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Case Studies on the effectiveness of capacity strengthening activities of the Science Granting Councils Initiative in Sub-Saharan Africa

Report by the STECS Project (Science Granting Councils Initiative (SGCI) in sub-Saharan Africa Training Effectiveness Case Studies)

a collaboration between

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Executive Summary

The African Science Granting Councils Initiative (SGCI) has been active in 15 sub-Saharan African countries since 2015, with the overall aim of strengthening the capacities of science granting councils (SGCs) to support research and evidence-based policies that will contribute to economic and social development. Science systems are key and pervasive pillars of knowledge and guidance in responses to societal challenges, such as the current COVID-19 pandemic, but the systems can only go so far in supporting situations which are inherently complex and multifaceted. It is against this backdrop of SGCI's role - not just as an agent in strengthening the capacities of publicly funded SGCs, but as a driver of systemic approaches to building coalitions of sectoral, national and regional agents and actors in science ecosystems - that the SGCI Training Effectiveness Case Studies (STECS) Project was undertaken between September 2019 and June 2020. Focusing on nine¹ of the 15 SGCI countries, the STECS Project deployed multiple methods including document reviews, questionnaire-led and face-to-face interviews and observations to collect pertinent primary and secondary data to identify and analyse outputs of the SGCI and understand how they had been taken up by SGCs. The research further explored adjustments that would be necessary in the SGCI or the SGCs to make the capacity strengthening activities more effective. Data was analysed using thematic analysis, based on the key operating areas of SGCI.

The study established that the SGCI has contributed to SGCs in the study countries, emerging as an important academic, policy and practice coalition point through which, among others, a combination of trainings, masterclass papers, peer-to-peer and learning visits have enabled the Councils to improve their funding and governance roles in national science ecosystems. The Councils are also at various stages in developing and implementing different components of their science systems, for example through deployment of learnings from SGCI on public-private partnerships and use of science, technology and innovation (STI) indicators in development and implementation of programmes. This report presents a number of pertinent examples on how the SGCI has been effective and influential through different, context-dependent ways in the study countries.

In the medium-term, SGCI's Theory of Change (ToC) aims for the outcome of more effective research investments and strengthened research leadership for development in participating African countries. This has been achieved in some of the SGCs. The ultimate, longer-term impact of SGCI would be effective SGCs that can strengthen national science systems, and nationally-led research that contributes to development in the participating countries and beyond. Findings from this study suggest that all SGCs surveyed have, in line with the SGCI ToC, been able to engage with and implement at least some of the trainings received by SGCI, and many have benefitted directly from trainings and technical support provided during the programme to make some progress towards the desired impact.

¹ The study countries were Burkina Faso, Kenya, Malawi, Mozambique, Namibia, Rwanda Senegal, Uganda and Zambia.

Context' emerged as a key consideration across the study's overarching questions and assessment of SGCI's thematic areas. For example, the study unpacks and suggests the need to deepen context-specific understandings on what constitutes 'private sector' within and across participating countries to ensure more effective SGC engagement with the private sector in research and innovation. This study also reveals that the need for mainstreaming of gender and inclusivity in research allocation and management (both in qualitative and quantitative perspective) is paramount. Continuous development, consolidation and alignment of developed capacities in line with local contexts, especially in light of the realities exposed by the COVID-19 pandemic, is a necessary next step for SGCI and the SGCs.

September 2020

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List of Abbreviations

ACBF: African Capacity Building Foundation
ACTS: African Centre for Technology Studies
ATPS: African Technology Policy Studies Network
AUC: African Union Commission
CTAs: Collaborating Technical Agencies
DFID: Department for International Development
EARIMA: East African Research and Innovation Management Association
EU: European Union
FNI: Fundo Nacional de Investigação (National Research Fund),
Mozambique
FONRID: National Fund for Research and Innovation for Development,
Burkina Faso
GDP: Gross Domestic Product
IDRC: International Development Research Centre
IMT: Initiative Management Team
LMICs: Low-and-Middle-income Countries
MEL: Monitoring, evaluation and learning
MESR: Ministry of Higher Education, Research and Innovation (Senegal)
MoU: Memorandum of Understanding
NEPAD: New Partnership for Africa's Development
NCST: National Council for Science and Technology (Rwanda and Malawi)
NCRST: National Commission on Research, Science and Technology (Namibia)
NRF: National Research Foundation (South Africa)
NRF: National Research Fund (Kenya)
NSTC: National Science and Technology Council (Zambia)
PI: Principal Investigator
PPP: Public-Private Partnership
R&D: Research and Development
SADC: Southern African Development Community
SARIMA: Southern African Research and Innovation Management Association
SBIR: Small Business Innovation Research programme (USA)
SDGs: Sustainable Development Goals
SGC: Science Granting Council
SGCI: Science Granting Councils Initiative
SMEs: Small and Medium Enterprises
SSA: Sub-Saharan Africa
STECS: SCGI Training Effectiveness Case Studies project
STeAPP: Department of Science, Technology, Engineering and Public Policy
ST&I (STI): Science, Technology and Innovation
STISA2024: Science, Technology and Innovation Strategy for Africa 2024
ToC: Theory of Change
UCL: University College London
UIS: UNESCO Institute of Statistics

UK: United Kingdom

UNCST: Uganda National Council for Science and Technology

UNECA: United Nations Economic Commission for Africa

UNESCO: United Nations Educational, Scientific and Cultural Organisation

UR: University of Rwanda

USA: United States of America

1. Introduction

The African continent will enter multiple transition phases in the next few decades, which will impact different facets of the continent's economy, and for which science, technology and innovation (ST&I) will play prominent roles. These include, among others, demographic and disease transitions as populations age and as infectious diseases begin to be overshadowed by non-communicable diseases, in addition to the intensifying impact of chronic infections on non-communicable diseases. All these changes will occur as industrial transitions and rural to urban migrations accelerate. It is therefore important for lessons on what ST&I-led initiatives have tried to do in different jurisdictions, agencies and locales to be assessed and documented. The rationale and justification for such assessments is that by looking at what has worked well (or not), we will be able to understand exactly how and why. This allows those running the assessments to evaluate how to consolidate or make improvements and to make these applicable to different situations (Bardach and Patashnik, 2016). The current COVID-19 pandemic and the challenges and disruptions it has unravelled globally in only a few months is, among others, an important reminder of the need for agile, appropriate and responsive ST&I systems across the world, including Africa. The fact that ST&I landscapes across developing regions still suffer from a number of challenges, including dwindling funding and low capacities in research and research management, is well documented (Chataway et al, 2019; Mugwagwa, Banda et al, 2019; Mugabe, 2009).

i. Science Granting Councils Initiative (SGCI) in sub-Saharan Africa

In response to some of these challenges, the Science Granting Councils Initiative² (SGCI) in sub-Saharan Africa, a 5-year programme, was started 2015, with the overall aim of strengthening the capacities of Science Granting Councils (SGCs) in sub-Saharan Africa in order to support research and evidence-based policies that will contribute to economic and social development.

The objectives of this Initiative are to strengthen the ability of Councils to:

1. Manage research;
2. Design and monitor research programmes based on the use of robust science, technology and innovation (ST&I) indicators;
3. Support knowledge exchange with the private sector; and
4. Establish partnerships between SGCs and other science system actors.

The Initiative is jointly funded by the United Kingdom's Department for International Development (DFID), Canada's International Development Research Centre (IDRC), and South Africa's National Research Foundation (NRF), and has collaborated with SGCs in 15 countries, namely: Botswana, Burkina Faso, Côte d'Ivoire, Ethiopia, Ghana, Kenya, Malawi, Namibia, Mozambique, Rwanda, Senegal, Tanzania, Uganda, Zambia and Zimbabwe.

² <https://www.idrc.ca/en/initiative/science-granting-councils-initiative-sub-saharan-africa#:~:text=Responding%20to%20these%20challenges%2C%20the,development%20in%20Sub%2DSaharan%20Africa>, Accessed 26/06/2019

ii. SGCI Training Effectiveness Case Studies project

The SGCI Training Effectiveness Case Studies (STECS) project was initially a 5-month study (extended to 10-months due to COVID-19 pandemic) which undertook case study analyses to document how SGCI trainings and other forms of technical support have influenced the performance of beneficiary SGCs from countries participating in the Initiative.

The STECS project was anchored on three broad questions, namely:

- (i) How have evidence, knowledge exchange and support informed research allocation and grants management by SGCs?*
- (ii) How have learning outputs been taken up by SGCs*
- (iii) what adjustments can be made in SGCI and SGCs for science systems to be more effective;*

This report draws specifically from primary and secondary data gathered from a sample of nine (9) out of the 15 SGCI countries initially between September 2019 and February 2020, later extended to June 2020 due to disruptions and delays induced by the COVID-19 global health pandemic. It compliments this with primary and secondary data from the Collaborating Technical Agencies (CTAs) and Initiative Management Team (IMT) of SGCI. Data analysis was undertaken thematically on an on-going basis from the data collection period to early July 2020. The process and outputs of this study are concerned, on one hand, with the relevance, efficiency, effectiveness and influence of SGCI-supported training and support and on the other with contributing learning to broader efforts for strengthening the research and innovation arenas of the study countries, Africa and beyond.

From this brief **introduction**, the rest of the report is structured as follows: **section 2** gives a brief background to science systems and their role in African economies. This is followed by **section 3** which reviews literature on strengthening of science systems, looking at the SGCI couched within conceptual and theoretical narratives. **Section 4** presents data collection and analysis methodologies for this study. **Section 5** presents the study findings. **Section 6** discusses the findings. **Section 7** draws together some conclusions and proposes some recommendations. In this section, we also share some preliminary insights on the roles and contributions of SGCs to responses to the COVID-19 pandemic.

2. Background

2.1 Science, Technology and Innovation in Africa

The African Union (AU) member countries aspire to become inclusive and sustainable knowledge-based economies as stated in the AU's Agenda 2063³. Likewise, the Science Technology and Innovation Strategy for Africa (STISA2024) suggests that science, technology and innovation are key drivers and enablers towards the achievement of Africa's desired social and economic transformation. Adequate investment in research and technological development are of paramount importance in attainment of the envisaged innovation-led economic growth, requiring significant increases from the current baseline. To this end, AU member states have undertaken to commit 1% of GDP to research and development, a milestone in terms of political belief in the role of ST&I in the AU members' socio-economic transformation⁴.

While it is now widely acknowledged that ST&I play a significant role in driving economic growth and development through enhanced industrial activities and competitiveness backed by increased production efficiencies (Oyeyinka et al, 2018; Chataway et al., 2019; NEPAD, 2014), and while more than two-thirds of African countries have moved to design and adopt ST&I policies and strategies (The African Capacity Building Foundation, 2017), a majority of the countries still lack the requisite capacity to leverage and benefit from their investment in ST&I (Oyeyinka et al, 2018). They have not solved the challenge of sustainably funding research and innovation and, as a result, they are failing to effectively generate and deploy knowledge and technological innovations for socioeconomic growth, by harnessing introduction of new as well as improved products and services for various economic sectors such as agriculture, mining, manufacturing, health and services.

Besides and/or in addition to dealing with emerging societal challenges such as the COVID-19 pandemic, African countries have a perennial imperative to industrialise and achieve rapid economic growth to improve the livelihoods of citizens and establish, amongst others, robust infrastructure that supports health, energy and food security as well as full employment that leverages the demographic dividend highlighted in Agenda 2063. Thus, appropriation of new knowledge and innovations generated by contextualised research is a key driver for sustainable industrial and economic development. However, research and innovation depend largely on sustainable and focused funding buttressed by research and innovation ecosystems purposively designed to harness knowledge and turn it into useful products and services for society. Put in another way, a widely accepted key enabler to the development of the knowledge economy in any country is its science ecosystem, which covers both the natural and the social sciences and, by our definition, encompasses ST&I and research. The strength, focus and relevance of a country's science system are thus important factors for how it contributes to the country's economic, social and political development. It is in this backdrop

³ Overview of the AU' Agenda 2063

https://au.int/sites/default/files/documents/33126-doc-11_an_overview_of_agenda.pdf

Accessed, 26/06/2019

⁴Science Technology and Innovation Strategy (STISA 2024)

https://au.int/sites/default/files/newsevents/workingdocuments/33178-wd-stisa-english_-_final.pdf

Accessed, 26/06/2019

that the role of the SGCI - not just as an agent in strengthening the capacities of publicly funded SGCs, but as a driver of a systemic approach to building coalitions of sectoral, national and regional agents and actors in science ecosystems— is worth investigating.

2.2 Contested realities

It is widely accepted that science granting councils play a critical role in supporting the consolidation of a country's national system of innovation and are central to funding and catalysing research and innovation. These organisations are both agents of government and represent the interests of a country's scientific community. They, inter alia, disburse funds for research and development (R&D), and innovation; build research capacity through appropriate scholarships and bursaries; set and monitor research agendas and priorities; advise on science, technology and innovation policies; manage bilateral and multilateral science and technology agreements; and assess the communication, uptake and impact of publicly funded research⁵. By playing multiple roles in countries' systems of innovation, SGCs are fundamental pillars for elevating countries to knowledge-based economies. Most of today's industrialised countries have had in place since time immemorial institutional and infrastructural architectures to reflect this important role of science granting councils. This aspect though begs some reflection on the contestations of what constitutes science, technology and innovation (Mavhunga et al, 2017), and by extension the institutions that serve as funders and brokers between innovators, policymakers and society. We are cognisant of the fact that narrow conceptualisations of science, technology and innovation which do not take into consideration countries' historical and contemporary peculiarities, do not only result in inadequate recognition of certain countries' roles and contributions to scientific endeavours, but may also lead to poor choices regarding the best mechanisms to fund and govern science (Mugwagwa, Banda et al, 2019). The scientific endeavour has an obvious Western-bias, giving privileged positions to European and American knowledge systems and institutions, but the reality is that what is often considered to be modern science has developed in isolation from bodies of knowledge that were developed in non-western locations, such as China, the Islamic world, the indigenous Amerindian populations of the Americas, and Africa (Louis, 1990). While this project does not delve deeper into these issues, we are fully aware that, for African countries in particular, historical realities going back as far as slavery in the 1800s and before, the colonial era in the 1900s and economic structural adjustment programmes in the 1980s, among others, have a large bearing on the background and foreground of how science systems are structured, the socio-technical imaginaries they seek to achieve and the extent to which they achieve their objectives (Mugwagwa, Banda et al, 2019). We also deliberately do not go into the political economy that emerges from these contextual realities for each country as that is the subject of another SGCI-funded project – the Political Economy Project Phase 2 (Daniels et al, 2020).

