

# FINAL TECHNICAL REPORT / RAPPORT TECHNIQUE FINAL STRENGTHENING AFRICA'S SCIENCE GRANTING COUNCILS TO CHAMPION THE USE OF SCIENCE, TECHNOLOGY AND INNOVATION INDICATORS IN PUBLIC POLICYMAKING

African Union Development Agency (AUDA-NEPAD);

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Strengthening Africa's Science Granting Councils to Champion the Use of Science, Technology and Innovation Indicators in Public Policymaking

# FINAL TECHNICAL REPORT



IDRC PROJECT NUMBER: 108320-001  
April 2020

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## EXECUTIVE SUMMARY

There is increasing demand for data use by the public, government ministries and agencies (including Science Granting Councils), development partners, regional economic communities and continental organizations to clearly demonstrate the impacts of public investments in science and technology programmes, and other development interventions. This demand requires Science Granting Councils in Sub-Saharan Africa to increase their organizational capacity and to play an intermediary role in national R&D and innovation systems within the *national development context*. The Science Granting Council Initiative is aimed at strengthening the role played by Science Granting Councils in Africa's national economic systems. The Science Granting Councils are working together with Collaborating Technical Agencies to deepen their understanding of national economic structures, research and innovation systems. Knowledge-based approaches to effectively manage research and innovation activities for creating social and public value are important. One of the key capabilities that is urgently needed by Science Granting Councils is the use of high quality and high-coverage data to generate macro and micro-information relevant for their day-to-day planning and activities. Therefore, the appropriate use of sufficiently disaggregated STI indicators, at specific levels within research and innovation ecosystems, to understand the implications of a policy, strategy or objectives of National Development Plan is critical for formulating and implementing projects. The need for generating a data-rich picture on the status of subnational and national R&D and Innovation systems cannot be overemphasized or ignored. The AUDA-NEPAD, a Collaborating Technical Agency of the Science Granting Council Initiative, implemented Science Granting Council Initiative-Theme 2 for the period August 2016-March 2020. The activities involved building the capacity of Science Granting Councils to design and monitor research programmes based on the use of robust science, technology and innovation indicators within the context of national development. This is the final technical report of the 42-months project, and it provides the deliverables (i.e., outputs and outcomes), findings, lessons, challenges and recommendations.

# 1 PROJECT INTRODUCTION AND BACKGROUND

Innovation<sup>1</sup> matters for development and drives economic growth and provides solutions to a myriad of social challenges. Improved economic and social conditions are good national productivity and efficiency. To make innovation work for the economy and society at large, R&D and innovation activities have to be well planned and supported by clear policies and programmes. Such are possible if responsible national agencies such as Science Granting Councils (SGCs) have an in-depth micro-level understanding of their national research and innovation systems. The performance and efficiency of national research and innovation systems depend on a maze of interactions among many variables: infrastructure, equipment, funding, workforce, enterprise or organizational business processes, projects, goods and services. To understand these interactions, the need to use relevant data and robust indicators is key. However, robust indicators require *reliable* and *good quality* data sources at both the micro- and macro-levels of national research and innovation systems. The right data and policy instruments provide the appropriate levels of information and insights needed to come with the innovations that drive economic growth and create job opportunities. For responsible agencies to effectively manage, promote and benefit from innovation, robust Science, Technology and Innovation (STI) indicators are essential.

Science Granting Councils are intermediaries in setting and monitoring of the research agenda and priorities within the national research and innovation systems. SGCs are mandated to implement STI policy through well designed publicly funded R&D and innovation programmes and projects that must create social and public value. To achieve this, SGCs should utilize effective research management practices and implement relevant STI policy instruments. Evidently, SGCs must have intimate knowledge of their national economies at the most appropriate levels of activity in different sectors (including the major traded goods and services). Such knowledge will help SGCs in allocating and targeting limited R&D resources to the sectors that need them most and where resource use makes the most impact. Therefore, STI policy implementation apart from strengthening the supply side (i.e., input), should focus on generating knowledge, skills and technologies that complement innovation performance. For SGCs to play an effective intermediary role within national research and innovation systems, they should have a systemic view of the economic structure and the institutional set-up that affects the national development plans.

The majority of SGCs in Sub-Saharan Africa (SSA) are organizationally weak institutions and play peripheral roles in national R&D systems. Moreover, the SGCs operate in environments

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<sup>1</sup> Innovation as used here is understood to mean a new or improved product or process (or combination thereof) that differs significantly from the organization's previous products or processes and that has been introduced on the market or brought into use by the organization.

where the national R&D systems are disconnected with the economic systems<sup>2</sup> and structures<sup>3</sup>. The Science Granting Council Initiative (SGCI) was meant for SGCs and Collaborating Technical Agencies (CTAs) to develop a collective understanding of Africa's national economic systems, economic structures and how these related to R&D and innovation ecosystems. Such information and knowledge should enable SGCs to effectively manage the performance of innovation by designing project proposals and funding that created economic, social and public value. This was envisaged to work if the capacities of SGCs were enhanced to effectively: 1) manage research; 2) design and monitor research programmes, and to formulate and implement policies based on the use of robust science, technology and innovation (STI) indicators; 3) support knowledge exchange within an STI system, and; 4) establish partnerships with all actors in a science and technology system. Councils that are effectively managed and connected with multiple actors, at scale, will in turn strengthen national research and innovation systems to deliver on Africa's transformative agenda. Therefore, the context within which SGCs operated is critical for the success of the SGCI.

The African Union Development Agency (AUDA-NEPAD) as the Collaborating Technical Agency (CTA) of the SGCI is implemented Theme 2 of the initiative. The overall aim of SGCI-Theme 2 was to strengthen the capacities of SGCs to champion the use of STI indicators in public policymaking process and manage the performance of their research and innovation systems. This is a final technical report outlining and describing the project deliverables (i.e., outputs and outcomes), findings, lessons, challenges and recommendations of SGCI-Theme 2 implemented from August 24, 2016 to March 24, 2020.

## 1.1. Organization of the Report

This section presents the background information to SGCI-Theme 2. The remainder of the report is organized as follows; Section 2 is a short description of the aim and objectives of the project; Section 3 summarizes the methodology and the delivery approach to achieve the objectives of the project. Section 4 describes the key outputs and findings of the project; Section 5 illustrates how the deliverables contributed to achieving the objectives of the project, Section 6 outlines outcomes that have emerged from the outputs and findings; Section 7 describes how the main outputs, outcomes and findings has contributed to the SGCI output indicator 1.2 target; Section 8 provides a summary of the key lessons, observations and experiences from SGCI-Theme 2 implementation; In Section 9, the report provides some excerpts of gender and inclusivity considerations and the overall assessment and recommendations from the project are presented in Section 10.

