia played a crucial role in sustainable energy innovations, developing biodigesters for biogas generation, complete with a purification and bottling unit, while also optimizing the production process of two local beverages.

3.3.2 Knowledge Outputs

SGCI-2 played a pivotal role in enhancing knowledge production through scientific publications, policy briefs, and research models. **Burkina Faso** contributed significantly with scientific publications and policy briefs focused on malaria control and sustainable agriculture. **Rwanda** demonstrated high research productivity, with over 25 publications in refereed journals and several draft manuscripts in preparation. **Senegal** also made valuable contributions, publishing three scientific articles on foodborne pathogen epidemiology, developing a risk-mapping model for Hepatitis E transmission, and producing a public health policy brief. Further research outputs from Senegal included two conference presentations on molecular

food safety, two scientific articles on rhizobium-cowpea interactions, and a farmer training manual on bio-fertilization. **Uganda** made notable contributions by publishing one scientific journal paper and one book chapter, strengthening research in STI and product development. **Zambia** also enriched the knowledge landscape by publishing a journal article on integrating gender dimensions in STI participation and another on geospatial environmental factors affecting the survival and transmission of the SARS-CoV-2 virus.

3.3.3 Research Infrastructure and Equipment

SGCI-2 investments significantly improved research infrastructure and facilitated access to critical research equipment. **Malawi** benefited from the acquisition of several research tools, including a Bomb Calorimeter, autoclave machines, and freezers, which supported research activities across various disciplines. **Senegal** saw substantial advancements in laboratory infrastructure, including the establishment of a new molecular biology lab for foodborne virus testing at UCAD, the development of a national food safety database, and the enhancement of spectroscopy labs at MESRI for iodine and heavy metal analysis. Additionally, **Senegal** upgraded soil microbiology labs at ISRA-CERAAS and introduced high-throughput sequencing capabilities for soil bacteria analysis. **Burkina Faso** established agricultural demonstration sites for soil conservation techniques, which directly benefited local farmers. Uganda expanded its research capacity by establishing three mother gardens for aromatic plants, with 1 acre at Bishop Stuart University, 10 acres at Mbarara Zonal Agriculture Research Station, and 0.25 acres at Afri-Banana Ltd, a private sector partner. In Zambia, research efforts contributed to understanding the abundance and spatial distribution of invasive alien species, which could be utilized for biomass energy generation. **Tanzania** supported the design and manufacturing of five affordable plants 1) sunflower oil mini-refinery 2) avocado mechanical mini extractor 3) sunflower harvester 4) sunflower thresher 5) improved sunflower oil processor. These affordable plants contributed to the enhancement of productivity and quality of avocado oil and sunflower oil in Tanzania. Mozambique constructed and installed a [greenhouse solar dryer technology Boane District at the Agrarian Institute of Research of Mozambique, to particularly support the agricultural community grouped in cooperative; to reduce post-harvest loss.](#)

3.3.4 Research and Innovation Grants Management System (RIGMS)

The implementation of the Research and Innovation Grants Management System (RIGMS) in **Rwanda** significantly improved the efficiency and transparency of research funding allocation and monitoring. By streamlining grant management processes, the system enhanced accountability, reduced administrative burdens, and facilitated the equitable distribution of research funds among scientists and innovators. The adoption of RIGMS represents a crucial step toward strengthening national research governance structures and ensuring sustained investment in science and technology.

3.3.5 Technological Advancements

Digital technologies played a crucial role in the SGCI-2 projects, enabling innovative solutions in healthcare, data management, and scientific research. **Burkina Faso** developed a web-based medical prescription database (<https://info-med-27bf9.web.app/>) to promote rational drug use, ensuring greater accessibility and efficiency in medical prescription management. The country also implemented **Go.Data**, a functional digital health platform designed for epidemiological monitoring. Senegal contributed to digital advancements by developing a national food safety database and establishing a living collection of rhizobia strains for bio-fertilizer research. **Zambia** made technological strides by introducing a model aimed at improving collaboration among government, academia, and industry, strengthening knowledge exchange and fostering partnerships in research and innovation.