Science granting councils are an increasingly influential player in structural and institutional architectures to support the generation of new knowledge, technologies and innovations. They are required by law to fund national research priorities, with recent research showing that in some countries, their share of research funding available nationally has risen in the

⁵<https://sgciafrica.org/en-za/the-initiative>

last 5 to 10 years from 15% to between 30 and 40% in countries such as Uganda, Ivory Coast and Burkina Faso (Mugwagwa, Banda et al 2019). A clearer understanding of how they are configured is therefore important in light of this increasing influence, and an overall desire to ensure that the hitherto observed less than optimum results from investments in science can be reversed (Daniels, 2017). Relatedly, there remains contestations on where best to locate an SGC within the public policy space of a country. For instance, it is expected that an SGC which is strategically positioned in the government institutional architecture, for example, Rwanda's National Council for Science and Technology (NCST) - which reports directly to the Office of the President of the Republic, with management capabilities- would more easily influence government decisions on increasing R&D budget allocations and approval of new research management policies. Conversely, it could be challenging for an SGC, even with a competent management team, to influence a particular government decision in cases where the SGC is located less centrally, under a given ministry, or other government agency, as it is the case for Senegal. But the contention, and indeed the evidence, is that the realities are not as clear-cut, which is why an assessment of this nature is important for unpacking these issues on SGC location, agency, capabilities, competency and other contextual dynamics which influence the extent to which the SGCs are able to embed and deploy lessons from the SGCI and other forms of support.

3. Literature review

In this brief review, we focus on the role of science granting councils in developing national scientific capabilities, what SGCI and others have been doing, how these roles are assessed and why it is important to assess the roles and how now is an important time to assess these roles.

3.1 Why ST&I and SGCs matter in Africa's development

As has been alluded to already, the place of science, technology, and innovation on the national, regional, and continental policy agendas in Sub-Saharan Africa (SSA) has become markedly more prominent in the recent years. Indications of this increased prominence are varied. A survey of seventeen African countries found an increase in those with science and technology (S&T) or ST&I policies (Mouton et al. 2014). As of 2010, according to this survey, thirteen out of the seventeen countries had a national S&T, revised S&T, or ST&I policy up from six to eight countries in the period 1986–2010. None had any S&T policies between 1960 and 1985. At the regional level, important policy documents—such as the African Union's Science, Technology and Innovation Strategy for Africa 2024 (AUC 2014)—increasingly relate ST&I to economic growth and development in Africa.

Funding from national agencies for science and research in SSA has increased (UNESCO 2016). At the national level, SGCs are key vehicles for channelling such funding. The SGCs - a broad categorisation used by the Science Granting Councils Initiative (SGCI) - include organisations such as government ministries, agencies, or specific institutions that fund science and research. Although we are witnessing a renewed enthusiasm for ST&I and science funding as policy items in SSA, we also note a concern among analysts that investment in science (and even in innovation) does not automatically lead to social and economic development (Arocena et al. 2017; Cirera and Maloney 2017; Mazzucato 2013; Schot and Steinmueller

2016) and there is also evidence of the limited impact that relevant policy initiatives can have in the absence of institutional and broader human resource capability building on low- and middle-income countries (LMICs) (Lee and Kim 2009).

There is considerable evidence that, over the long term, the capabilities that derive from investment in science deliver positive developmental results (Cirera and Maloney 2017) and thus uncertainties do not seem to undermine the policy case for funding science and technology overall. But they do call into question uncritical assumptions about the relationship between science and development. This in turn necessitates more careful investigation of the patterns of increased funding, and for research and scrutiny about the rationales for funding science. In particular, many questions remain unresolved regarding how best to balance between mission-oriented, R&D-centric or S&T-centric policies on the one hand, and on the other, broader innovation policies more oriented towards grassroots efforts (Daniels, 2017). For African and other LMICs, resolution of this dilemma requires a careful historical analysis to understand and unpack the institutional trajectories that have shaped and locked-in current practice, and exploration of how best to resolve them. By studying the role of science system influencers such as the SGCI, important empirical evidence can be garnered on the everyday practices of science system actors and how they draw on different knowledge systems and tools to reshape ST&I landscapes.

Nearly 40 years after adopting the Lagos Plan of Action, and despite consistent acknowledgement of the importance of research and innovation in the continent's economic and industrial development and improved productivity (Mugwagwa, Banda et al, 2018); numerous African countries have not met the Heads of States' commitment to allocate at least 1% of gross domestic product (GDP) to research and development (R&D) (AUC, 2014; ATPS, 2017). Only Kenya with 0.9% and Egypt and South Africa with 0.8% of GDP, have come near the goal (UNESCO, 2016). Earlier case study work to understand the political economy of countries involved in SGCI noted that across the five countries surveyed (Ethiopia, Kenya, Rwanda, Senegal and Tanzania): 'All case study countries are committed to increasing funding for science but overall levels of funding are still low' (Chataway et al, 2017). Africa's low domestic investments in research and innovation in particular, and in science, technology and innovation broadly, worsened after the 2008 global financial crisis and the subsequent 2008–2012 global recession which caused reduced budgetary allocations to R&D globally. The same situation also prevailed in developed economies. For example, the EU's target to raise overall R&D investment to 3% of GDP by 2010 was shifted to 2020 after the 2010 deadline was missed (UIS, 2016). The 3% target was an ambitious goal, as the UIS data tool shows. To date, only six countries worldwide (three in the EU: Denmark, Finland and Sweden) have managed to surpass the 3% target. The leaders are Japan at 3.6%, Israel at 4.1% and South Korea at 4.3%. Austria, Germany and Switzerland hover around the 3% target, as does the United States (UIS, 2016). In response to these challenges, countries have experimented with various approaches, institutional reforms, models and mechanisms for funding and financing research and innovation that have delivered good results. For instance, in the USA, the Small Business Innovation Research Program (SBIR) - a pre-commercial procurement scheme was introduced in 1982 and it mandates the use of 2.5% of the federal R&D budgets from all government departments and agencies with large R&D budgets to contract R&D services from SMEs (<https://www.sbir.gov/>). Similarly, the Malaysian government established the Cradle Fund, a unit of the Ministry of Finance that supports the creation of an ecosystem to promote

a strong and innovative business growth environment for technology entrepreneurs in Malaysia (<http://www.cradle.com.my/faq/>).

There should thus be new impetus for African countries to explore new approaches, sources, tools and institutional arrangements to improve the funding of research and innovation. Ozor (2015) and World Bank (2008) argue that in order to increase funding/financing opportunities for research and innovation under the current global financial crises (by inference, the COVID-19 pandemic) and national cutbacks in research and development (R&D) budgets, - new approaches and considerations must be made. A key policy hook for increased investment in research and innovation are the Sustainable Development Goals (SDGs), which advocate for promoting research in all fields and full research capacity in all countries by 2030. Recent work on new approaches for funding research and innovation in Africa (Mugwagwa, Banda et al, 2019) revealed that countries were deploying specific instruments as tools to translate R&D funding policy formulation into implementation. The possibilities span direct funding by government of research (whether for government labs, universities, private actors, etc), to government funding of private R&D (e.g. through grants or procurement), to non-financial instruments such as network-based policies, and information brokerage between different actors. Some countries have tried to include a considerable component of tax incentives for private R&D, though this is currently weak in Africa, apart from South Africa. While African countries can learn considerable lessons from these programmes, the unravelling global and national impact of COVID-19 will undoubtedly challenge existing systems to think and act differently in a new normal. If lessons from the 2008 financial crisis are anything to go by, and predictions are already pointing in that direction (.e.g. IMF, 2020⁶), science funding, especially in LMICs, is likely to diminish in the aftermath of COVID-19 as countries focus on the immediate tasks of restoring employment and other sources of livelihood for their populations. The STECS team have argued in a recent blog that ‘science as usual’ will not suffice in a post-COVID-19 era⁷. Empirical evidence from this study will make an important contribution to the realities, opportunities and sources of leverage for different national science ecosystems in Africa.

4. Methodology

The study informing this report was formed in response to a Call for Proposals from the SGCI funders as a partnership between the University of Rwanda and University College London. The STECS Project, had a timescale of 5 months (extended to 9 months due to the COVID-19 pandemic) in which we carried out primary and secondary data collection in nine of the 15 SGCI-supported countries. A STECS Project inception meeting was held from 28 to 30 September 2019 at the University of Rwanda to develop the project’s conceptual framework and fine-tune case study selection and assessment methodologies. The inception meeting drew on an initial review of data and documentation and a few key informant interviews which all informed selection of case studies and how to frame the case study research. In addition to the STECS project researchers, the SGCI Initiative Management Team (IMT) and

⁶ IMF 2020 World Economic Outlook, April 2020: The Great Lockdown
<https://www.imf.org/en/Publications/WEO/Issues/2020/04/14/weo-april-2020>

⁷<https://blogs.ucl.ac.uk/steapp/tag/coronavirus/> accessed 01 June 2020

selected stakeholders from Rwanda's science system participated in the meeting, contributing in invaluable ways to development of case study selection criteria and common understandings on assessment process and outputs. A three-tiered set of criteria for identifying and exploring cases was used in case study selection: firstly, relating to the research questions guiding this Project as spelt out in Section 1; secondly, relating to the expected SGCI outcomes in the medium term as spelt out in the preamble of the Call for Proposals; and thirdly, in relation to the Initiative's Theory of Change (Annex 1) and overall objectives as spelt out in the preamble of the Call. A case study matrix was developed in order to ensure that a varied range of case studies was selected. Based on the set criteria, nine (9) case study countries were identified: Burkina Faso, Kenya, Malawi, Mozambique, Namibia, Senegal, Rwanda, Uganda, Zambia.

A case study approach was deemed best suited for this type of research because of the deep and close in-situ investigation that we would be able to obtain at national level as well as within and across SGCs. Case studies were designed to be analytical and descriptive, and as presented in Section 5, to provide detailed accounts of the way that training and other forms of support had been planned, devised and implemented, and the results that these capacity building efforts had achieved to date. From the descriptive element of the work, the aim was to generate a number of themes that would be used to investigate more explanatory accounts of cause and effect relationships. Inspired by, and drawing from, different evaluation approaches (notably World Bank and DFID⁸ frameworks), the STECS project aimed not only to design research that fulfils the objectives of the study but to design research in such a way that themes emerging from the study findings could be used to inform future studies⁹.

We used a number of data collection methods, including desk research [review of main SGCI documents (tools, guidelines, manuals and templates)], review of knowledge products (reports, journal articles and policy briefs), and semi-structured interviews with SGCs, CTAs and the SGC IMT. The project team also kept running notes of any observations they made that were relevant to the assessment (e.g. of interactions within or across the SGCs or with external parties). Primary data was collected mainly through a questionnaire which was self-completed by interviewees or completed by the research team during semi-structured interviews with respondents as illustrated in Table 1 below. Informed consent was sought from interviewees and anonymity preserved in accordance with UCL and UR Ethics requirements and similar requirements in the SGCI as well as case study countries and organisations. Qualitative data was analysed using thematic analysis (against SGCI Themes 1-4, and additional themes on national science ecosystems and gender and inclusion); while quantitative data was analysed mainly through tabulation. Primary and secondary data from each of the identified countries forms the basis of this report, as well as a journal article and a policy brief which cover all the case study countries, and cross-country comparisons on specific thematic policy and practice lessons that arise from the countries.

⁸https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/380435/Evaluation-Strategy-June2014a.pdf last accessed 17th June 2020

⁹http://ieg.worldbankgroup.org/sites/default/files/Data/reports/oed_wp1.pdf accessed 17 June 2020

Table 1: Breakdown of respondents by category (*Note: Interviews were held in-country or remotely, with the exception of interviews with UNCST and SARIMA representatives which were held at the SGCI close-out workshop in Senegal, February 2020)

SGC	No. of respondents
Burkina Faso	2
Kenya	1
Malawi	4
Mozambique	3
Namibia	4
Rwanda	1
Senegal	2
*Uganda	1
Zambia	4
CTAs and IMT	No. of respondents
ACTS	1
ATPS	1
*SARIMA	2
Scinnovent Centre	1
IMT	2
Overall total number of respondents	29

4.1. SGCI theory of change, documents and knowledge products

STECs project was a component of the monitoring, evaluation and learning (MEL) evaluative framework of SGCI's Theory of Change (inputs-activities-outputs-outcomes-impact), as indicated in the SGCI Log Frame. The assessment of SGC effectiveness (outputs) across the four themes was undertaken in relation to the three overarching questions mentioned in section 1 above: (i) *How have evidence, knowledge exchange and support informed research allocation and grants management by SGCs*, (ii) *How have learning outputs been taken up by SGCs*, and (iii) *what adjustments can be made in SGCI and SGCs for science systems to be more effective*. The evidence comprised documents such: tools, guidelines, manual and templates developed by CTAs. These include the SARIMA's Good Practice Guidelines on the quality of research competition and NEPAD's STI data collection instruments(tools). The knowledge exchange was realised through training workshops, learning visits and on-site technical supports organized by CTAs. The learning outputs (or knowledge products) were developed by epistemic experts from universities and (or) research organizations including CTAs. The knowledge products were produced and published in various categories such as: Masterclass papers, policy briefs, reports, books and toolkits. And all could be accessible to the SGCI website (<https://sgciafrica.org/en-za/home>). These knowledge products were mainly presented and discussed at the annual regional meetings and (or) annual forums. The lists of SCGI knowledge products, trainings and meetings are provided in Annex 2. The narratives in the subsequent sections are based on the above methodological perspective.