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<sup>2</sup>Economic system means development space comprised all aspects of production, resource allocation and distribution of goods and services within society or a given geographical area

<sup>3</sup>Economic structure describes the changing balance of output, trade, incomes and employment drawn from different economic sectors ranging from primary (e.g. farming, fishing, mining, etc.) to secondary (manufacturing and construction) to tertiary and quaternary (tourism, banking and software). The economic structure is important for determining the allocation of factors of production. Therefore, the economic structure is a combination of institutions, agencies, entities, decision-making processes and patterns of consumption.



## 2 PROJECT GOAL AND KEY OBJECTIVES

The overall objective of SGCI-Theme 2 was to strengthen the abilities of participating SGCs to design and monitor research programmes and formulate and implement policies based on the use of robust STI indicators. The specific objectives were to strengthen the capacity of Science Granting Councils to:

- a) Develop, collect, analyze and disseminate indicators relevant to STI policy instruments;
- b) Develop and use indicators for assessing STI policy relevance and advocating for increased R&D investments;
- c) Design and monitor research programs by developing a guide to best practices; and
- d) Champion the appreciation and use of STI indicators in policy decisions.

The project implementation involved SGCs from Senegal, Burkina Faso, Ivory Coast, Ghana, Namibia, Malawi, Mozambique, Zimbabwe, Zambia, Botswana, Uganda, Kenya, Tanzania, Ethiopia and Rwanda.

# 3 PROJECT DELIVERY APPROACH

The delivery approach of SGCI-Theme 2 was guided by the context described in different national development plans, STI related policies, and national, regional and continental frameworks such as STISA 2024 and Agenda 2063. The implementation approach utilized 4 modes of engagement with the SGCs to build capacities in the design and monitoring of research programmes and to formulate and implement policies based on the use of robust STI indicators. These were (1) On-site Engagements with SGCs, (2) Regional Training and Joined-Up CTA Programmes, (3) SGCI Consultative and Annual Learning Forums and (4) Regional Advocacy and Dissemination Platforms. There were 39 sessions (combined activities or engagements) for the four modes of implementation. All four modes were strategically planned to strengthen the human and institutional capacities of SGCs to:

- Conduct reviews of STI policies in their countries in the context of national development plans;
- Map SGCs mandates and needs to the STI policy frameworks and instruments;
- Develop context specific data instruments for collecting and analyzing relevant STI indicators for delivering on their mandate;
- Design and implement data systems for monitoring the impact of national research and innovation programmes; and
- Use the evidence from STI indicators to advocate for increased investments in R&D and innovation activities.

The proceeding sections provide a brief description of the implementation under the 4 modes of delivery.

## 3.1. On-site Engagements with SGCs

On-site engagements allowed SGCs and AUDA-NEPAD to look at specific issues that were pertinent to the context in which a specific SGC operated. More importantly, sessions on *needfinding* (including observing and learning at the place of work for SGCs also) surfaced some implicit needs not normally picked up by traditional needs assessment. Institutional STI information that may be deemed confidential was shared by SGCs and utilized to illustrate important lessons and informed the design of data collection instruments. Senior SGC officials got the opportunity to share and exchange knowledge on specific internal dynamics of their institutions. The on-site engagements with SGCs accelerated progress towards meeting the SGCI output indicator 1.2 target. For the period of the project, there were 15 On-site engagements in the following countries: Rwanda, Zambia, Ethiopia,

Senegal, Tanzania, Burkina Faso, Cote d'Ivoire, Senegal and Mozambique (see Annex 11.7; some countries had multiple On-site engagement sessions). These sessions helped the CTA to appreciate how the SGCs operated and related to other government agencies. Such observations prompted the inclusion of variables on how both R&D and innovation are planned for and managed in the modified data collection instruments.

### 3.2. Regional Training and Joined-Up CTA Programmes

To foster peer-to-peer learning and sharing of experiences and practice among SGCs and CTAs, AUDA-NEPAD organized regional joined-up training sessions as part of its delivery process. The 15 countries were divided into three geographical groups as indicated in Table 1. The activities under this mode of delivery provided additional platforms for achieving the objectives and targets of SGCI-Theme 2. First, there were several overlaps between the delivery of Theme 2 and other themes of SGCI (e.g. Themes 1 and 3). For instance, the evidence and analytics insights generated by the efforts of Theme 2 served as input for research management capacity building activities of Theme 1 led by SARIMA. One typical example was the engagement session held in Botswana (see activity number 28 in Annex 11.7). The training session demonstrated the inter-connectedness among the different themes of the SGCI. The session started with the design of national research programmes and the use of evidence and STI robust indicator datasets to prioritize and contextualize the programmes. A case study on the leather industry in Botswana was simulated used to illustrate the activities involved in selecting the industry sector, designing of the research and innovation programmes relevant to current opportunities and challenges. This was followed up by demonstrating the use STI micro-data to support the planning process. The session concluded with practical steps in building partnerships with the private sector and how to scale-up innovation projects in the sector. The relevance of research projects (apart from publishing papers) to national development objectives is a major disconnect among public research institutions. This message was part of developing key messages to advocate for increased funding of R&D and innovation projects.

Group 1	Group 2	Group 3
Senegal	Namibia	Uganda
Burkina Faso	Malawi	Kenya
Ivory Coast	Mozambique	Tanzania
Ghana	Zimbabwe	Ethiopia
	Zambia	Rwanda
	Botswana	

*Table 1: Geographical groups for SGCI-Theme 2 Joined-Up Regional Training Engagements*

Prior to the SGCI programme, AUDA-NEPAD had built a strong network of STI focal points in 41 AU Member States (12 out of the 15 SGCs were part of this network). Some of the focal points were used for the peer-to-peer learning sessions among SGCs during regional training workshops; they were used as the nuclei for training activities on STI data collection, analysis, reporting and feedback on what needed to be improved based on their accumulated experiences and skills.

### 3.3. SGCI Consultative and Annual Learning Forums

The SGCI regional and annual forums were the platforms for sharing progress on the work of SGCI-Theme 2 with SGCs, CTAs, other invited governmental institutions and stakeholders. The forums were also used as platforms for introducing the SGCI to governments, private sector and the scientific community. For every forum, the IMT appraised the progress toward the objectives of SGCI-Theme 2, under the Monitoring, Evaluation and Learning (MEL) sessions. This provided the needed feedback and insights to revise the workplans and activities scheduled for implementation.