Table 5: Summary of Research Outputs, Innovation Products, and Technological Advancements Across Participating Countries

| Country | Products/ Prototypes | Knowledge Outputs | Equipment/Infrastructure | Technology |
|----------------------|---|--|---|--|
| Botswana | Innovation Products: 3 developed | 6 technical Reports: 2 Policy Briefs developed 4 Research Papers (incomplete) | | |
| Burkina Faso | | Scientific publications and policy briefs on malaria control and sustainable agriculture. | Agricultural demonstration sites for soil conservation techniques, benefiting local farmers. | A web-based medical prescription database (https://info-med-27bf9.web.app/) for rational drug use. A functional digital health platform (Go.Data) used in epidemiological monitoring. |
| Cote d'Ivoire | <ul style="list-style-type: none"> Development of agro-processing prototypes for value addition in cassava and cocoa value chains Pilot innovations in climate-smart agricultural practices | <ul style="list-style-type: none"> 4 scientific publications (peer-reviewed and draft manuscripts) 2 policy briefs on agricultural productivity and food security 3 technical reports on value chain enhancement and rural innovation systems | <ul style="list-style-type: none"> Establishment of pilot processing units for cassava and cocoa Upgrading of laboratory facilities for food quality and safety analysis | <p>Introduction of improved cassava processing technologies</p> <p>Deployment of digital advisory tools for farmers on climate-smart agriculture</p> |
| Malawi | | | <p>Several research equipment (Bomb Calorimeter; Autoclave machines; freezers etc) secured through the projects.</p> <p>A parabolic greenhouse dryer system for food preservation of fruits and vegetables designed, constructed, and its performance evaluated</p> | |
| Mozambique | <ul style="list-style-type: none"> - 151 plant species identified - 44 invasive alien plants identified <p>Essential oil from Eucalyptus sp.</p> | 2 publications (not complete at the time of project closure) | The greenhouse solar dryer technology constructed and installed | Solar drying technology |
| Namibia | <ul style="list-style-type: none"> 6 innovation products developed across priority research areas Applied research prototypes supporting local industry and socio-economic development | <p>Technical Reports: 7 completed.</p> <p>Policy Briefs: 3 developed.</p> <p>Research Papers: 5 not complete at time of closure.</p> <p>Innovation Products: 6 developed.</p> | <ul style="list-style-type: none"> Strengthened research infrastructure through acquisition of laboratory and field equipment Enhanced institutional capacity for applied research and innovation activities | <ul style="list-style-type: none"> Development and application of context-specific technologies supporting research and innovation outputs Improved systems for knowledge generation, dissemination, and uptake |
| Rwanda | Protocols, methods, techniques, prototypes and services developed/ designed. More than 18 Projects have shown potential for commercialization | Production of draft manuscripts for publication More than 25 publications in refereed journals. | | |