5. Findings

5.1 Country case study narratives

In this section, we present summaries of findings on the SGCs with respect to SGCI Themes 1-4, and additional themes on national science ecosystems and gender and inclusion. Further details, including an extended evaluation on a range of basic questions relating to SGCs' date of establishment and position within their country's science ecosystems are presented in summarised in Annex 3. The tables also present SGCs relationship with SGCI, and the training and resources received from SGCI which are presented in narrative form below. The tables also capture details of key external funding and support in training and capacity development.

5.1.1 Key findings on research management

Under this theme, trainings and technical support activities were aimed at improving the capacities of the SCGs in initiating and managing research calls. The SGCs of Burkina Faso (FONRID), Kenya (NRF), Malawi (NCST), Mozambique (FNI), Namibia (NCRST), Rwanda (NCST), Senegal (MESR), Uganda (UNCST) and Zambia (NCST) participated in the trainings and technical support activities organized by SARIMA in collaboration with the NRF South Africa, and ACTS though with diverse levels of involvement and explicit use of acquired skills and tools. The main goal of this training was to help the SGCs organize and conduct high quality research competitions in their respective national science systems.

FONRID (Burkina Faso) benefited from the funding of its strategic planning and capacity building in the specific areas of capacity strengthening in monitoring, evaluation and learning (MEL), project management, research management. However, internally, the SGC's management system is still largely analogue and weak, to the extent that while the SGC is now very well-known and receives many applications after research calls, managing the process in a quick, secure and scientifically fair way remains a real challenge. There is thus a necessity to have an online management system for a quick, fair and sustainable process. Networking and experience sharing through SGCI allowed FONRID to know what was being done in others SGCs such as the online management of projects and the reviewers database. The networking has included study visits to South Africa and Uganda. Meanwhile, joint calls and joint management of projects with Senegal was very good but needs to be improved regarding the process of funds delivery and SGC involvement.

NRF (Kenya) learnt how to better handle its core mandate of research management. It benefited a lot from training workshops and other technical support activities conducted by SARIMA. Given that NRF had just started the research management process, the skills and tools acquired from the training were very beneficial. These include SARIMA's review of NRF's ToRs for developing a research management system. With reference to SARIMA's Good Practice Guidelines on the quality of research competition, which covers four areas: call for applications, review and assessment, award, and MEL – NRF managed to update and customise its own guidelines to support the call processes. At the time of this study, NRF was in the process of establishing a national research management information system (RMIS). NRF's involvement in SARIMA's knowledge exchange activities on improving research

management, including peer learning visits, was useful in NRF's handling of subsequent bilateral calls such as the mobility programme under a Kenya/France partnership, and research programmes with various UK delivery partners in the Newton Fund Programme.

Various staff members at **NCST (Malawi)** have been trained on different aspects of research management and granting, and in developing bilateral agreements and MOUs. Training activities for other stakeholders have been undertaken alongside NCST staff in research management and R&D indicators. Face to face trainings for scientists and other science system stakeholders were conducted on aspects such as research grants management, research ethics, programme evaluation, IP and commercialization of research and gender in research. Online training courses were conducted on research grants management, programme evaluation and intellectual property, and commercialization of research. There were reciprocal learning visit and interface meetings involving RCZ (Zimbabwe), FNI (Mozambique) for researchers to identify common priority areas for collaborative research in agricultural biotechnology and renewable energy ahead of SGCI phase two research calls which will be managed by NCST. Researchers from Zambia, Zimbabwe and Mozambique were also facilitated to share lessons and experiences on research in renewable energy and agricultural biotechnology.

FNI (Mozambique)'s capacity in research management was improved from use of the SARIMA Good Practice guidelines on the quality of research competition, learning from UNCST and NRF (South Africa) management of online systems. FNI ICT staff were sent to South Africa to learn how the NRF research management system works and exploring ways of identifying and strengthening weaknesses in their research management. Research grant instruments were also reviewed to improve excellence in research. The 2018 master class paper on new approaches to fund research and innovation in Africa was referenced to provide definitions for research and innovation and establish mechanisms to fund both. Training of scientists on good scientific proposal writing and being competitive in bidding for funding was being planned at the time of this study, while plans were also being put in place for an FNI portal on available research funding.

Since 2016, the **NCRST (Namibia)** has been receiving extensive support from SARIMA with the objective to strengthen research and grant management practices. The successful attendance of seven NCRST staff members in training workshops and learning visits on research and grant management, led to successful completion of online training courses in research management, grants and contracts management, programme evaluation; ethics and integrity in research; intellectual property, technology transfer and commercialisation. A technical expert was identified to address and review processes of grant management of the NCRST. SARIMA arranged mutual learning and knowledge exchange visits including a learning visit to the NRF (South Africa) Head Office and an NRF Research Administrators Workshop. In addition, SARIMA drafted and distributed the Good Practice Guidelines on the quality of research competitions. This was used as a guide for the NCRST and FNI joint call for proposals. Some changes were made to the NCRST grant rules and procedure document, with guidance from SARIMA. The goal was to strengthen grant management operational processes in order to ensure quality research competitions.

NCST (Rwanda) witnessed increased capacity building in research management. This resulted from SARIMA's training in research management, specifically for IT staff members on grants management and other IT systems. It also resulted from support in reviewing research calls, the M&E framework and training of researchers on how to write fundable research proposals. NCST staff have been able to implement various activities including research calls, development of implementing tools and mechanisms. The NCST research call, research and innovation M&E framework, and agreement between NCST and researchers were reviewed by SARIMA. SARIMA supported NCST staff to visit NRF South Africa in order to acquire knowledge on systems needed for grants management. NCST staff acquired knowledge about IP rights and research management after attending a training organized by SARIMA that equipped them with deeper understandings of the research management value chain. In 2019, NCST published a research call and successful researchers had already received the first instalments at the time of this study. During this time as well, NCST was developing (with the support of a consulting firm) a research and innovation grant management system.

At **MESR (Senegal)**, activities within the framework of the SGCI had helped build capacities in managing research projects. Most of the capacity building and support received was in the form of training and learning visits that took place in other SGCs and in Senegal. Financial support was received for projects selected in the joint Senegal/Burkina Faso call for proposals. The skills gained have been used in the development of a research strategy document and other MESR planning documents. For the first time in 18 years, MESR was able to revise its funding documents for the Directorate of Funding, Scientific Research and Technological Development. Staff members of MESR have been seeing learning visits to other SGCs not only as opportunity to share good practice in research management system, but also to learn English language. Meanwhile, while MESR sees the value of having a strong research management system and a good communication system to disseminate research results, the benefits from these may be hampered by lack of funds for digitalization and having a functional monitoring and evaluation system.

In **UNCST (Uganda)**, there has been some improvement in designing research management tools and guidelines. This was through the SARIMA's capacity building support, research and grant management trainings/courses, learning visits to National Research Foundation (NRF), South Africa, and hosting of peer learning visits for SGCs from other countries in 2019. Professional training courses held between 2017, 2018 and 2019 by SARIMA on IP were also said to have strengthened UNCST. The SGC has incorporated SGCI into its budget to ensure provision of counterpart funding. The manuals/guidelines from CTAs such as the one on good practice for research grant management and the generic manual on research management by SARIMA, have been relevant for UNCST, though they needed to be harmonised with existing tools already used by the SGC.

For **NCST (Zambia)** key successes were that, as a result of SGCI engagements, the Council had adopted some best practices in grants management. The Council's Promotions Unit has developed a communications strategy, while, in partnership with researchers from Malawi, Zimbabwe and Mozambique, lessons and experiences on research in renewable energy and agricultural biotechnology have been shared.

5.1.2 Key findings on Partnerships and Private Sector Engagement

SGCI envisages science funding to serve as a nudge and stir for scientific cooperation. To this end, the funding of bilateral and trilateral research projects was not only designed to stimulate the creation of new partnerships but also enhance existing scientific collaboration agreements which would otherwise not be put into action. Under this theme, trainings and technical support activities are aimed at strengthening partnerships between SGCs and the private sector. The theme was led by the ACTS consortium, with Scinnovent Centre focusing on public-private partnerships. The ultimate goal is for participating SGCs to leverage skills acquired and tools gained from Theme 1 and 2, and be further supported to: (i) prepare and make bilateral, trilateral or regional high-quality research collaborative calls with peer SGCs or other actors in their respective science systems; and (ii) prepare and make high quality national calls involving research and private sector collaborations. Under SGCI Phase 1, nineteen (19) projects were funded, including seven (7) bilateral and regional collaborations, and twelve (12) in-country public-private partnership projects (see details in Annex 3). For each call, the SGCs were meant to raise counterpart funding for successful projects. Some SGCs participated in both calls, some in either of the two and others did not take part as described further below.

i. Collaboration in bilateral, trilateral and regional calls

Through the Long-Term European and African Research and Innovation Partnership on Food Security and Sustainable Agriculture (LEAP-Agri) and the initiative of EU-AU based on H2020, **FONRID (Burkina Faso)** participated in the ERANET joint call, where the themes of calls were decided jointly. It was the same with LEAP4FNSSA and FOSC, WaterAid and France Embassy in Burkina Faso. FONRID also received funds to finance some projects respectively on WASH and agriculture. The experience gained from the first bilateral call is now ready to be extended for two other calls with peer SGCs. At the time of this study, FONRID was discussing partnership arrangements with Uganda and Mozambique.

Under the coordination of ACTS, **NRF (Kenya)** participated in the East Africa Collaborative Research Programme. This programme comprised two projects that brought together four countries namely: **Kenya, Tanzania, Uganda and Rwanda**. The co-funding programme is run under the umbrella of the East Africa Science and Technology Commission (EASTECO), and the activities are facilitated by ACTS. The programme kicked off in October 2018 when all partners signed the MoU. Through this collaboration, participating SGCs learnt from the best practices of their peers in the implementation of collaborative projects. The skills and experience gained from research management, collaborations and calls gave NRF impetus in handling of subsequent bilateral calls such as the mobility programme under the Kenya/France joint initiative, and research programmes with various UK delivery partners under the Newton Fund Programme.

FNI (Mozambique) made a collaboration joint call with **NCRST (Namibia)**. Improved communication with NCRST as a result of SGCI was a major contributing factor towards successful implementation of the joint call. The call was one of the outcomes of a one-week training on managing communication with the private sector held in Nairobi, Kenya in 2019

organized by ACTS. In addition, following the paper on “Research Excellence” presented in Maputo in 2016, which recommended establishment of partnerships and networks to increase of quality research, FNI discussed with Germany and Zambia on a trilateral call to train six researchers from universities and research institutions.

The **MESR (Senegal)** joint call of two projects with FONRID was its first experience in such calls., while **UNCST (Uganda)** participated in the collective research initiatives in all the three components: Bilateral (with Cote d’Ivoire), Trilateral (as part of EA regional programme) and public private partnerships (PPP) calls. However, it was not straight forward obtaining counterpart funding from Government, for both collaborative projects and PPPs, due to the fact that the projects were not budgeted for. As alluded to earlier, at the time of this study, UNCST were in the process of incorporating SGCI into their budget in order to facilitate counterpart funding.

ii. Partnerships in national public-private-partnership calls

NCST (Malawi) acquired and applied skills in the management of two PPP projects including designing of research calls, review of proposals and developing of research grants contracts, which will be utilised in the subsequent work of the SGC’s continued advocacy and lobbying for STI funding. The effective application of knowledge and skills acquired across the four themes is expected to result in enhanced PPPs and improved project implementation within the science system and nationally. **FNI (Mozambique)** developed a call and five (5) PPP projects were supported: 2 supported by ACTS while the other 3 were funded by FNI. Following the training on managing communication with the private sector conducted by ACTS in 2019, FNI made calls where each public institution was required to have a private partner institution. FNI also adopted a communication framework (excel sheet) for internal activities and communication with private sector developed by ACTS. Meanwhile, in collaboration with ACTS Consortium, **UNCST (Uganda)** developed a call and co-funded three PPP projects.

5.1.3 Keys findings on use of STI Indicators

The main goal of this theme was to provide SGCs with skills and tools to conduct STI surveys and enable the formulation of evidence-based and evidence-informed STI policies. The training provided was also meant to reflect SGCI’s support strategies/policies and mechanisms to implement national STI goals in line with STISA 2024 and SDGs. The financial costs of the actual surveys were to be borne by the SGCs. Eight (8) of the SGCs which were part of this study, namely: Burkina Faso (FONRID), Kenya (NRF), Malawi (NCST), Mozambique (FNI), Namibia (NCRST), Rwanda (NCST), Senegal (MESR) and Uganda (UNCST) benefited from trainings and technical support by NEPAD on the use STI indicators. The trainings conducted also focused harmonizing STI indicators across SGCs. For instance, indicators for STI have already been harmonized in SADC region. Another outcome of the trainings was a recommendation for NEPAD to revise the Frascati Manual approach in order to incorporate context-relevant indicators.