### 3.4. Regional Advocacy and Dissemination Platforms

Dissemination and political buy-in by decision makers are key success factors for the SGCI. AUDA-NEPAD used its access and influence in the African Union and Regional Economic Communities (RECs) to disseminate the work under the SGCI and sought buy-in from the political leadership. Under activity number 14 in Annex 11.7 for instance, the progress and implementation of STISA-2024 and the SGCI was presented to the African Union Specialized Technical Committee Meeting of Senior Experts. The recommendations from the Senior Experts were adopted by the AU Ministers of Education and Science & Technology. Under Decision Item 'VI' of the Specialized Technical Committee Meeting, the AU Member States were urged to actively support (i.e. financial, human and social) and own the Science Granting Council Initiative (see Annex 11.6). This decision is critical for the future work and sustainability of the SGCs beyond the SGCI.

# 4 PROJECT FINDINGS AND OUTPUTS

Over the 42-months period of implementing SGCI-Theme 2, there has been significant deliverables and outputs, which were shared using AUDA-NEPAD channels of dissemination. The outputs and findings served as progress towards meeting the objectives of SGCI-Theme 2 and SGCI output indicator 1.2 target. As SGCI-Theme 2 is not necessarily a research-based project, in this section, instead of presenting findings, we present the main project outputs<sup>4</sup> and how the outputs were disseminated. However, six essential lessons from the implementation of the project have been outlined in Section 8.

## 4.1. Knowledge Outputs

### 4.1.1. Impact Oriented Monitoring Guide for SGCs

Given the importance of accountability and growing calls for increased investments in R&D, government institutions understand the urgent need to demonstrate the impact of research activities. Most institutions, for an example SGCs, find it difficult to describe the impact and pro-actively track the impact of the research and innovation programmes they fund using relevant data. The AUDA-NEPAD has engaged with and trained (see Annex 11.7) all SGCs on how to use the Impact Oriented Monitoring (IOM) methodology to describe, document and demonstrate the impact of their projects. The methodology is a handy systematic tool that captures relevant data and generate useful information on the impact of R&D and innovation projects at different times and levels of the targeted population or organization. This knowledge product is a practical guide that walks SGCs through the process of understanding the project scope, then re-designing and re-structuring their data management systems for R&D and Innovation programmes to progressively document their impact. The guide and corresponding instruments are attached in Annex 11.1. The development of this guide is an iterative process characterized by robust feedback loops to improve the quality of data collected at every stage of the project from conceptualization to post-closure.

### 4.1.2. Policy Paper 1: Using Micro-Data to Understand the Interactions within National Research and Innovation System: The Case of Ethiopia

Ethiopia has put together good data systems and infrastructure for STI indicators. This

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<sup>4</sup>Details of the findings of SGCI-Theme are expressed in the knowledge outputs

data infrastructure has been used for micro-level data collection and analysis. Having undertaken the capacity strengthening workshops provided by AUDA-NEPAD on firm level innovation performance measurements, Ethiopia invited the AUDA-NEPAD for an on-site engagement on how to use the micro-level STI indicators to derive insights on their national research and innovation systems. More significantly, Technology Innovation Institute (TECH-IN) provided AUDA-NEPAD with the anonymized raw data from their innovation surveys. A summary *InfoBrief* policy paper that explores the high-level interactions within the national research and innovation systems of Ethiopia using the datasets from the innovation and R&D surveys is presented. The paper also assesses how such interactions compare with the R&D system for South Africa. The *InfoBrief* paper is attached in Annex 11.2.

#### 4. 1. 3. Policy Paper 2: Capacity Strengthening on Economic Subsector Innovation Performance Systems for SGCs in Sub-Sahara Africa

Given the revised Oslo Manual<sup>5</sup> (OM 2018), the concept of innovation has been clarified by a measurement framework and guidelines that provide for full alignment with United Nations' statistical classifications such as the System of National Accounts (SNA 2008<sup>6</sup>) and the International Standard Industrial Classification of All Economic Activities (ISIC Rev. 4<sup>7</sup>). The OM 2018 now includes all SNA sectors such as general government, non-profit institutions servicing households and households themselves. Since innovations are key to transformative social and economic changes, the demand for effective public services delivery can be addressed by improving and using knowledge of the African national research and innovation ecosystems. Despite the acknowledged potential of innovation to transform African economies, major data and knowledge gaps exist on the role of innovations and the appropriate policies to support such innovations. AUDA-NEPAD has therefore provided training modules and tools on Economic Subsector Innovation Performance Systems for SGCs. This *InfoBrief* policy paper highlights the processes of establishing such a system as well as the importance of such efforts and the need for providing additional resource support. The *InfoBrief* paper is attached in Annex 11.3.

#### 4. 1. 4. Impact Oriented Monitoring Guide for SGCs

The robustness of STI indicators is based on micro-level datasets. This type of data is needed by SGCs to understand the link between macro- and micro-level planning (the way SGCs budget and allocate resources for research projects or programmes) given national development objectives. To generate the required micro-level data, AUDA-NEPAD worked with SGCs to; (1) develop new measurement instruments that capture data at different

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<sup>5</sup><https://www.oecd-ilibrary.org/docserver/9789264304604-en.pdf?expires=1550139196&id=id&accname=guest&checksum=FBD847C82AC32AFC025D13D7D5D4BDA1>

<sup>6</sup><https://unstats.un.org/unsd/nationalaccount/docs/SNA2008.pdf>

<sup>7</sup>[https://unstats.un.org/unsd/publication/seriesm/seriesm\\_4rev4e.pdf](https://unstats.un.org/unsd/publication/seriesm/seriesm_4rev4e.pdf)

levels within the national R&D and innovation value chains or (2) modify current measurement instruments so that they capture the micro-level data at different stages of the national organizations or enterprises that perform R&D and innovation based on different economic value chains. The generic measurement instruments that can be adapted by any SGC are attached in Annex 11.4.

#### 4.1.5. Mapped National Research and Innovation Systems for SGCs

To realise increased R&D and innovation performance, AUDA-NEPAD has built the capacities of SGCs to identify and interrogate the interactions among components within their respective national research and innovation systems. The performance of national research and innovation systems is determined by the interactions among individual elements. Different configurations of the national research and innovation systems result in varied performances. Annex 11.5 outlines the mapped national research and innovation systems of 5 SGCs.