| Country | Products/ Prototypes | Knowledge Outputs | Equipment/Infrastructure | Technology |
|----------|--|---|---|------------|
| Senegal | | <p>3 scientific articles on foodborne pathogen epidemiology</p> <p>1 risk-mapping model for Hepatitis E transmission</p> <p>1 public health policy brief</p> <p>2 conference presentations on molecular food safety.</p> <p>2 scientific articles on rhizobium-cowpea interactions</p> <p>1 database of nitrogen-fixing rhizobia strains</p> <p>1 farmer training manual on bio-fertilization</p> <p>1 patent application on a rhizobium-based inoculant.</p> <p>2 scientific articles on iodine stability and heavy metal contamination</p> <p>1 policy brief on salt iodization enforcement</p> <p>1 database of salt quality assessments across Senegal.</p> | <p>New molecular biology lab for foodborne virus testing at UCAD</p> <p>Establishment of a genomic surveillance unit for Hepatitis E</p> <p>Development of a national food safety database.</p> <p>Upgraded soil microbiology labs at ISRA-CERAAS</p> <p>Established a living collection of rhizobia strains for bio-fertilizer research</p> <p>Introduced high-throughput sequencing capabilities for soil bacteria.</p> <p>Enhanced spectroscopy labs at MESRI for iodine and heavy metal analysis.</p> | |
| Tanzania | <p>Six (6) engineering drawings designed; two sunflower oil mini-refinery; one avocado mechanical mini extractor; one sunflower harvesting machine; one threshing machine; and one improved sunflower oil</p> | <p>One (1) publication and 4 manuscripts submitted for review prior publication in peer review journals (at the time of project closure)</p> <p>Two policy briefs developed</p> | <p>Five affordable plants manufactured 1) sunflower oil mini-refinery 2) avocado mechanical mini extractor 3) sunflower harvester 4) sunflower thresher 5) improved sunflower oil processor</p> | |
| Uganda | <p>2 candidate wheat varieties</p> <p>4 prototypes of potential commercial crickets' feeds</p> <p>5 other prototypes developed (2 Essential Oil Products; 1 Cough Mix; 1 body herbal jelly and 1 liquid soap)</p> <p>1 bread and 1 cake standard</p> <p>3 shea butter-based products developed (Nilo Soap, Nilo Cream, and Nilo Body Lotion.)</p> <p>2 products developed (Propolis infused body cream and Propolis infused tea)</p> | <p>1 Scientific Journal paper published</p> <p>1 book chapter published</p> | <p>3 mother gardens established for aromatic plants</p> <p>1 acre at Bishop Stuart University; 10 acres at Mbarara Zonal Agriculture Research Station; 0.25 acres at Afri-Banana Ltd-(Private sector partner).</p> | |

| Country | Products/ Prototypes | Knowledge Outputs | Equipment/Infrastructure | Technology |
|-----------------|--|--|---|--|
| Zambia | <p>Biodigesters for biogas generation (complete with a biogas purification and bottling unit)</p> <p>Isolation and culturing of live SARS-CoV-2 virus and screening of candidate plant for viral growth inhibition;</p> <p>Optimization of the production process of two local beverage. The project fostered collaborations with the Science Granting Councils and researchers in Mozambique and Malawi, enhancing knowledge exchange and partnership. The project contributed to</p> | <p>A Policy brief on triple-helix model for collaboration</p> <p>A framework for PPP in R&I projects</p> <p>A policy brief on PPP framework for R&I</p> <p>Knowledge on</p> <p>1 journal article on integration of gender dimensions in participation in STI published.</p> <p>1 journal article on geospatial environmental factors and meteorological conditions affecting the survival and transmission of SARS-CoV-2 virus</p> | | A solar drying technology for drying fruits and vegetables |
| Zimbabwe | <ul style="list-style-type: none"> • Development of digital research management and coordination tools to support the Research Council of Zimbabwe (RCZ) • Prototype systems for research tracking and grant management | <ul style="list-style-type: none"> • Technical reports on research coordination and funding mechanisms • Policy-oriented outputs supporting national research governance and innovation systems • Documentation supporting institutional strengthening and research oversight | Software acquired aiding RCZ to conduct its activities smoothly | <ul style="list-style-type: none"> • Implementation of digital platforms for research administration, monitoring, and evaluation • Adoption of information management systems to streamline research processes and reporting |

4. LESSONS LEARNT AND BEST PRACTICES

Finding 5: *SGCI-2 revealed that aligning research with national priorities, as seen in Malawi, Rwanda, and Zambia, improves policy uptake. Capacity-building efforts in Uganda, Mozambique, and Senegal boosted sustainability, while public-private collaborations enhanced innovation uptake in Zambia and Senegal. Despite prototype successes, research commercialization remains a challenge across many countries. Best practices include establishing digital grants management systems (Rwanda’s RIGMS), promoting applied research, fostering regional partnerships (e.g., the tri-country biogas project), and integrating open science for better policy engagement and regional collaboration.*

The implementation of the SGCI-2 provided valuable insights into strengthening national research ecosystems, improving research governance, and fostering collaboration among science granting councils, universities, industries, and policymakers. This section highlights key lessons from the initiative and best practices that have contributed to the success of research projects across the 12 participating countries.