FONRID (Burkina Faso) was trained by NEPAD to collect data to prove the importance of research on policy. The training included methods of analysing policy, identification of robust

indicators and collecting pertinent data for elaboration of good policy advice and building adequate STI policy. This led to the national STI policy review in 2019, across public and private sectors, to improve their efficiency. Despite obstacles, FONRID was still in the process of collecting data to feed back into national STI policy design at the time of this study. The use of STI robust indicators helped to argue the importance of science (research), technology and innovation in development and implementation of policies.

NRF (Kenya) participated in training activities held in Kenya and other participating countries (Tanzania and Seychelles). From NEPAD training, NRF was able to improve on its research and development (R&D) surveys. For instance, after adapting the manual developed by NEPAD, NRF managed to conduct national R&D surveys which started early (March-April) 2019, with government investment amounting to approximately 15 million Kenyan Shilling (about 150,000USD) from two fiscal years (2018-19 and 2019-20). Data analysis and report writing were under-way at the time of this study, and it was expected that the final report would be officially published by June, 2020. **NCST (Malawi)** was also trained on STI indicators by NEPAD, and were in the process of developing local STI indicators, drawing from the NEPAD manual, at the time of this study. NEPAD training and technical assistance helped in the development of STI Indicators in **NCRST (Namibia)**.

In **Mozambique**, given its mandate, **FNI** has not been directly involved in the implementation of STI indicator surveys. Thus, NEPAD were engaging directly with the department responsible for STI indicators in the Ministry of Science and Technology. Trainings and technical support by NEPAD helped the Ministry in validation of 2016 STI indicators and in early 2019, the 2017 STI indicators survey report from Mozambique was published on www.mctestp.gov.mz. The report for 2018 STI survey was being finalized at the time of this research.

Training on STI indicator increased **NCST (Rwanda)**'s capabilities in STI policy development and monitoring. Following NEPAD training, the NCST organized and conducted a national R&D survey. The survey was successfully implemented due to the training provided to the NCST staff about STI indicators in Frascati and Oslo¹⁰ Manuals. In addition, the reviewed national STI policy was enhanced after acquisition of knowledge from the training organized by other CTAs. As a result, the NCST staff have better understanding of STI indicators and their role in research management and science policy broadly.

In **Senegal**, STI indicators training strengthened ability of **MESR** to design and monitor research programmes, and effective use of STI indicators to formulate and implement policies. The Director for Funding Scientific Research and Technological Development (the SGC) works closely with the Research Strategies and Policy Directorate which is working on research indicators. Senegal is in the process of developing its research policy document and clear STI indicators are needed for good policy.

UNCST (Uganda) undertook capacity building work in data collection and management of STI statistics and indicators with support provided by NEPAD from 2016 to 2018. Trainings provided were looking at designing appropriate instruments for data collection of national

¹⁰ <https://www.oecd-ilibrary.org/docserver/9789264304604-en.pdf?expires=1600257387&id=id&accname=guest&checksum=B1AD2129799A13E3F568F181AC8EAB02>

and project level statistics. UNCST had a pre-existing country level STI survey manual, and NEPAD tools were thus used mainly to help customize the national manual and instruments to the Frascati Manual¹¹ on research and innovation surveys. Policy trainings by NEPAD and ACTS were useful in the designing of new survey instruments for R&D and innovation surveys; and also updating the metadata manual for national STI. The adoption and incorporation of STI statistics and indicators, including the national statistical system, resulted in recognition of STI in the national development frameworks, NDP2 and NDP3, as a specific sector with a specific budget. This is unlike most of other countries where STI is in their development agendas, but spread across many sectors and often not centrally funded.

5.1.4 Keys findings on Networking SGCs

Under this theme, trainings and technical support activities were aimed at creating opportunities for greater interaction between the SGCs, particularly through the regional and annual meetings of SGCI. The networking SGCs went beyond attending the regional and annual meetings to include other knowledge exchange activities that brought the SGCs together such as learning visits organized by CTAs. Most of the expertise that was shared in regional and annual forums has been used to improve the operations of the SGCs. In addition to strengthening collaboration, SGCs have been enabled to learn from successful peers in particular through sharing of knowledge and insights from various programmes. SGCs learned how to work with other SGCs and implement joint projects. For instance, the improved communication between FNI and NCRST was a major contributing factor towards successful implementation of joint projects between Mozambique and Namibia. Consistent participation of senior officials from SGCs in annual meetings was one of contributing factors to building institutionalised partnerships amongst SGCs. For instance, the NCRST (Namibia) entered into bilateral cooperation with Botswana and Zambia, and signed a partnership agreement with FNI (Mozambique), mainly as a result of interactions amongst peers in the networking activities. The SGCI has also enabled SGCs to forge new partnerships with other SGCs and the creation of joint research teams with partner countries. For instance, the DFRSDT/MESR (Senegal) was able, for the first time, to launch a joint call with the FONRID (Burkina Faso) while NCST (Rwanda) signed an MoU with NCST (Zambia).

The networking of SGCs was largely achieved through successful hosting of annual forums, regional meetings, and learning visits, where SGCs would share knowledge produced from, inter alia, commissioned studies, published journal articles, research papers and policy briefs. However, the CTAs suggested that there had been limited success in implementation of some of the planned research activities. This was partly based on the reality that it takes a lot more time to sensitize and mobilize SGCs than anticipated.

5.1.5 Key findings on National Science Ecosystem

Impact on the national science ecosystem was not one of the explicit aims of SGCI, but was a critical and recurring theme appearing throughout the interviews with SGCs. This has broader implications for STI funding at country and regional level as explored in the introduction and

¹¹ <https://www.oecd-ilibrary.org/docserver/9789264239012-en.pdf?expires=1600257264&id=id&accname=guest&checksum=92919671BA468624B74C7B2D81B3FAAB>

literature review. The use of evidence and application of knowledge were largely contingent to the structural position and mandate of the SGCs within the national science ecosystem. Nonetheless, in all cases, the extent of translation of acquired evidence and knowledge within the SGCs and in other stakeholders in the national science ecosystems, was based on whether that evidence and knowledge output was aligned to the organizational or (and) national development priorities.

For instance, FONRID (Burkina Faso) and NRF (Kenya) are both not responsible for STI policy, but they have gained capacity to produce evidence for policy or support science activities within the national science ecosystem. Based on knowledge acquired from masterclasses given during SGCI sessions on science diplomacy, FONRID organised a platform of around 20 people from national research institutes/centres, public and private universities and innovators. This was expected to contribute towards generating evidence to inform the process of setting up an exchange framework with private sector which was being spearheaded by the ministry responsible for science and technology at the time of this research. On the other hand, NRF was able to sponsor the conference of the East Africa Research and Innovation Management Association (EARIMA) in December, 2019. The NCRST (Namibia) was set to introduce and implement policy changes to promote collaboration among actors in the national system of innovation. To this end, they had identified the need for coherence (direct link) between industrial policy and research policy.

The level of SGC's autonomy seems to influence the procedures and approval processes of evidence and knowledge outputs prior to their use by the Councils and other actors within the national science system. For instance, FNI, being an autonomous public institution affiliated to the ministry of science and technology, has authority to develop, review and approve all the operational/implementation instruments/tools to facilitate its mandate. FNI operational/implementation autonomy has given them opportunity to fast track the use of evidence. FNI uses its autonomy to provide evidence for the government to know and appreciate where and why there is need to fund R&D in priority areas. For UNCST the operational and institutional level evidence such as good practice guidelines, were approved at three levels (departments, top management and board) within NCST. However, the national level evidence/knowledge output such as political economy studies, required higher levels (Cabinet and Parliament) mainly because they involved change in policy and budget. In Zambia, among the factors that facilitated the use of outputs was the need to change and make the operations of NCST more effectively. The Council had to reposition itself in the Science sector by passing on its knowledge to other institutions in the ecosystem.

The factors that have constrained the use of evidence and outputs within the nation system ecosystem vary from country to country. For instance, in Burkina Faso, the main inhibiting factor was said to be lack of political understanding of the importance of STI indicators at government level. In Zambia, the NCST was constrained by dealing with the population that lowly appreciates science, technology and innovation, while the UNCST (Uganda) was constrained by financial resources, and systemic bureaucracy within the Council and outside. There were some suggestions that for SGCs to operate more effectively and play an effective oversight role in the national science ecosystem, they should be structurally positioned in higher offices such as NCST (Zambia) which reports to the Vice President's office. The NCST (Rwanda) and UNCST (Uganda) report to the President's offices of their respective countries.

The perspectives of CTAs towards national science ecosystems were that SGCs have been given some essential tools to transform their national science systems, such as the STI training book, an edited volume on Strengthening Science Systems in Africa developed by ACTS and Scinnovent Centre and the virtual (online) research management portal developed by SARIMA. All these could be used, not just by the SGCs but also other stakeholders in national systems, such as universities and research institutions, further enhancing the system-wide influence. Many Councils were under pressure to make sure that their funding resulted in commercialized products. This was due to an increasing orientation of Councils' funding towards applied research, mainly in line with development objectives of their countries. However, according to CTAs, SGCs need be clear on their mandate and get that right to ensure efficiency and effectiveness of their interventions, otherwise stakeholders (within and outside national systems) would be hesitant to work with them. Focusing on clearly defined core missions is essential for building their brand and in strengthening the national innovation system.

5.1.6 Key findings on gender and inclusion issues

Tackling gender and inclusion issues was not one of the dominant themes of Phase 1 of SGCI, however the significance of this theme is recognised and it will be one of the leading themes in Phase 2.

On the one hand, some SGCs based their approach on existing national gender mainstreaming policies and constitutional provisions in setting research funding criteria in their calls, most of which were quantitative: percent share of women research team composition and/or research team leadership (PI or Co-PI), and qualitative: Research calls mentioning that women and people with disability were highly encouraged to apply (Kenya and Senegal for instance). On the other hand, other SGCs were based on the national policy and constitutional provisions pertaining to 'equal rights' and hence stick to 'performance' and quality of applications irrespective of when or not research team includes women (Malawi for instance). In line with the former, in addition to gender consideration, some SGCs went as far as to consider demographic consideration (the application being submitted by research team from rural or urban areas) (Uganda for instance). However, nearly none of the calls targeted gender and inclusivity as a topic/problem to researched on. One of the courses (online course) developed and delivered by SARIMA was on Gender in STI, with the goal to create awareness. For their internal assessment, the tracking of presence of women is done through attendance, and this is even stated in the call guidelines. Through these courses, some SGCs are trying to incorporate lessons learnt in their national processes.

5.2 Key findings from thematic analysis

Figure 1 shows the frequency with which different themes were mentioned within interviews with the SGCs. Interviews tried to prompt a range of responses across these found different areas of SGCI operation and this gives a relative sense of the significance given to each theme, gauged by how often it was mentioned during the interview responses. It gives a sense of the themes that were seen as being mutually supportive e.g. 'Networking SGCs' frequently appeared as a generally supportive activity across all of the other SGCI themes, while 'Use of STI Indicators' was spoken of as a more discrete activity. This should be read in association

with the narratives in section 5.1 for a full picture of the context (i.e. positive / negative) in which themes were spoken about across the SGCs and CTAs.



Figure 1: Frequency of themes recorded across all SGC interviews (Research Management 39%, Networking SGCs 27%, Partnerships and private sector engagement 21%, Use of STI indicators 13%)

Table 2: frequency of themes recorded across all SGC interviews by country

	B. Faso	Kenya	Malawi	Mozam.	Namibia	Rwanda	Senegal	Uganda	Zambia
Research Management	13	11	7	18	13	7	11	12	2
Networking SGCS	9	4	5	18	5	7	8	8	1
Partnerships and Private Sector Engagement	7	7	7	11	0	4	6	7	1
Use of STI indicators	6	3	3	4	1	8	3	3	0

Table 3: Frequency of themes recorded across all SGC interviews by CTAs

	CTAS ACTS	CTAS ATPS	CTAS SARIMA	CTAS Scinnovent
Research Management	5	0	7	2
Networking SGCS	4	11	2	5
Partnerships and Private Sector Engagement	3	1	0	5
Use of STI indicators	0	0	0	0

5.3 Summary of points from SGCs and CTAs

The following tables (Tables 4 and 5) summarise the key elements of responses to the overarching research questions by the SGC's and the CTA's.