### 4.2. Dissemination of Knowledge Outputs

As described in Section 3.4 above, the findings and insights from the project outputs listed here have been disseminated using the African Union and RECs channels of dissemination. In some of the on-site engagements (for instance, activity number 34 in Annex 11.7), stakeholders' meetings were held, where other government institutions and the private sector were invited to discuss and interrogate innovation performance in selected sectors of the economy. AUDA-NEPAD shared the insights from the enlisted knowledge products; the feedback, especially, from the private sector was used to refine the products. The following are other<sup>8</sup> forums where the work under SGCI-Theme 2 has been shared:

- *Joint Meeting of SADC Ministers Responsible for Higher Education, Training, Science, Technology and Innovation (ET-STI) and the Eleventh Session of SACMEQ Assembly of Ministers*, Ezulwini, Kingdom of Swaziland (19-23 June 2017);
- *UNECA Senior Experts Dialogue on Science, Technology and Innovation and the African Transformation Agenda*, Dakar, Senegal (15 -17 November 2017); and
- *25th SADC Director-Generals Committee on Statistics Meeting*, Johannesburg, South Africa (13-15 June 2018). This is a meeting of National Statistics Office of SADC, attended by all DGs of Statistics.

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<sup>8</sup> These fora are not listed in Annex 11.7 because the attendance was funded by AUDA-NEPAD's core budget.

# 5 ACHIEVING THE PROJECT OBJECTIVES

**Objective 1: To strengthen the ability of Science Granting Councils to develop, collect, analyze and disseminate indicators relevant to STI policy instruments.**

**Comment:** This objective has been fully met (scale 4 out of 4) as all SGCs have now either (1) developed new measurement instruments that capture data at different levels within the national R&D and innovation value chains or (2) modified their measurement instruments to capture the micro-level data at different stages of the national R&D and innovation systems. SGCs from Burkina Faso, Senegal, Zambia, Ethiopia and Rwanda have piloted the instruments. Details of this have been captured in the 6 technical reports submitted to IDRC.

**Objective 2: To strengthen the capacity of Science Granting Councils to develop and use indicators for assessing STI policy relevance and advocating for increased research and development (R&D) investments.**

**Comment:** Through the AUDA-NEPAD's engagements and training sessions (see Annex 11.7), the capacities of SGCs have been strengthened to identify important national framework conditions related to financing, regulation, knowledge generation, skills development, and market structures. Their capacities have also been strengthened on how to use robust STI indicators to appreciate the effects of national framework conditions (e.g. human resources, science base, regulatory environment, employment conditions, fiscal environment, networking, collaboration, entrepreneurial activities, and IP management) on R&D and innovation performance. In our view, this objective has been fully met (scale 4 out of 4). For further details refer to the 6 technical reports previously submitted to IDRC.

**Objective 3: To strengthen the capacity of SGCs to design and monitor research programs by developing a guide to best practices.**

**Comment:** The capacities of all SGCs were strengthened to use the Impact Oriented Monitoring (IOM) methodology. The IOM is a handy systematic tool for capturing relevant data and generating useful information on the impact of R&D and innovation projects. The guidelines for implementing the methodology have been developed see Annex 11.1. Botswana and Tanzania are engaging with AUDA-NEPAD on how to operationalize the methodology. As such this objective has been fully met (scale 4 out of 4). Further details are captured in the 4th, 5th and 6th technical reports submitted to IDRC.



**Objective 4: To strengthen the ability of Science Granting Councils to champion the appreciation and use of science, technology and Innovation (STI) indicators in policy decisions.**

**Comment:** SGCs have acquired not only demonstrable capabilities to measure STI performance but communicating the results to influence policy changes. To effectively communicate the results of STI measurements packaging of the right messages, identifying the right target audiences and using the right windows of opportunity (particularly political) are required. SGCs have been trained on some of the good practises for formulating key advocacy messages focused on increased investments in R&D and Innovation activities. The capacities of SGCs have also been strengthened on the techniques of building a strong, diverse and engaged partnership base needed to influence policy and account for the impact of research. SGCs in Ethiopia, Botswana, Burkina Faso and Senegal have produced key messages to advocate for investment (levels of investment and strategic economic sectors) in R&D and innovation. As such the objective have been met (scale 3 out of 4). Further details are captured in the 4th, 5th and 6th technical reports submitted to IDRC.

# 6 PROJECT OUTCOMES

The outcomes for SGCI-Theme have been adequately captured in Sections 4 and 7. In order not to repeat content, this section captures the summaries of the outcomes in Sections 4 and 7.

- **Increased Commitment of SGCs to Strengthened their STI Data Systems**

Through the work under SGCI-Theme 2, there has been increased commitments from the leadership of SGCs to strengthen their STI data systems. Top management of SGCs (e.g. RCZ-Zimbabwe, FONRID-Burkina Faso and TECH-IN-Ethiopia) and STI institutions participated in the training sessions of SGCI-Theme 2 and contributed to the discussions that resulted in the outcomes articulated in this report. The Government of Ethiopia, for instance, fully funded additional participants (including their Director General) to attend the SGCI-Theme 2 training sessions. The Minister of State for Science and Technology for Ethiopia also attended and presented on innovation in one of our training sessions. This is an indication of how some governments value the SGCI.

- **Enhanced Knowledge on National Research & Innovation Systems**

The work under SGCI-Theme 2 has increased the understanding and knowledge base of SGCs on how to map their national research and innovation systems and produce relevant metrics for performance. Such a knowledge base allowed SGCs to understand and appreciate the interactions and the different configurations of their own systems. The work also provided a platform that increased the interactions among stakeholders within the respective national research and innovation systems. The consultative meeting (see item 34 in Annex 11.7) in Burkina Faso for instance brought together over 100 stakeholders.

- **Increased Capacity on STI Measurements**

The work under SGCI-Theme 2 has enhanced the capacities and skills of SGCs to understand, modify and adapt standard STI measurement instruments to suit their local context and need; some SGCs have gone a step further to pilot the instruments. SGCs have also increased their capacities to analyze and use STI indicator datasets to derive insights (a good example is TECH-IN-Ethiopia).