4.1 Lessons Learnt

Alignment of Research Funding with National Priorities Enhances Impact

One of the most significant lessons from SGCI-2 is that aligning research projects with National Research Priorities (NRPs) ensures that funded initiatives address pressing national and regional challenges. Countries that linked research funding to their development strategies—such as Malawi’s National Research Agenda, Rwanda’s National Strategy for Transformation, and Zambia’s National Industrial Policy—demonstrated greater policy uptake of research findings.

Capacity Building Strengthens Research Sustainability

SGCI-2 demonstrated that investment in postgraduate training, mentorship programs, and researcher development enhances national research capabilities. Countries that emphasized capacity building—such as Uganda, Senegal, and Mozambique, which trained early-career researchers in biotechnology, climate-smart agriculture, and epidemiology—benefited from stronger national innovation ecosystems.

Multi-Stakeholder Collaboration Improves Research Uptake

The initiative showed that collaboration between academia, industry, and government leads to greater research impact. Countries that engaged private sector actors, such as Zambia’s biogas commercialization research and Senegal’s bio-fertilizer initiatives, saw improved research uptake and market-driven innovation. Strengthening public-private partnerships was a critical success factor.

Regional and Cross-Border Research Enhances Knowledge Exchange

Research projects that involved regional partnerships demonstrated greater knowledge-sharing and resource optimization. The Mozambique-Malawi-Zambia trilateral biogas energy project is a strong example of how regional collaboration can drive impactful research. This lesson underscores the need for continued cross-country research networks.

Research Commercialization Remains a Challenge

Despite advances in research and innovation, commercializing research outputs remains a challenge in many countries. While prototypes and patents have been developed in Uganda, Botswana, and Zimbabwe, translating these innovations into market-ready products requires stronger linkages with the private sector, improved intellectual property policies, and support for technology transfer.

Digital Research Management Systems Improve Governance

Countries that adopted digital research management tools—such as Rwanda’s Research and Innovation Grants Management System (RIGMS) and Burkina Faso’s web-based medical prescription database—benefited from improved research governance, funding allocation, and transparency. Digitalization is a best practice that can improve research efficiency across the continent.

4.2 Best Practices

Institutionalizing Research Grants Management for Efficiency

Countries that developed structured grants management systems—such as Rwanda, Senegal, and Uganda—ensured better coordination, accountability, and monitoring of research projects. Establishing digital grants management platforms enhances the ability of science granting councils to track funding, assess research impact, and ensure transparency in fund allocation.

Strengthening Public-Private Partnerships for Research Impact

A key best practice from SGCI-2 is the integration of industry in research and innovation projects. For example, Senegal’s collaboration with agricultural enterprises on bio-fertilizer production demonstrated that engaging industry stakeholders early in research processes leads to smoother commercialization and greater societal impact.

Investing in Applied Research for Socioeconomic Development

Countries that prioritized applied research—such as Zimbabwe’s bio-fertilizer program and Botswana’s solar mini-grid initiative—were able to directly address local challenges while creating economic opportunities. Applied research ensures that scientific discoveries translate into practical solutions for communities.

Promoting Open Science and Data Sharing for Collaboration

SGCI-2 highlighted the importance of open-access research platforms and data-sharing policies to facilitate knowledge exchange. Countries like Senegal and Burkina Faso, which developed national food safety and health databases, demonstrated how open science can improve evidence-based policymaking and regional collaboration.

Supporting Multidisciplinary and Regional Research Networks

Countries that participated in cross-border research collaborations, such as Mozambique, Malawi, and Zambia’s biogas research partnership, benefited from shared expertise, infrastructure, and funding. Encouraging interdisciplinary research that brings together experts from agriculture, health, energy, and climate sciences is a proven best practice.

Enhancing Policy Engagement to Maximize Research Impact

Countries where science granting councils worked closely with policymakers—such as Malawi and Rwanda—saw greater integration of research findings into national development plans and policy frameworks. Establishing structured mechanisms for research-policy engagement ensures that scientific discoveries inform decision-making at the highest levels.