Table 4: Narratives capturing perspectives from SGCs on the overarching research questions

<p>How have evidence, knowledge exchange and technical support informed research allocation and grants management by SGCs?</p>	<ul style="list-style-type: none"> • Development and honing of 'missions' • Strategic planning in science systems • Capacity development e.g. strengthening in MEL, MEL software, project management, research management, analysis, development of STI indicators • Discovering and sharing innovations by other councils • Shift from more manual to more digital research management systems • Development of bi- and trilateral collaborations and calls for research • Meetings and other new engagements with private sector • Some training on ethics and gender in research and women in STI
<p>How have learning outputs been taken up by SGCs?</p>	<ul style="list-style-type: none"> • Use of SARIMA guidelines / best practice • Use of ACTS communication framework • Training session attendance • Training sessions for national researchers • Masterclass attendance • Exchange visits between SGCs • Learning and exchange during Annual Meetings • Joint calls and projects developed • Greater orientation towards policy impact • Development / adaptation of in-house materials and guidelines • Development / strengthening of East Africa Collaboration Research Programme • (Re)definitions of R&I
<p>What adjustments need to be made in SGCI processes for increased influence and effectiveness of SGCs?</p>	<ul style="list-style-type: none"> • Recognition of the scope / responsibilities of SGCs and how this varies across countries (not all SGCs have remit to influence all of the SGCI themes) • More money should be allocated for launching calls • Provide SGCs with a (shared?) online management system

	<ul style="list-style-type: none"> • Expediting necessary approvals processes for joint bids • Appreciating limited capacity in time and resources in SGCs • Recognition that SGCs may be largely publicly funded and need to invest in government priorities (relationship to national innovation system) • Channelling of funds to CTAs vs SGCs (especially an issue with PPP arrangements) • Heavier involvement of SGCs in their own MEL processes
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Table 5: Narratives capturing perspectives from CTAs on the overarching research questions

<p>How have evidence, knowledge exchange and technical support informed research allocation and grants management by SGCs?</p>	<ul style="list-style-type: none"> • Input to negotiation between councils to ensure cooperation and collaboration • Training to support the ability of SGCs to design and manage collaboration agreements between other SGCs and PPPs • CTAs maintaining ‘constant communication’ with the SGCs
<p>How have learning outputs been taken up by SGCs?</p>	<ul style="list-style-type: none"> • Attendance at training / masterclasses and exchange visits • Tailored support for setting up new institutions and infrastructure • Use of training materials e.g. STI training book • Reporting and sharing at Annual Forums and MEL events
<p>What adjustments need to be made in SGCI processes for increased influence and effectiveness of SGCs?</p>	<ul style="list-style-type: none"> • Greater focus on innovation management • Reorientation to view selves as ‘facilitators’ of STI for sustainable development, rather than fund dispersers • Need to increase their capacity as boundary managers between policymakers and the science community within countries • Listen more to SGCs – “often the(y) know what they want and are quite knowledgeable in their own fields” • “Provide clear leadership in prioritizing the research and innovation agenda” • More time to implement some activities (“it takes a lot more time to sensitize and mobilize SGCs than earlier anticipated in the programme”)

6. Discussion

The following is a reflection on some of the emerging overarching messages from the findings, tying this back to the mandate of SGCI including the theory of change (in particular), thematic areas and overarching questions for this study. In some instances we also situate our reflection in the broader issues introduced in the literature review.

6.1 Reflections on SGCI themes

6.1.1 Research management

The SGCI Theory of Change poses that SGCs ability to manage research can be strengthened through customized regional training courses in STI policy analysis and priority setting, grant making systems and procedures, on-site coaching and ongoing access to expert advice. This would lead to more effective research practices such as ability to identify and set research priorities that meet local need, develop competitive research calls, manage fair and transparent adjudication processes and manage and monitor research.

Following SARIMA trainings, peer learning and learning visits to NRF, many SGCs agreed on the need to have robust, online research management information systems. The countries involved in SGCI are already at different stages of undertaking this activity, with some developing new electronic systems while others make more minor changes to existing systems. For instance, while FONRID of Burkina Faso is expecting to ask the SGCI to spare some research calls funding for this activity in Phase 2, NRF of Kenya, FNI of Mozambique and NCST of Rwanda have already started the processes of developing the systems using their own funding or with support from other partners. Uganda and Kenya have made calls with support from SARIMA. The decisions to develop their own systems can in part be linked to the level of understanding of issues of IP ownership. Uganda NCST which already had an online system used the SARIMA training as opportunity to improve and harmonise it with other existing tools used by the Council. SGCI supported networking activities also supported this, for example FNI's decision to establish its own online research management was cited as having been directly inspired by a peer learning visit to UNCST in 2019.

Other activities related to research management and networking SGCs, outside SGCI intervention, include NRF participation in a bilateral programme with the UK (under Newton Fund-NF). Within this agreement, there is an exchange programme offering capacity development partly similar to what is done by SARIMA. It commenced in 2018 where NRF staff went to the UK and UK staff came to Kenya for peer learning and experience sharing in 2018. The next cohort of staff from both sides took place in January and February 2020. In addition to learning about research management, participants learnt from best practices of their peers on the implementation of collaborative projects, similar to the opportunities offered by ACTS.

6.1.2 Partnerships and Private Sector Engagement

The SGCI Theory of Change poses that SGCs ability to support knowledge transfer to the private sector is important and will be strengthened by alignment of research evidence with demand, identification of research priority areas for SGCs, and working with SGCs to launch proposal calls and provide co-funding for research. This would lead to the development of SGC policies that strengthen links with the private sector and promote innovation.

Many specific examples of new collaborations and engagements with the private sector were noted, as a direct and / or indirect result of SGCI trainings and networking opportunities. A number of these are outlined in the following sections.

Observations on SGCs participation in private sector collaboration and Public-Private Partnership (PPP) projects

According to Scinnovent Centre, in their report on empowering Africa through innovative partnerships¹²: in the context of SGCI, public-private partnerships refer to the linkages between the publicly-funded research entities on the one hand, and the industry, particularly the manufacturing sector on the other hand (pp, 52). Public private partnerships take different shapes mainly depending on projects and actors involved. For instance, while the project on introduction of solar powered technologies to the smallholder dairy industry in Malawi is routed into innovation co-creation amongst knowledge partners (Lilongwe University of Agriculture and Natural Resources-Bunda College), industrial partners (Solar energy technology providers, LUANAR and Orifice Irrigation and Water Supply Limited), and end-users (small-scale dairy farmers and local milk processors); the project on developing and promoting supplement and beverage product prototypes for improved commercial exploitation of propolis and bee venom in Uganda, is largely rooted into linear mode of innovation research and commercialization by knowledge partner (Makerere University College of Veterinary Medicine and Animal Resources and Biosecurity), with indigenous suppliers (bee farmers) being less involved in the process (pp 28, 39). In both projects and others, the SGCs (NCST in the former and UNCST in the latter) play the role of regulators (including M&E) while CTAs (Scinnovent Centre) undertake trainings, fund disbursements and management.

Uganda's NCST appeared to be the most active SGC in all 19 projects cited, with 4 out of 7 collaboration projects (including two bilateral and 2 regional collaboration projects), and 3 out of 12 PPP projects. It was followed by Mozambique with 1 bilateral and 2 PPP projects. It is worth noting that in addition to the 2 PPP projects funded by the Initiative, Mozambique funded 3 more PPP projects. Malawi presents an interesting case with 3 PPP projects but no formal collaboration with other SGCs. This might partly reflect the embeddedness within the national science ecosystem and its influence on the private sector. FONRID has managed to organize meetings to advocate for private sector engagement, which have seemed fruitful. They are trying to maintain dialogue with the private sector to secure commitment on research funding. Burkina Faso's ministry of higher education, research and innovation is setting up an exchange framework with private sector.

¹²https://sgciafrica.org/en-za/resources/Resources/Empowering%20Africa%20through%20innovation_final.pdf
Accessed 12/05/2020

Some SGCs experienced significant challenges across this theme. The Scinnovent Centre approached NRF (Kenya) with funding to participate in the PPP programme, but NRF took a long time to commit to the fund due to long approval processes, hence Scinnovent Centre ended up engaging with UNCST. The NCST (Zambia) has also been challenged to bring the private sector on board more quickly.

6.1.3 STI Indicators

The SGCI Theory of Change poses that SGCs ability to design and monitor research and to formulate and implement policies based on robust STI indicators would be supported and strengthened by customised training on linking R&D innovation to development plants, the collection of micro-level datasets and training on the use of data for priority setting and allocation analysis. This would result in the increased use of STI indicators to design and monitor research programmes and to formulate and implement policies: using research evidence to improve the capacity of SGCs to manage research programmes, improved capacity to identify and prioritise future STI needs and contribution to building resilience of science systems.

SGCs made different uses of the STI indicators training. The STI indicators trainings and other technical support prompted Senegal's SGC to start the process of formulating a national research policy and Zambia noted that NEPAD has helped them to do their work on STI Indicators differently. In other cases where research policies / existing STI indicators were more firmly in place, such as Kenya, Mozambique and Rwanda, the trainings offered an opportunity for investment of public finding in conducting the STI surveys. For instance, the STI survey report of Mozambique was published in 2017 while the R&D survey reports of Rwanda and Kenya are in their final stages of publication. Rwanda (NCST), Zambia and Zimbabwe conducted surveys with their own money, while NEPAD helped them to develop their manuals. It is worth noting that FNI is not mandated for STI indicators. Hence, though they participated in the process, the leading agency was the Ministry in charge of science and technology to which FNI is affiliated. This is important to note, as the position and remit of the SGCs may heavily affects their ability to engage in this theme.

Looking at how countries benefited and utilized the STI indicators through the lenses of the SCGI theory of change (acquire, adapt and apply); out of the nine countries, Four countries (Kenya, Mozambique, Rwanda, Uganda and Burkina Faso-to some extent) have been able to meet the three steps of the theory. That is to say, following the training and technical support (acquire), they revised or developed tools (adapt) and finally conducted STI surveys to inform policy (apply). Namibia, Malawi and Senegal participated in the trainings and adapted the acquired skills and tools to develop/revised their respective STI indicators.

6.1.4 Networking SGCs

The SGCI Theory of Change poses that SGCs ability to establish partnerships among SGCs and other science system actors can be strengthened by collaborative agreements with demand-led joint activities and the creation of learning forums. This would result in increasingly confident and networked SGCs, where increased coordination would increase synergies with

other science system actors, and networking would enable interactive learning, collaborative agreements and joint projects on regional priorities.

Bilateral/Trilateral/Regional Collaborations

Malawi, Mozambique and Zambia have signed a trilateral collaboration agreement. Uganda and Cote d'Ivoire have signed a partnership agreement. Following Theme 3 trainings, Zambia and Rwanda signed an MoU without the intervention of ACTS brokerage (intermediary). NRF and FNI leveraged the acquired skills and competences to engage in further (trilateral) collaborations beyond the SCGI participant countries, the former with France and the UK and the latter with Germany and Zambia. Although the NCST (Rwanda) did not participate in the SGCI funded bilateral calls, except the EA regional programme, the acquired skills, competences and tools training and technical assistance raised the NCST's impetus to call national level calls in 2019. These include: The Research excellence grant, Academia-industry collaboration grant and Rwanda innovation challenge (RIC)¹³. In addition, The NCST (Rwanda) signed an MoU with NSTC (Zambia) for collaboration beyond the SGCI initiative. Relatedly, many references were made by the SGCs to tacit knowledge accumulation through the inspiration, knowledge sharing and knowledge co-creation that networking activities such as the SGCI forums and other in-person trainings and meetings enabled.

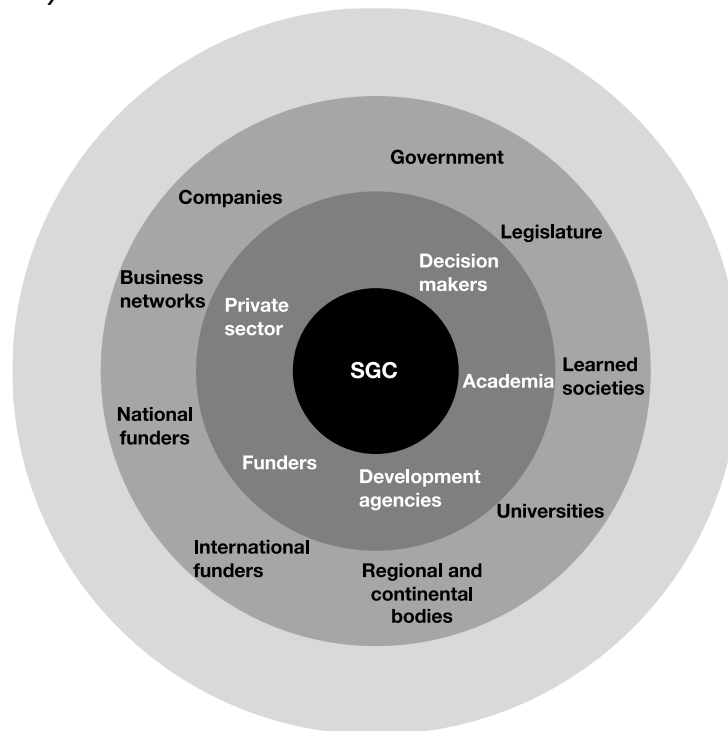
6.1.5 National Science Ecosystem

Impacting and improving the interaction of SGCs with other actors in the national science ecosystem is an implicit or explicit part of many of the SGCI themes. The longer-term impact of SCGI is captured in the Theory of Change as the development of effective SGCs that can strengthen national science systems, and nationally led research that contributes to development in East Africa and other participating counties.

This study found that many of the participating SGCs were interacting with a broad range of actors across the national science ecosystem, and that training and technical support activities by SGCI had increased and / reoriented these relationships in a number of countries as indicated in Section 5.1.5 above. Figure 2 illustrates a range of possible relationships that SGCs may have with a range of actors across the national science ecosystem. We noted from this study that the relationships illustrated above move from the more general in the inner circle, to the more specific in the outer circle. The outmost circle ultimately represents relationships with small groups of individuals from across the sectors shown.

¹³<https://www.ncst.gov.rw/>
Accessed 18/05/2020

Figure 2: Theoretical illustration of the potential engagement of SGCs with other actors in the national science ecosystem



Source: authors, reflecting on STECS study data (2019-2020)

6.1.6 Gender and Inclusion Issues

Tackling gender and inclusion issues was not one of the dominant themes of Phase 1 of SGCI, however the significance of this theme is recognised and it will be one of the leading themes in Phase 2. Gender and inclusion issues were not frequently mentioned in the SGC interviews, aside from in the sections which asked very specific questions about these topics in particular. Burkina Faso noted a number of examples around SGCI training engagements on gender in STI and ongoing plans for good impact pathways taking in account gender issues, inclusivity and equity. Zambia confirmed to ensure gender was considered in all science and technology aspects. They put in place reward systems that consider both males and females, senior and junior scientists. Out of ten awarded projects, two were awarded to females. They have revised guidelines to include gender and inclusivity aspects in the proportion of 20-80, 20 being for affirmative action and 80 for equal competition. With this, they also hope to trigger improvement in having female PIs. So, far, the SGCs cross collaboration focus more on the quality aspect and leave aside gender issues. Mozambique (FNI) provided inputs into a paper on ‘Promoting the Equality and Status of Women in Research’ and had planned to join a SADC call on focussed on gender mainstreaming in STEM. The SGCI ‘Gender in Science and Technology’ training course was widely cited.