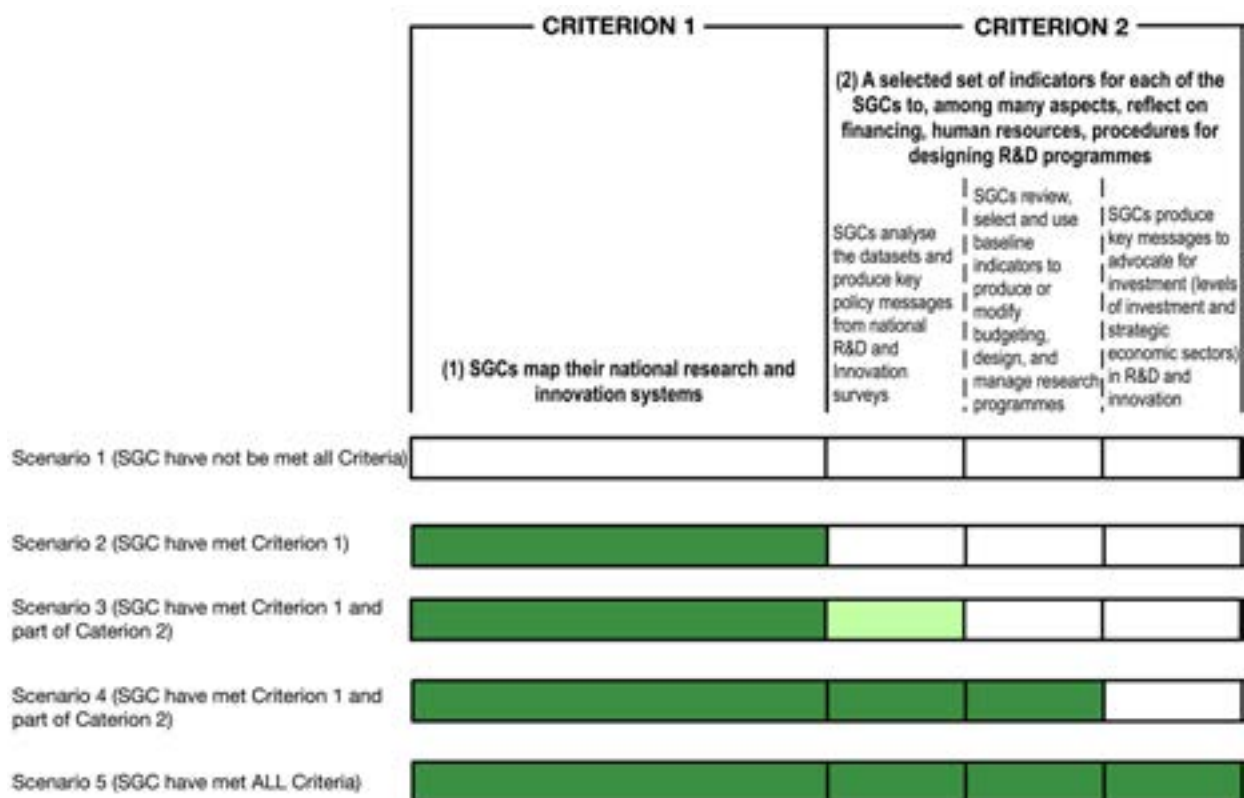
- **Increased Capacities on Economic Subsection Innovation Performance Measurements**

The work under SGCI-Theme 2 has increased the capacities of SGCs to design, pilot and implement targeted measurement instruments for economic subsectors innovation performance and R&D targets. The focus of the measurement or assessment is on innovation, with R&D considered as a supporting activity. This is one of the unintended outcomes of SGCI-Theme 2. The outcome emerged as a result of several engagements with stakeholders and their request to understand innovation in all sectors of the economy and how innovation benefited from R&D.

# 7 MEETING THE SGCI LOGICAL FRAMEWORK TARGETS

The target that was set for March 2020 under SGCI Theme 2 is that *at least 4 SGCs change their approach to budget allocation for research programs and prioritize investments guided by robust indicators. In previous technical reports, AUDA-NEPAD agreed with IMT on the criteria for assessing progress towards this target. The criteria for monitoring and tracking progress towards achieving this Output Indicator 1.2 target are:*

1. The maps of the national research and innovation systems for each of the SGCs;
2. A selected set of indicators for each of the SGCs to, among many aspects, reflect on financing, human resources, procedures for designing and monitoring R&D programmes, data management, and knowledge sharing.



**Figure 7-1 Scenarios of SGCs Progress towards achieving the Output Indicator 1.2**

All SGCs have met criterion 1, hence this progress report is focused on criterion 2. The second criterion was further broken down into 3 sub-milestones (see Figure 7-1):

- a) SGCs analyze the datasets and produce key policy messages from national R&D and Innovation surveys;
- b) SGCs review, select and use baseline indicators to produce or modify their budgeting (bidding and implementation of the budget allocation), design research programmes (focusing on resource allocation, calls for proposals, data management systems and knowledge sharing), and manage research programmes; and
- c) SGCs produce key messages to advocate for investment (at different levels within their R&D systems and identified strategic economic sectors) in R&D and innovation.

For these behavioral changes to take place among SGCs, evidence and insights from micro-data on R&D and Innovation as well as an understanding of the country-specific economic activities are critical success factors. We casted the 3 sub-milestones into a set of questions that would help us to evaluate the progress towards meeting the second criterion. The questions are; (1) Is there any evidence, for an example that TECH-IN has analyzed the datasets and produced key policy messages from national R&D and Innovation surveys?; (2) Is there any evidence that TECH-IN has reviewed, selected and used baseline indicators to produce or modify budgeting, design research programmes and manage research programmes?; and (3) Is there any evidence that TECH-IN has produced key messages to advocate for investment (levels of investment and strategic economic sectors) in R&D and innovation? In the preceding section we report on how *Burkina Faso, Ethiopia, Senegal* and *Botswana* have met the SGCI output indicator 1.2. We have also added *Zambia, Mozambique* and *Tanzania* as the SGCs from the three countries have made significant progress towards the target.