5. CONCLUSION

The Science Granting Councils Initiative (SGCI-2) has played a transformative role in strengthening national research ecosystems across 12 African countries by aligning research funding with National Research Priorities (NRPs). The initiative has facilitated advancements in agriculture, renewable energy, climate resilience, health, biotechnology, industrialization, and digital innovation, contributing to national development goals and fostering sustainable socioeconomic growth.

A major impact of SGCI-2 has been capacity building, with significant investments in training postgraduate students, early-career researchers, and institutional staff. This has enhanced national research capabilities, ensuring that local scientists have the skills and resources needed to address critical challenges. Additionally, the initiative has promoted multidisciplinary and cross-sector collaborations, encouraging knowledge sharing between academia, industry, and policymakers.

The initiative has also contributed to significant research outputs, including scientific publications, policy briefs, patents, and prototypes. Countries such as Senegal, Uganda, and Zambia reported key advancements in biotechnology and public health research, while Malawi and Mozambique led efforts in climate-smart agricultural technologies and food preservation innovations. The establishment of research and innovation grant management systems in countries like Rwanda has improved national research coordination and funding mechanisms, strengthening governance structures for long-term sustainability.

Moreover, SGCI-2 has had a notable influence on policy and funding mobilization. The initiative has helped operationalize national research funds, such as Malawi's Science and Technology Fund, and facilitated the mobilization of over 1 billion Rwandan francs for research and innovation in Rwanda. These developments have improved national research governance, enabling greater investment in science, technology, and innovation (STI) at the country level.

Despite these achievements, challenges persist in areas such as research commercialization, regional collaboration, and long-term funding sustainability. While SGCI-2 has strengthened Africa's research landscape, continued efforts will be needed to translate research findings into real-world applications, ensure knowledge-sharing across borders, and maintain the momentum of research funding and policy support.

6. RECOMMENDATIONS

6.1 Science Granting Councils (SGCs) and Research Institutions

Enhancing Research Coordination and Knowledge Sharing

- ▶ **Develop Cross-Border Research Collaboration Mechanisms:** The Mozambique-Malawi-Zambia trilateral renewable energy project showcased the benefits of regional research partnerships. SGCs should create a continental framework for joint funding and knowledge exchange.
- ▶ **Strengthen Research Commercialization Pathways:** While countries like Uganda developed herbal-based pharmaceuticals, weak technology transfer systems hindered market adoption. SGCs should implement technology transfer offices (TTOs) and facilitate patent support programs.
- ▶ **Expand Capacity Building Programs for Researchers:** Rwanda and Malawi successfully trained over 100 postgraduate students under SGCI-2. SGCs should institutionalize research mentorship and provide funding for PhD and postdoctoral fellowships.

Improving Research Impact Assessment and Policy Uptake

- ▶ **Standardize Monitoring, Evaluation, and Learning (MEL) Frameworks:** Countries like Zambia developed research impact assessment tools but lacked standardized tracking mechanisms. SGCs should establish MEL indicators to track research uptake and policy impact.
- ▶ **Enhance Policy Engagement:** In Malawi, SGCI-2 influenced the Science and Technology Fund, demonstrating research-driven policy success. SGCs should actively engage policymakers through policy dialogues, briefings, and advisory committees.

6.2 Funders (IDRC)

- ▶ **Sustain Institutional Strengthening of SGCs:** Projects under SGCI 2 have built strong foundations for research governance. IDRC should extend support to embed these capacities permanently within SGCs' structures.
- ▶ **Expand Regional Learning from Joint Calls:** Joint research calls improved collaboration and learning across countries. IDRC should scale these initiatives to enhance cross-border research impact and synergy.
- ▶ **Enhance Uptake of Research Outputs into Policy:** Funded projects produced valuable evidence for policy, yet uptake was uneven. IDRC should invest in strategies like policy labs and advisory linkages to close the gap.
- ▶ **Consolidate Gains in Gender Mainstreaming:** Many councils integrated gender into calls and training. IDRC should build on this by supporting gender impact tracking and institutional frameworks for inclusion.
- ▶ **Leverage Digital Tools for Grant Management:** Digital systems improved transparency and efficiency in grant administration. IDRC should support full integration of these tools across all participating SGCs.

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