While the gender aspect has received some sort of attention in terms of calls, and affirmative action depending on gender mainstreaming policies and constitutional provisions applicable in different countries (Kenya, Senegal, Malawi, and Uganda), the theme related to gender and inclusion still needs more focused consideration in the next phase.

6.1.7 Other

One other set of issues that was identified throughout the documentary research and interview period, but was not clearly part of one of the preceding sections, is captured below.

Consistency, governance and institutionalization of SGCI

This uptake and integration of SGCI's offerings has taken place in different ways across the countries. For example, in addition to constantly designating senior officials to represent the SGC in all SGCI activities, Uganda and Mozambique have institutionalized SGCI across various units. This means knowledge uptake and use of evidence (including tools developed with CTAs) have already changed, to a wider extent, the way FNI and UNCST do business across its units and with other actors within national science systems. Similar changes were felt in NRF (Kenya) and NCST (Rwanda) to some extent, despite that both are still in their early stages of maturity and still relatively understaffed. Analysis and consideration of these issues across countries is a key part of ensuring context-based planning by SGCI and assessment of the Initiatives influence and impact.

7. Conclusions and Recommendations

The African Science Granting Councils Initiative (SGCI) Training Effectiveness Case Studies (STECS) Project deployed multiple methods including document reviews, interviews and observations to collect pertinent primary and secondary data to identify and analyse outputs of the SGCI and how they had been taken up by SGCs. The research further explored adjustments that would be necessary in the SGCI or the SGCs to make the capacity strengthening activities more effective. This report has presented a number of pertinent examples on how the SGCI has been effective and influential through different, context-dependent ways in the study countries.

In the medium-term, SGCI's Theory of Change aims for the outcome of more effective research investments and strengthened research leadership for development in participating African countries. This has been achieved in some of the SGCs. The ultimate, longer-term impact of SGCI would be effective SGCs that can strengthen national science systems, and nationally-led research that contributes to development in the participating countries and beyond. Findings from this study suggest that all SGCs surveyed have, in line with the SGCI Theory of Change, been able to engage with and implement at least some of the trainings received by SGCI, and many have benefitted directly from trainings and technical support provided during the programme to make some progress towards the desired impact. The preceding findings and discussion sessions have narrated, as well as critically reflected on, different examples and instances of SGCI influence in different SGCs, through the lenses of the study research questions and SGCI thematic areas. In this concluding section, we proffer some high level as well as granular conclusions and recommendations for consideration by SGCI and partners in Phase 2 of the Initiative and on a continuing basis for the SGCs.

Considerations for improving training and technical support in SGCI Phase 2

- **SGCs as part of a national science ecosystem** - Given divergences in the nature of SGCs, and viewing them through their structural and locational lenses, their engagements in SCGI and uptake of knowledge products and engagements tented to have greatest impact when aligned with their specific missions in the national science systems. For instance, Senegal (the SGC being a department within the ministry in charge of S&T) used SGCI mainly as opportunity to address policy gaps (hence, started formulating the national research policy), while Rwanda used acquired knowledge and skills to update the revised version of the national STI policy prior to tabling it for approval. Thus, it is proposed that Phase 2 should clearly and explicitly focus on specific SGC missions and needs in line with national STI priorities, which is one of the cited aims of SGCI.
- **SGC location matters** – where an SGC is located within the national institutional terrain and national science ecosystem has an impact on its autonomy and speed with which decisions are made regarding their role of managing the science system, for example how they implement different procedures and channels for research ethics approval. A related issue is the geographical location of CTAs and the extent of their influence on SGCs. These align strongly with the first point on viewing SGCs as part of a national science ecosystem and are issues for consideration in designing tailor-made responses in SGCI Phase 2.
- **Clarifying the role of CTAs** – While CTAs have been crucial partners in developing and delivering training and technical support, their role in the SCGI process has not always been clear to participants. Both CTAs and SGCs suggested the benefits of SGCI having a comprehensive implementation plan, highlighting major activities of each of the CTAs and showing how they complement to each other and how is going what, right at the beginning of Phase 2.
- **Thinking broadly about innovation and PPPs** – Innovation has been conceptually perceived to be a result of research and development, i.e., an STI-based innovation across nearly all PPP projects. For SGCI to add more value to the science systems, innovation will need to be viewed in its comprehensive perspective i.e. STI-based mode of innovation and the doing-using and interacting (DUI)-based mode of innovation. The latter would be most suitable to the context of Africa’s dominant non-R&D performing firm and informal economic settings (Lundvall, 2010; Mavhunga, 2017), as well as non-commercial innovations such as organizational innovation in public and private (non-governmental) settings (Iizuka, 2020). It is also important to consider and explore a broader definition of private sector and what constitutes this sector and all its dimensions in the context of Africa which could partly contribute to spurring effective PPPs with greater impact to the society. Drawing from the SGCI commissioned PPPs masterclass paper would be handy in this regard.
- **Gender mainstreaming** – Gender and inclusion issues were explicitly mentioned by a few SGCs, but this did not appear as a major element of progress made as a result of engagement with SGCI. There is much space to build upon the expressed interest and

desire of SGCs for further mainstreaming of gender and inclusion issues into their processes through the 'Gender mainstreaming framework and action plan' set out for Phase 2.

Further points to consider

- **Context matters:** e.g. there are very different recipient/beneficiary departments of SGC support across countries, depending on the context of the SGC in the national science ecosystem, and it is beneficial to recognise these nuances
- **Communication matters:** e.g. many issues and misunderstandings between SGCs, CTA and SCGI can be resolved through communication. It is through communication that issues about funding going directly to recipients and not through the SGCs, or addressing queries about further SGC participation in MEL can be resolved
- **Curation of evidence matters:** e.g. to highlight successes, timeliness matters because evidence can be lost. STECS has taken place relatively early in the life of SGCI, as part of an already detailed MEL programme, but may not have captured the full details of impacts across time and space
- **Geographical proximity matters:** in terms of the cross-country collaborations observed among countries, it is very often the case that those who are geographically proximate see more active and numerous collaborations
- **History also matters** for these collaborations, where prior relationships exist between countries and SGCs due to history, including relationships based on shared working languages
- **Time matters** – more time is needed (by both SGCI and SGCs) for needs articulation and for project implementation, which could be a key consideration moving in to Phase 2

In the final analysis, this study has confirmed that science systems are important and pervasive pillars of knowledge and guidance for development agendas and responses to persistent and emerging societal challenges, which are inherently complex and multifaceted. With respect to the COVID-19 pandemic for example, responses by SGCs are indeed highlighting the importance, not just of the availability of different tools from science, but their timeliness and relevance to contexts of application. Continuous development, consolidation and alignment of developed capacities in line with local contexts is thus a necessary next step for SGCI and the SGCs.

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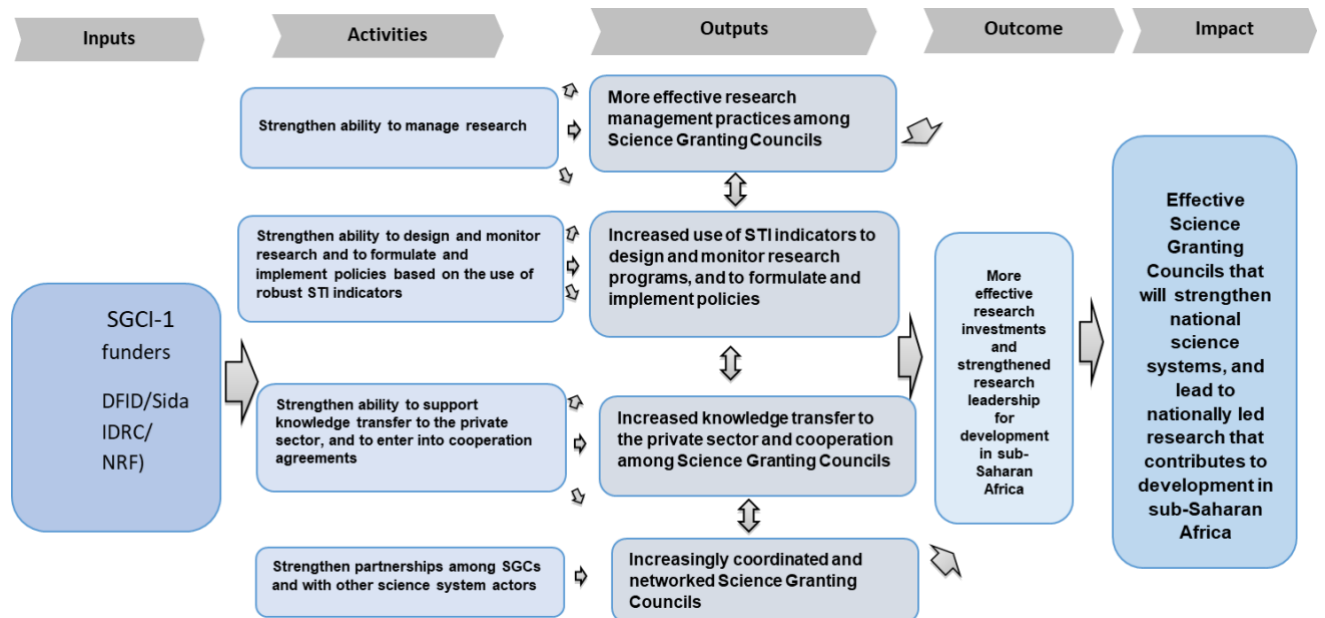
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Annexes

Annex 1: SCGI Theory of Change



DfID, IDRC, NRF Partnership (2015)

Annex 2: SCGI Knowledge products, trainings and meetings

Knowledge products

1. **Masterclass papers:**

- **Open science in research and innovation for development**, *Geoffrey Boulton, Joseph Mwelwa, 2019*
- **Public-Private Partnerships in Research and Innovation**, *Oyelaran-Oyeyinka, Banjia, Vallejo, Berthab and Vasudev, Shrutic, 2018*
- **New approaches for funding research and innovation in Africa**, *Julius Mugwagwa and Banda, 2018*
- **Research Excellence in Africa**, *Erika Kraemer-Mbula, Robert Tijssen, 2016*

2. **Policy Briefs:**

- *Banji Oyelaran-Oyeyinka, Bertha Vallejo, Banke Abejirin, Shruti Vasudev, Nicholas Ozor, Maurice Bolo (2018) SGCI Policy Brief, **Towards Effective Public-Private Partnerships in Research and Innovation: A Perspective for African Science Granting Councils***
- *Mugwagwa, J., Banda, G., Ozor, N., Bolo, M. and Oriama, R., (2019). **New approaches for funding research and innovation in Africa.** African Technology Policy Series (ATPS) Network Policy Brief*

3. **Reports:**

- **How do political economy factors influence the evolution of science funding in sub-Saharan Africa?** *Joanna Chataway and Cosmas Ochieng*
- **Case Studies of the Political Economy of Science Granting Councils in Sub-Saharan Africa** *Joanna Chataway and Cosmas Ochieng*
- **Research excellence in Africa: policies, perceptions and performance.** *Robert Tijssen and Erika Kraemer-Mbula*
- **Building sustainable research management in science granting councils in sub-Saharan Africa: capacity building needs assessment survey** *Centre for Research on Evaluation, Science & Technology, Stellenbosch University, 2016*
- **The Africa Data Revolution Report 2016: Highlighting developments in African data ecosystems,** *Africa Data Revolution Report, 2016*

4. **Toolkits:**

- **Science, Technology And Innovation (STI) Policy Training For Africa** *Bitrina Diyamett, Hezron Makundi, and Gussai Sheikheldin, 2019*
- **Communicating with the Private Sector: A toolkit for Science Granting Councils in Africa** *Dorine Odongo and Maurice Bolo, 2019*

5. **Books:**

- *Building science systems in Africa: challenges and opportunities for science councils (forthcoming), Edited by Rebecca Hanlin, Aschalew Tigabu and Gussai Sheikheldin, 2020*
- **Transforming Research Excellence, New Ideas from the Global South** *Edited by Erika Kraemer-Mbula, Robert Tijssen, Matthew L. Wallace&Robert McLean, 2020*
- **Empowering Africa through innovative Partnerships** *The Scinnovent Centre, 2019*

Trainings

2018 – Theme 1

Dates	Country	SGCs and participant details	Training Focus
12-16 February 2018	Maputo, Mozambique FNI	15 participants (6 Male; 9 Female) (incl University representatives Science Council Researchers)	Research and grants management
04 July 2018	Accra, Ghana MESTI & ATPS (Pre-meeting workshop)	42 participants (28 Male; 14 Female)	Relevance of PCF in SGC context Developing a generic operational manual
23 – 27 July 2018	Lusaka, Zambia NSTC	26 participants (15 Male; 11 Female) 12 Zambia SGC staff; 14 external stakeholders.	Research and grants management
27 – 31 August 2018	Lilongwe, Malawi (Onsite Training) NCST	12 participants (8 Male; 4 Female) 9 Malawi SGC staff; 3 University representatives	Research and grants management
17 – 21 September 2018	Pretoria, South Africa NRF Head Quarters (Learning visits to the NRF)	25 participants (18 Male; 7 Female) Not included: NRF staff members as well as representatives from NRF's external stakeholders	Research and grants management
17 September (expected finish date 24 October 2018)	Online Training offered through Wits Digital Campus	25 participants (17 Male; 8 Female)	Fundamentals of Research Management Course
15th – 19 October 2018	Gaborone, Botswana Joint onsite training with NEPAD and ACTS	25 Participants (5 Male; 6 Female and 14 participants did not specify their gender) 11 Botswana SGC staff; 14 external stakeholders	Research and grants management,
5 November 2018	Abidjan, Cote d'Ivoire PASRESI & ATPS (Pre-meeting workshop)	13 participants (6 Male; 7 Female)	New Approaches for Funding Research and Innovation in Africa