## 7.1. Ethiopia

**Is there any evidence that Technology Innovation Institute (TECH-IN) has analyzed the datasets and produced key policy messages from national R&D and Innovation surveys? YES**

The following results of the on-site engagements 32, 35 and 36 shown in Annex 11.7 serve as evidence that TECH-IN has analyzed micro-datasets and produced key policy messages from national R&D and Innovation surveys:

- TECH-IN and its stakeholders have the capabilities to analyze micro-level datasets on STI indicators. The capability skills-set include (1) pre-processing of micro-datasets from the STI surveys; (2) generating key research and policy questions; and (3) using statistical models derive useful insights from the micro-datasets.
- TECH-IN and its stakeholders (such as Ethiopian Institute of Agricultural Research, Ethiopian Biodiversity Institute, Ethiopian Environment and Forest Research Institute etc.,) have selected key policy messages such (1) mechanisms of improving

relationships with industry to translate R&D products into innovations, (2) using innovation data analysis to demonstrate weak linkages between industry and academia, (3) R&D expenditure flows signaling Ethiopia's institutional preparations for a growing manufacturing sector, and (4) Initiated discussions on the possible revision of the industrial and product classification systems by the Ministry of Trade. Further details on this result has be captured in the 4th and 5th technical report submitted to IDRC.

- TECH-IN agreed to capture the micro-level datasets at the four-digit level of the ISIC Rev. 4 instead of ISIC Rev 3 at the two-digit level they previously used. This micro-level allows the measurement of innovation and R&D at the main business activity level and allows for the analyses of micro-data for inputs, processes, outputs, and outcomes. The Director for R&D at STIC promised to meet with, among many organizations, STIC, the Ministry of Industry and the Central Statistical Agency, to discuss how the recommended changes could be implemented in the next national innovation survey. This is a significant change in approach to measuring national R&D and innovation performance.

**Is there any evidence that TECH-IN has reviewed, selected and used baseline indicators to produce or modify budgeting, design research programmes and manage research programmes? YES**

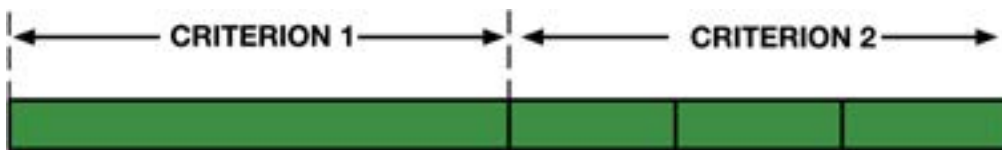
The following results of the on-site engagements 32, 35 and 36 shown in in Annex 11.7 serve as evidence that TECH-IN reviewed, selected and used baseline indicators to produce or modify budgeting, design research programmes and manage research programmes:

- TECH-IN is currently implementing processes that ensures the impact of government funded R&D projects are tracked using the following dimensions; (1) Capacity building and research targeting, (2) Advancing knowledge, (3) Dissemination and knowledge transfer, (4) Informing decision-making, (5) Specific Economic Sector Impact, (6) Broad Economic and Social Impact. The specific indicators for each dimension are dependent on the objectives, processes, outputs and envisaged outcomes of the project.
- There was consensus among the stakeholders that every R&D performing institution should implement data management systems based on the Impact Oriented Monitoring of projects. The information from these sub-systems can then be linked with the systems at TECH-IN to create a comprehensive national information system for R&D projects.
- All R&D performing institutions (such as Ethiopian Institute of Agricultural Research, Ethiopian Biodiversity Institute, Ethiopian Environment and Forest Research Institute etc.) that participated in the on-site engagements expressed interest to use the Impact Oriented Monitoring methodology for managing and measuring performance of their projects.

**Is there any evidence that TECH-IN has produced key messages to advocate for investment (levels of investment and strategic economic sectors) in R&D and innovation? YES**

TECH-IN has produced key messages to advocate for investment (levels of investment and strategic economic sectors) in R&D and innovation projects. The key advocacy messages and narratives for increased investment in R&D and innovation were discussed and captured during on-site engagements. Some of the messages have been captured in their 2019 R&D National Report.

**Summary**



In summary, Ethiopia has met criteria 1 and 2 (i.e., Scenario 5 in Figure 7-1). The results reported here are not once-off deliverables, they are iterative and may need continuous capacity strengthening to consolidate and institutionalize the agreed-on actions. However, the follow-up activities should be interactive and organic such that SGCs will gradually follow through.

## 7.2. Botswana

The Department of Research Science and Technology (DRST) under Ministry of Tertiary Education, Research Science and Technology (MOTE), has made significant progress towards the SGCI Output indicator 1.2 target. The department has relatively strong processes for collecting and managing STI indicator datasets for policy design and implementation.

**Is there any evidence that DRST has analyzed the datasets and produced key policy messages from national R&D and Innovation surveys? YES**

The joint-up CTAs on-site training in Gaborone (activity 28 in Annex 11.7) was a platform that provided DRST the opportunity to experience and learn the synergies and flows among the capacity modules of SGCI-Themes 1, 2 and 3. Botswana submitted full datasets for the African Innovation Outlook 3, as such AUDA-NEPAD worked with DRST to analyze and derive insights from the R&D and Innovation datasets provided. The training resulted in DRST understanding the thematic sectors (such as agro-processing) to focus their R&D programmes and projects. DRST has also redesign their R&D and Innovation measurement instruments and they requested for AUDA-NEPAD to provide technical support in the implementation of the IOM methodology.

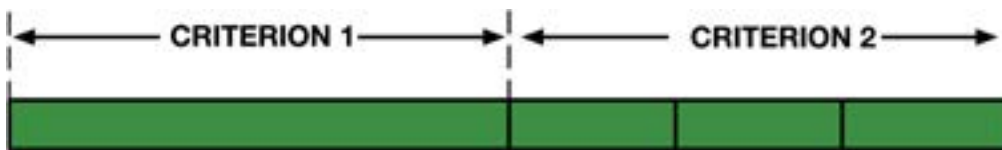
**Is there any evidence that DRST has reviewed, selected and used baseline indicators to produce or modify budgeting, design research programmes and manage research programmes? YES**

The analysis of the innovation datasets of Botswana showed weak public research institutions-university-industry linkages and collaboration for R&D and innovation activities. DRST has therefore used this baseline information to select related STI indicators to design Private Public Partnership programmes to strengthened linkages between industry and academia.

**Is there any evidence that DRST has produced key messages to advocate for investment (levels of investment and strategic economic sectors) in R&D and innovation? YES**

Botswana has mapped their National Innervation System and has also analyzed and derived insights to strengthen the linkages and efficiency of the system. During the joint-up CTAs on-site engagement, DRST generated key messages that can be used to advocate for increased R&D and Innovation investments. However, there is need to link the messages with the generated insights from the STI datasets for evidence-based advocacies.

### Summary



Botswana has made significant progress towards meeting the SGCI Output indicator 1.2 target. However, there is need for iterative follow-ups on the following aspects:

- Implementation of the IOM methodology; and
- Linking of the key advocacy messages with the STI data analytics and insights.

## 7.3. Burkina Faso

**Is there any evidence that FONRID has analyzed the datasets and produced key policy messages from national R&D and Innovation surveys? YES**

The on-site engagement 27 in Annex 11.7 provided an opportunity for AUDA-NEPAD to engage with staff members of FONRID on their internal processes and data systems for the management and planning of their R&D programmes and projects. Although FONRID has well elaborated processes for designing, prioritization, budgeting and management of R&D projects, the requisite macro and micro level data needed for evidence-based planning of R&D and Innovation programmes were lacking. As such AUDA-NEPAD has worked with



FONRID to design customized STI measurement instruments for collecting and analyzing the needed datasets to inform policy and planning. Through these effects, FONRID has embarked on an economic sub-sector innovation measurement survey<sup>9</sup> to determine characteristics of the main economic sectors to focus their R&D projects and investments. Existing R&D data for Higher Education and the Government sector have been analyzed and shared with FONRID.

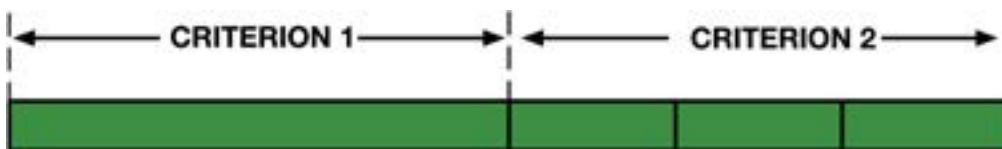
**Is there any evidence that FONRID has reviewed, selected and used baseline indicators to produce or modify budgeting, design research programmes and manage research programmes? YES**

FONRID, through the support of SGCI-Theme 2 has analyzed the R&D data for Government, Higher Education and Private Non-Profit sectors of the economy. The data although high level, have provided the baseline information for structuring the instruments (and their corresponding datasets) for informing budgeting and design of R&D projects.

**Is there any evidence that FONRID has produced key messages to advocate for investment (levels of investment and strategic economic sectors) in R&D and innovation? YES**

AUDA-NEPAD has worked with FONRID to conduct stakeholders’ consultative meeting (activity 34 in Annex 11.7) aimed at utilizing the incredible power of questions by different stakeholders in the innovation ecosystem to get the important “innovation concepts” that must be measured, understood and exploited. The meeting brought together stakeholders from the main sectors of the economy to discuss topical issues on innovation and to derive key messages to advocate for increased investments in R&D. In all, 26 crucial policy questions were raised, and key policy messages and preliminary answers were generated for some of the questions. These policy questions and messages have been reported in the 5th technical report submitted to IDRC.

**Summary**



Burkina Faso has made good progress towards meeting the SGCI output indicator 1.2 target. However, there is need for follow-ups and continuous engagements particularly on strengthening the internal STI data management systems at FONRID as well as coordination of the national STI measurement systems.

**7.4. Senegal**

**Is there any evidence that DGRI has analyzed the datasets and produced key policy messages from national R&D and Innovation surveys? YES**

<sup>9</sup>The actual survey was funded from AUDA-NEPAD core budget

The following results of the on-site engagement 24 in Annex 11.7 serve as evidence that DGRI can analyze datasets and produce key policy messages from national R&D and Innovation surveys:

- DGRI and stakeholders now have the capabilities in analyzing micro-level datasets on STI indicators. The capability skillset includes (1) pre-processing micro-data from STI surveys (2) generating key research and policy questions (3) using statistical models to derive insights from micro-dataset.
- The R&D survey data for 2010 was used for the analysis during the on-site engagement. The 2015 R&D survey only covered the government and higher education sectors, as such the data could not be used to demonstrate the R&D financial flows.
- Ministry of Higher Education, Research and Innovation have signed a Memorandum of Understanding (MoU) with the National Institute of Statistics their next R&D and Innovation survey. The sampling frame for the next innovation and R&D was agreed upon with the National Institute of Statistics at the on-site engagement. It was agreed the Plan Sénégal Emergent (PSE) will guide the stratification for the sampling. The modified measurement instruments for R&D and Innovation was used a learning tool to understand the PSE and the national research and innovation system of Senegal.

**Is there any evidence that DGRI can review, select and use baseline indicators to produce or modify budgeting, design research programmes and manage research programmes? YES**

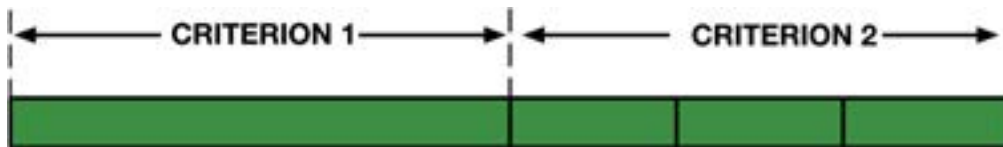
The following results provide the evidence that DGRI can review, select and use baseline indicators to produce or modify budgeting, design research programmes and manage research programmes:

- R&D project design, budgeting and management of 3 research projects funded by DFRSDT were assessed and re-analysed using interactive discussions; the following projects were used as examples; (1) Genetic and immunology biomarkers in preventing and monitoring breast cancer in Senegal; (2) Vegetal biotechnologies applied to the development of rice varieties (*Oryza Sativa* L) of high yield adapted to high temperature in the valley of the Senegal River; and (3) Valorisation of plastic waste for fuels. Through scenario analysis, it was observed that most of the projects funded by DFRSDT had a wider scope compared to the resources allocated for project implementation. The need for practical guidelines to formulate calls for proposals, procedures and appropriate indicators for managing R&D projects (particularly scope-creep) were emphasized.
- The on-site engagements with DGRI concluded that every R&D performing institution should implement data systems for the Impact Oriented Monitoring of

**Is there any evidence that DGRI can produce key messages to advocate for investment (different levels of investment and strategic economic sectors) in R&D and innovation? YES**

This question needed some follow-up activities by AUDA-NEPAD. AUDA-NEPAD conducted follow up engagements with DGES and DGRI to understand the SGC’s perspectives on innovation needs, opportunities, challenges, barriers and R&D targets (i.e., requirements) in relation to the main economic sub-sectors of Senegal. These activities helped DGES, DGRI and other stakeholders to understand and appreciate some of the examples of key messages on research and innovation that could be effective in conveying the importance of research to government. Most importantly, the reasons why the government should increase investments not only in national R&D but also in innovation.