2018 – NEPAD

Country		Purpose of the training	Dates in 2018	Number of Participants			Organisation/Country invited
				Total	Female (%)	Male (%)	
01	Zambia	Designing and Monitoring of Research Programmes using Micro-Level STI Indicators	23 - 25 April, 2018	36	15 (41%)	21 (59%)	Malawi, Namibia, Zimbabwe, Botswana
02	Ethiopia	On-site training on the Use of Microdata and the Impact Oriented Monitoring Methodology for Designing Research Programmes (Addis-Ababa)	3 - 6 Sept 2018	39	14 (36%)	25 (64%)	Ethiopia (Science and Technology Information Centre, STIC, & Core survey team, few federal Ministries, Universities and Research Institutions) and SANBio
03	Senegal	On-site training on the Use of Microdata and the Impact Oriented Monitoring Methodology for Designing Research Programmes (Dakar)	10. - 13 Sept 2018	19	6 (21%)	13 (79%)	Senegal (Core Survey team, Universities, ministries of Trade, Industry, Planning & Commerce, National Statistics Office) and SANBio
04	Cote d'Ivoire	Regional Workshop (2 days) and On-site training (3 days) on the Use of Microdata and the Impact Oriented Monitoring Methodology for Designing Research Programmes (Abidjan)	01- 05 October 2018	21	5 (24%)	16 (76%)	Burkina Faso, Ghana, Cote d'Ivoire (with local PhD candidates and PhD degree holders beneficiaries of PASRES grants), Senegal and SANBio
05	Botswana	Joint SARIMA/NEPAD/ACTS On-site training session on Research management, use of STI indicators and Partnerships and private sector engagement (Gaborone)	15-19 October 2018	23	14 (60%)	9 (40%)	ACTS, SARIMA, Botswana (Research Institute, Universities, Ministries) & SANBio
06	Burkina Faso	On-site training on the Use of Microdata and the Impact Oriented Monitoring Methodology for Designing Research Programmes (Ouagadougou)	29 Oct – 01 Dec. 2019	23	7 (30%)	16 (70%)	Burkina Faso (FONRID, INERA, Ministry of Economy, Maison de l'entreprise, National Statistics Office, Universities, etc.) & SANBio
TOTAL				185	72 (39%)	113 (61%)	

2017 – Theme 1

Dates	Country	SGC participants and partners (M/F)	Themes
March	Ghana	20 (14/6)	Research and grants management
3-7 April	Ethiopia	17 (14/3)	Research and grants management
21-27 May	Namibia	9 (6/3)	SGCI Policy Dialogue (with ESSENCE on Health Research ³) on managing partnerships, leveraging funding, gender and diversity in research, and organisational risk management with SGCs.
5-9 June	Zimbabwe	12 (8/4)	Research and grants management
26 – 30 June	Namibia	29 (13/16)	Research and grants management
17 – 21 July	Burkina Faso	23 (12/11)	Research and grants management
3-7 July	South Africa (alongside NRF Stakeholder engagement)	14 (9/5)	Partnerships and collaboration
14-18 August	Uganda	22 (12/10)	Research and grants management
4 – 8 September	Dar es salaam, Tanzania	39 (28/11)	Research and grants management
25-29 September	South Africa (learning visit to NRF)	3 SGCs (1/3)	Research and grants management
9-11 October	South Africa (learning visit to NRF, research administrators workshop)	2 SGCs (0/2)	Research and grants management
2-6 October	Nairobi, Kenya	16 (8/8)	Research and grants management

2017 – Theme 2

Dates (2017)	Country	SGC participants and partners (M/F)	Theme
13-17 March	Accra, Ghana	27 (21/6)	R&D and innovation data for the production of related core indicators and research and grants management
20-22 March	Abidjan, Côte d'Ivoire	73 (53/20)	Collection of R&D and innovation data for the production of related indicators
2-8 April	Malawi	35 (24/11)	Championing the use of STI indicators in public policy making
9-15 April	Burkina Faso	20 (16/4)	Strengthening the ability of SGCs to collect, analyse and disseminate indicators relevant to STI policy and associated instruments
21-27 May	Namibia	58 (37/21)	NEPAD/ SARIMA: Joint meeting on STISA 2024 and - Continental Validation Workshop
4-10 June	Nairobi, Kenya	41 (30/11)	Championing the use of STI indicators in public policy making
9-14 July	Maputo, Mozambique	33 (20/13)	Needfinding Workshop on exploring ways for SGCs to advocate for increased R&D investment levels
24-29 July	Harare, Zimbabwe	47 (32/15)	STI-Policy instruments mapping for harnessing socio-economic growth
6-12 August	Seychelles	31 (19/12)	Creating an enabling environment for a knowledge-based economy led by innovations
4-8 Sept.	Dar es Salaam, Tanzania	39 (Kenya, Uganda, Tanzania and Rwanda)	Joint NEPAD/ SARIMA Regional Workshop on research management and mapping of STI systems for socio-economic growth

22-28 Oct.	Abidjan, Côte d'Ivoire	32 (Senegal, Burkina Faso and Ghana)	Understanding Research & Development and Innovation performance for increased productivity and socio-economic growth
29 Oct. – 4 Nov.	Addis Ababa, Ethiopia	32 (Rwanda, Uganda)	Measuring innovation performance for increased productivity in firms and social sectors

Meetings

- 2020 SGCI Closeout Workshop, Senegal, “Building Science Systems: the Role of Science Granting Councils”
- 2019 Annual Forum, Tanzania, “Open Science in Research and Innovation for Development
- 2018 Annual Regional Meeting, Ghana, “Research and Innovation for Job Creation”
- 2018 Annual Forum and Monitoring, Evaluation and Learning Workshop, Cote d'Ivoire, “New Approaches to funding research in Africa”
- 2017 Annual Forum, Zambia, “Effective public – private partnerships in Research and Innovation”
- 2016 Annual Forum, Mozambique, “Investing in Research Excellence in Africa”
- 2016 Rwanda, SGCI Regional meeting and MEL workshop

Annex 3: SGC Details

Burkina Faso (FONRID)

SGC Established	2011
Involved with SGCI since	2015
Themes	<ol style="list-style-type: none"> 1 Research Management 2 Use of STI indicators 3 Partnerships and Private Sector Engagement 4 Networking SDGs
% budget from SGCI	No direct contribution. Small grant fund from the ACTS for funding two bilateral projects built between researches from Burkina Faso and Senegal for a total amount of 100 000 USD
Other funders	<ul style="list-style-type: none"> • Government public funds • Local partners (ONG, Embassies) • Multilateral bodies i.e. European Union (LEAP-Agri, LEAP-FNSSA)
Types of support from SGCI	<ul style="list-style-type: none"> • The funding of bilateral research projects between Burkina Faso and Senegal via ACTS, 2018 • Training sessions for national researchers on methodology of writing good research projects, ethics and gender in research, 2018 • Methods of analyzing situation, identification of robust indicators and collecting pertinent data for elaboration of good policy advises and building adequate STI policy, 2019
Units receiving support	<ul style="list-style-type: none"> • FONRID's MEL department (management of the bilateral call and from training sessions organized along SGCI) • Around 20 persons from national research institutes/centers, public and private universities and innovators (trained by NEPAD to collect data to prove the

	<p>importance of research on the policy)</p> <ul style="list-style-type: none"> • Resource mobilization department at FONRID (masterclasses given during SGCI sessions on science diplomacy)
<p>Similar support from elsewhere</p>	<ul style="list-style-type: none"> • Through LEAP-Agri and the initiative of EU-AU based on H2020, we participated in ERANET joined call • It is the same with LEAP4FNSSA and FOSC • With WaterAid and French Embassy in Burkina Faso, received fund to finance WASH and agriculture projects.
<p>Kinds of evidence from SGCI</p>	<ul style="list-style-type: none"> • Documents about SGCI, report on women in STI and documents from ACTS during the SGCI sessions. Didn't receive any tools or manuals from SGCI for our SGC management.

Kenya (NRF)

SGC Established	2013
Involved with SGCI since	2016
Themes	<ol style="list-style-type: none"> 1 Research Management 2 Use of STI indicators 3 Partnerships and Private Sector Engagement 4 Networking SDGs
% budget from SGCI	Sponsorship in attending the SCGI activities and the collaborative research programme under the EAC
Other funders	Government of Kenya, through the Ministry of Education.
Types of support from SGCI	<ul style="list-style-type: none"> • Training workshops and other technical support activities conducted by SARIMA • Engagements during various SGCI meetings • Training activities held in Kenya and other participating countries (Tanzania and Seychelles). NEPAD training on research and development (R&D) surveys. • Attending and contributing to the regional and annual meetings.
Units receiving support	<ul style="list-style-type: none"> • Two NRF staff have been involved in the Initiative and hence received support • CEO has been participating in regional and annual meetings, while the Member of Secretariat has been coordinating all the initiative activities.
Similar support from elsewhere	<ul style="list-style-type: none"> • NRF is participating in a bilateral programme with the UK (under Newton Fund = British Council, Medical Research Council, Biotechnology and Biological Sciences Research Council)
Kinds of evidence from SGCI	N/A

Malawi (NCST)

SGC Established	2009
Involved with SGCI since	2015
Themes	<ol style="list-style-type: none"> 1 Research Management 2 Use of STI indicators 3 Partnerships and Private Sector Engagement 4 Networking SDGs
% budget from SGCI	Not quantified yet; because funding for projects in Malawi did not come through NCST as an SGC i.e funding was directly disbursed to researchers.
Other funders	Government / Treasury funding
Types of support from SGCI	<ul style="list-style-type: none"> • Trainings facilitated by Collaborating Technical Agencies (NEPAD, SARIMA, ACTS, Scinnovent Centre, STIPRO AAU,) since 2016 to 2019 • Coordination of SGCs to implement MoUs by ACTS in 2017 and May to June 2019 • Exchange visits (Malawi and Zimbabwe, Malawi and Mozambique) facilitated by ACTS to share lessons and experiences in STI management and identify research areas for collaborative projects under signed MOUs • Financing for Renewable Energy research projects through PPP in Phase I by ACTS (December 2018 – December 2019)
Units receiving support	<ul style="list-style-type: none"> • The Directorate of Research, and Technology Transfer • Planning, Monitoring and Evaluation • Documentation and Information Services
Similar support from elsewhere	No
Kinds of evidence from SGCI	<ul style="list-style-type: none"> • Masterclass Reports from consultants • Knowledge products Reports • Documentary Videos/films of funded projects

- Certificates of online courses by SARIMA and certificates of attendance by NEPAD training workshops

Mozambique (FNI)

SGC Established	2005 (updated in 2015 to accommodate the need under the additional mandate related to higher, technical and vocational education)
Involved with SGCI since	2014*
Themes	<ol style="list-style-type: none"> 1 Research Management 2 Use of STI indicators 3 Partnerships and Private Sector Engagement 4 Networking SDGs
% budget from SGCI	Almost 8% of the total current budget
Other funders	<ul style="list-style-type: none"> • Swedish International Development Agency (SIDA) • World Bank (WB) • In the past, STIFIMO (Science, Technology & Innovation Project between Finland and Mozambique)
Types of support from SGCI	<ul style="list-style-type: none"> • On-site visit by SARIMA to Maputo in February, 2018. • On-line courses for six months from September, 2018 to March 2019. • FNI staff went to South Africa in 2018 to learn from NRF how research is effectively managed. • Technical assistance visit by SARIMA • Training with NEPAD • Training with ACTS • Attending regional meetings
Units receiving support	<p>Almost all staff from all unites of FNI have received support:</p> <ul style="list-style-type: none"> • The Project Services Unit has 6 staff including one intern. All the six staff have been trained. • The Planning (including ICT), Studies and Cooperation Unit has 9 staff including 2 interns. All the 9 staff have been trained • The Finance, Human Resource and Administration Unit has 14 staff including 1 intern. 4 staff from

	Finance and 1 from Human Resource have been trained.
Similar support from elsewhere	<ul style="list-style-type: none"> • Technical support from the WB and SIDA which has been much more specialised and tailored to the specific projects to be implemented based on the type of the fund (mainly on M&E framework). The SARIMA technical support was a complement to the WB and SIDA support. It was also much more practical (in action), broad and comprehensive on how and why things are done in one way and not in the other, in M&E and other areas.
Kinds of evidence from SGCI	<ul style="list-style-type: none"> • SARIMA Good practice guidelines on the quality of research competition. • Draft terms of reference (ToRs) to develop strategic plan for FNI. The ToRs were developed by FNI with SARIMA expert in March 2019. • Revision of FNI manual of norms and procedures (existing guidelines for funding research projects) to include relevant components of SARIMA guideline • SARIMA Benchmarking Survey for SGCs • NEPAD worked with the SGCs to understand and harmonize the STI indicators • ACTS shared a communication framework • ACTS also shared a template of collaborative partnership agreement between FNI, ACTS and other SGCs. • review of research grants instruments to provide excellence in research • New approaches to fund research and innovation in Africa

*The Respondent was involved in the meetings and study held in 2014 leading to official launch of the SGCI that took place in 2015.

Namibia (NCRST)

SGC Established	2013
Involved with SGCI since	2015
Themes	<ol style="list-style-type: none"> 1 Research Management 2 Use of STI indicators 3 Partnerships and Private Sector Engagement 4 Networking SDGs
% budget from SGCI	1%
Other funders	<ul style="list-style-type: none"> • Government • International Development Agencies • Private sector
Types of support from SGCI	<ul style="list-style-type: none"> • SARIMA onsite training workshop on Research and Grant management in June 2017. • NRF Head Office Visit, learning track in September 2017. • Research Administration Workshop (RAW) learning visit track in October 2017. • 7 NCRST staff members participated in the online training courses in Research Management, Grants and Contracts Management, Programme Evaluation; Ethics and Integrity in Research; Intellectual Property, Technology Transfer and Commercialisation; Gender in Science and Technology from 2018 to 2019. • Technical assistance programme, with the objective to address action points that were identified by SGCs. The expert was hosted by NCRST and the workshop took place in May 2019. • A Joint Research Call for Proposal for Namibia and FNI, Mozambique focusing on Agro-Processing in 2018. • Financial support to attend various meetings and workshops hosted by the SGCI throughout SGCI phase 1.

Units receiving support	<ul style="list-style-type: none"> • Resource Mobilization and Grant management division • Natural Sciences Division; Innovation and Technology Development Department • Head of SGC, Coordinators and various staff members nominated to attend meetings or workshops
Similar support from elsewhere	Yes (not specified)
Kinds of evidence from SGCI	<ul style="list-style-type: none"> • SARIMA drafted and distributed the, <i>Good practice guidelines on the quality of research competitions</i>. The same document was also used as a guide during the setting up for a call for proposal between NCRST and FNI with the assistance of ACTS under Theme 3.

Rwanda (NCST)

SGC Established	2012
Involved with SGCI since	2015
Themes	<ol style="list-style-type: none"> 1 Research Management 2 Use of STI indicators 3 Partnerships and Private Sector Engagement 4 Networking SDGs
% budget from SGCI	SGCI has contributed a lot in terms of providing training and even funding two Rwandan researchers. Since we did not receive money in our account, it is difficult to measure the contribution in terms of %.
Other funders	<ul style="list-style-type: none"> • Government
Types of support from SGCI	<ul style="list-style-type: none"> • Training on STI policy development • Training on IP rights basis • Training on research management • Training on STI indicators • Support in proving and training NCST on Frascati and Oslo manuals • Training of it staff on grants management and other IT systems • Support in reviewing research call, and M&E framework • Training of researchers on how to write fundable research proposals • Support to benchmark methodologies on how to conduct R&D surveys • Fund to support two regional projects via the EAC collaboration • Support in increasing the knowledge on academia-industry collaboration
Units receiving support	<ul style="list-style-type: none"> • STI Development Department • Research and Innovation Development and Promotion Department
Similar support from elsewhere	Only Government
Kinds of evidence from SGCI	<ul style="list-style-type: none"> • R&D survey was successfully implemented due to the training provided by NEPAD to the NCSST staff and... about STI indicators- Frascati and Oslo manuals

- NCST excellent research call, research and innovation M&E framework, and agreement between NCST and researchers were reviewed by SARIMA
- SARIMA, through NRF South Africa, supported NCST staff to visit NRF South Africa in order to acquire knowledge on its systems needed for grants management
- NCST staff acquired knowledge about IP rights, and research management after attending a training organized by SARIMA
- The reviewed STI policy was enhanced after acquiring knowledge from the training organized by ACTS
- NCST is now in touch with various SGCS thanks to various meetings and forums organized by ATPS, ACTS, Scinnovent Centre and ACTS
- NCTS was able to fund, in collaboration with SGCs in EAC region, two regional projects. This means NCST managed to demonstrate to the Government of Rwanda that it can mobilize funds from partners

Senegal (DFRSDT)

SGC Established	2014
Involved with SGCI since	2015
Themes	<ol style="list-style-type: none"> 1 Research Management 2 Use of STI indicators 3 Partnerships and Private Sector Engagement 4 Networking SDGs
% budget from SGCI	N/A
Other funders	<ul style="list-style-type: none"> • Government of Senegal • Leap-Agri (EAR-NET co-fund project) • Japanese science and technology agency (JST)
Types of support from SGCI	<ul style="list-style-type: none"> • Most of the support received was in the form of capacity building and learning visits that took place throughout the country SGCI's members and in Senegal. • Financial support was received for projects selected in the joint Senegal/Burkina Faso call for proposals.
Units receiving support	<ul style="list-style-type: none"> • Scientific Research and Technological Development Funding Directorate (DFRSDT) • Research Strategies and Policy Directorate (DSPR)
Similar support from elsewhere	No
Kinds of evidence from SGCI	<ul style="list-style-type: none"> • Data on research in Africa • Innovation data • Research indicators • Projects management • Monitoring, evaluation of projects

Uganda (UNCST)

SGC Established	1990
Involved with SGI since	2014*
Themes	<ol style="list-style-type: none"> 1 Research Management 2 Use of STI indicators 3 Partnerships and Private Sector Engagement 4 Networking SDGs
% budget from SGI	No direct budgetary contribution. The technical support was mainly in-kind.
Other funders	Government of Uganda is the most significant funder
Types of support from SGI	<ul style="list-style-type: none"> • Capacity building support: research and grant management trainings/courses by SARIMA in 2017-2018 • Learning visits in 2018 to National Research Foundation (NRF), South Africa. • Peer learning visits by around 9 SGCs from other countries, held in Uganda (UNCST) in 2019. • Professional training courses held between 2017, 2018 and 2019 by SARIMA on Intellectual property (IP), Technology Transfer, Ethics etc. • Capacity building in data collection and management of Science Technology and Innovation (STI) statistics and indicators, by NEPAD from 2016 to 2018. • All trainings were looking at designing appropriate instruments for data collection of national and project level statistics. • Existing (predated) country level STI survey manual, and NEPAD tools were mainly to help customize the national manual and instruments to the Frascati Manual on Research and Innovation surveys. • Participated in the collective research initiatives in all the three components: PPP, Bilateral and Trilateral calls • Participated in all Annual Meetings and Regional Workshops.

Units receiving support	<p>The initiative support was institutionalised across various departments of UNCST within the mandate to work on the four themes:</p> <ul style="list-style-type: none"> • Theme1: Research Grants Unit, with 5 staff. • Theme2: Policy Unit, with 5 staff • Theme3: Research Infrastructure Unit and Accounts • Theme4: Bilateral Cooperation Unit.
Similar support from elsewhere	No.
Kinds of evidence from SGCI	<ul style="list-style-type: none"> • The evidence was mainly drawn from studies, including the Backward study of SGCI in Sub-Saharan Africa by IDRC, that covered the SGCs mandates, functions, structures, financing, linkages and impact for societal development. <p>Specific examples of other studies include:</p> <ul style="list-style-type: none"> • Political economy studies, • Research Excellence: perspectives and measurement of science excellence in Africa • Good practice in research management by SARIMA • other masterclass papers such as: Innovation systems by ACTS/ATPS.

*Although, the SGCI was officially launched in 2015, UNCST’s involvement in the Initiative started in 2014 when it was invited to express interest to participate, through a meeting held in Nairobi in 2014.

Zambia (NSTC)

SGC Established	2001
Involved with SGCI since	2017
Themes	<ol style="list-style-type: none"> 1 Research Management 2 Use of STI indicators 3 Partnerships and Private Sector Engagement 4 Networking SDGs
% budget from SGCI	N/A
Other funders	Government of the Republic of Zambia
Types of support from SGCI	<ul style="list-style-type: none"> • Capacity building • Financial support
Units receiving support	<ul style="list-style-type: none"> • All the units have received support from the SGCI
Similar support from elsewhere	<ul style="list-style-type: none"> • The Council has had an opportunity to work with the United Nations Economic Commission for Africa (UNECA). The support is in terms of capacity building.
Kinds of evidence from SGCI	<ul style="list-style-type: none"> • Best practices in Grants Management • Best practices in communicating about research

Annex 4: Summary of Collaborative and Public-Private Partnership Projects funded under SGCI Phase 1

Bilateral and Regional Collaboration Projects (Ref. SGCI Closeout workshop Feb 2020 Report, pp 6-7)

1. **Mozambique and Namibia:** Processing of under-utilized fruits and plants for enhancing nutritional quality.
2. **Burkina Faso and Senegal:** How to improve multi-sectoral management of chronic diseases in elderlies
3. **Burkina Faso and Senegal:** Development of saline lands to contribute to improving the living conditions of vulnerable populations in the context of climate change in West Africa
4. **Uganda and Ivory Coast:** Development of a real-time field pathogen monitoring system for devastating rice blast disease.
5. **Uganda and Ivory Coast:** Epidemiological study of yam viruses diseases in Uganda and Cote d'Ivoire
6. **East Africa:** A new technique for locus mass culture for food and feeds industry in East Africa
7. **East Africa:** Bioequivalence studies of locally manufactured amoxicillin and captopril solid dosage formulations: a catalyst for introduction of bioequivalence studies to support local pharmaceutical manufacturing sector in East Africa.

Bilateral and Regional Collaboration Projects (Ref. SGCI Closeout workshop Feb 2020 Report, pp 11)

1. Contribution to the enhancement of indigenous knowledge in the process of sustainable development of communities in the area of Ecotourism, in the administrative post of Quiterajo and implementation of the avitourism program in the administrative post of Mucojo district of Macomia, Cabo Delgado Province in Mozambique.
2. MUSSICA (Markets), Mozambique
3. Developing and promoting supplement and beverage product prototypes for improved commercial exploitation of propolis and bee venom in Uganda
4. Directing cocoa waste to wealth using known yeast strains from Uganda box fermentation
5. Maize Germ and bran as raw materials for high fibre value added bakery and confectionery products in Uganda
6. Piloting biogas production as a social enterprise at Tsangano vegetable market in Malawi
7. Biomass gasification for decentralized electricity generation in Malawi
8. Introduction of solar powered technologies to the smallholder dairy industry in Malawi
9. Optimization of rice production in the Nanan rice perimeter (Yamoussoukro) Cote d'Ivoire

10.: Creation and piloting of a mobile electrolytic decontamination prototype for industrial wastewater.
11. Developing the business case for the establishment of eh Ghana innovation and research centre (GIRC Centre) in Ghana
12. Private sector engagement strategy for research, science, technology and innovation in Botswana

SGCI Training Effectiveness Case Studies (STECS) Project
Assessment checklist

1. Background and context:

The Science Granting Councils Initiative (SGCI) is a multi-funder initiative that aims to strengthen the capacities of 15 science granting councils in Sub-Saharan Africa in order to support research and evidence-based policies that will contribute to economic and social development. Various capacity development activities have been conducted by the SGCI since its launch in 2015, in partnership with the Collaborating Technical Agencies (CTAs) under four themes. The independent SGCI Training Effectiveness Case Studies (STECS) project is being implemented between September 2019 and January 2020 to undertake case study analyses to document how SGCI trainings and other forms of technical support have influenced the performance of beneficiary Science Granting Councils (SGCs) from eight selected Sub-Saharan African countries.

As a key stakeholder, it is in this background that you are being contacted, to make a contribution to this evaluation. We seek your contribution to this endeavour through completing the questions below, either by email or through a conversation. All responses will be anonymised in the analysis and evaluation reports. You do not have to answer any question that you feel is not relevant to you or that you would prefer not to answer. You will be included in the distribution lists for the evaluation outputs which are due in early 2020.

2. Respondent details:

- Your name (optional):
- Your country:
- Your organisation:
- Position in own organisation:

3. Assessment questions:

1) General background on SGC and involvement with SGCI

- a. When was your SGC established?
- b. How long have you been involved with SGCI?
- c. How did the relationship start?
- d. Which themes are you involved in?
- e. In % terms, how much does the SGCI contribute to your SGC's budget?
- f. Who are the other funders of your SGC's activities?
- g. In your own few words, how would you describe how your activities under SGCI are going to date? Building capacity of the SGC and its stakeholders
- h. Are there any challenges or constraints you would want to share?
- i. How have you dealt with them?

j. What about key successes to date?

2) How have evidence, knowledge exchange and support informed research allocation and grants management by SGCs?

- a) Please give a breakdown of the types of support that your SGC has received from SGCI and when they were received
- b) Who or which unit within your SGC has received this support?
- c) Do you receive similar support from elsewhere?
- d) How about the knowledge exchange activities organised by SGCI that your SGC has been involved in?
- e) Please give a breakdown of the kinds of evidence that have been provided to your SGC by SGCI?
- f) How has your SGC used the evidence?
- g) Please describe the established processes through which your SGC seeks and utilises evidence
- h) What factors facilitated or constrained the use of that evidence?

3) How have learning outputs been taken up by SGCs?

- a) Please give a breakdown of the SGCI learning outputs that you are aware of?
- b) In your view, which ones are most important, and why?
- c) Which ones have your SGC used?
- d) Is there an established process/pathway for embedding learning outputs in your SGC?
- e) Who in the SGC has used them and how?
- f) What evidence can you provide or cite to verify the above?
- g) What factors constrained or facilitated the use of the outputs?
- h) Any other thoughts to share on this issue

4) What adjustments need to be made in SGCI processes for increased effectiveness of SGCs?

- a) How would you rate the relationship between SGCI and your SGC?
- b) Name two important things that your SGC has managed to achieve by being part of SGCI?
- c) Are there any opportunities missed as a result of being part of SGCI?
- d) Are there things you would

(1) do differently:

(2) keep doing?

- e) Please recommend two things that SGCI need to do to strengthen their contribution to SGCs?
- f) Two things that SGCs need to do to maximise the benefit of being in SGCI?
- g) Two things that SGCs can do to enhance their role in the national science system