**Summary**

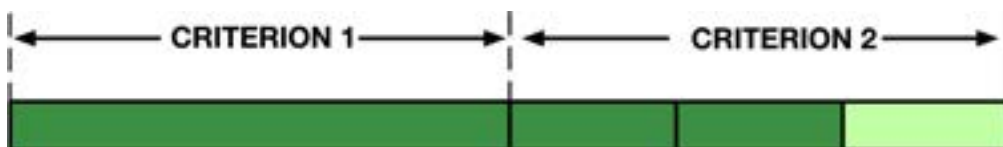


Senegal has made positive progress towards meeting the SGCI output indicator 1.2 target. However, follow-up engagements and continuous improvement (and learning) are required.

**7.5. Zambia**

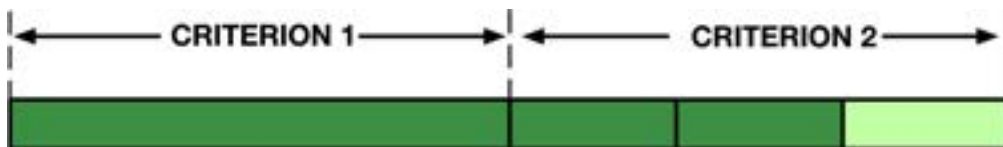
The National Science and Technology Council (NSTC, Zambia) following AUDA-NEPAD’s training and on-site engagement on IOM methodology, have conducted a preliminary survey on all R&D personnel in the Higher Education and Government sectors. This has provided NSTC with high level information on distribution of R&D personnel headcount and full-time equivalent by gender, Field of R&D (FORD), function, etc. However, to advise the government of Zambia on specific thematic areas of R&D and innovation investments, this information is not sufficient. As such AUDA-NEPAD has provided guidance on the following:

- Linking the preliminary R&D personnel survey with the internal programme portfolio datasets at NSTC and providing insights for policy advice; and
- Designing and conducting of fully-fledged national R&D and innovation surveys for the selected sub-sectors of the economy to get a fuller picture of the productive interactions.



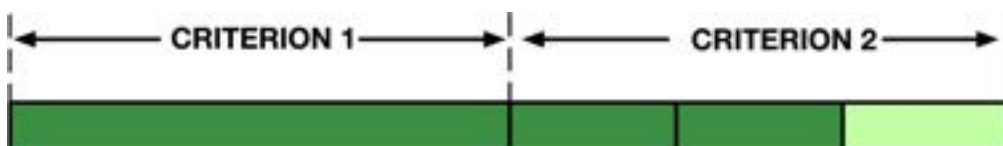
### 7.6. Mozambique

AUDA-NEPAD engaged with FNI and the Ministry of Science and Technology, Higher and Technical Vocational Education on understanding the economic sub-sector innovations and R&D targets (activity 38 in Annex 11.7). Working together (AUDA-NEPAD, FNI and the Ministry) we selected 7 economic sub-sectors to assess innovation performance and R&D targets focusing on what different entities considered important to measure. Teams comprised of AUDA-NEPAD, FNI, Ministry and other stakeholders' staff visited 42 institutions and firms to solicit for high level qualitative information on the concept of innovation, opportunities, challenges, barriers and R&D targets. The analysis of the information from this exercise was used to design targeted measurement instruments for each economic sub-sector in Mozambique. There is need for follow-ups on how to use the analysis of the high-level information to generate key advocacy messages and narratives for increased investment in R&D and innovation.



### 7.7. Tanzania

AUDA-NEPAD guided selected staff members of COSTECH in using existing project information to assess the impact of R&D projects from the project coordinator, funder and beneficiary perspectives. Tanzania currently has R&D personnel and expenditure datasets for the Government and Higher Education sectors for 2014. The datasets could not be linked to the internal R&D projects information because of it is (information) not granular in details. As such, AUDA-NEPAD has guided COSTECH in their preparation to launch national R&D and innovation surveys using the modified STI measurement instruments. AUDA-NEPAD has also provided guidance to COSTECH on the implementation of their M&E framework using the IOM methodology. This will allow the collation and consolidation of existing information on R&D programmes and projects.



# 8 KEY LESSONS

## **a) Adequate Local Institutional and Human Resources Required**

The utilization and impact of SGCI-Theme 2 outputs requires adequate human and institutional resources to take-up lessons learnt and observations from the capacity building engagement conducted. It is usually difficult to link capacity building efforts under SGCI-Theme 2 to performance of SGCs and impact within a period of less than 3 years. However, the outcomes of the SGCI-Theme 2 have significantly influenced and contributed to the desired institutional changes on STI indicators and evidence required by the project.

## **b) In-depth Knowledge of National Research and Innovation Systems**

During the first 12 months of implementation, there were low levels of awareness on the essential components of national research (and innovation) systems and interactions that drive their performance. The use of efficient and effective research resource allocation models can be realized if there is a clear understanding of the national development agenda (NDPs), economic and industry structures as well as the interactions within national research and innovation systems. Most senior officials from participating SGCs now have an in-depth understanding of the connections among the priority areas of their NDPs and the interactions within their national research and innovation systems.

## **c) Monitoring and Evaluating the Implementation of STISA 2024 through the SGCI**

The STISA 2024 Implementation Guide selected a full set of indicators that are relevant for capturing research and innovation in countries covered under the SGCI. Some of the indicators, for example, the number of joint projects between universities and industry, are meant to stimulate university-industry linkages. The piloting of these indicators is part of the M&E efforts led by AOSTI and AUDA-NEPAD as part of implementing STISA 2024. AUDA-NEPAD has strengthened capacities of some SGCs to streamline their national level STI indicators to feed into the M&E indicators of STISA 2024.

#### **d) Strengthening the STI Data Systems for National Research Programme Portfolio Management**

Prior to the implementation of SGCI-Theme 2, micro-level data on STI indicators was not accessible to most SGCs. The datasets in national institutions responsible for STI statistics were indicators generated by measurement instruments that were designed to collect data for international comparison and benchmarking. AUDA-NEPAD has gradually built the capacity of SGCs to understand the relationships among STI actors and status of data collection and analysis. STI data collection instruments were modified to suit the local context of SGCs and the process of modification was used as a learning process to provide a deeper understanding of central aspects of R&D and Innovation processes, and the possibility of designing sector-specific R&D projects and programmes (see Section 7).

#### **e) Re-orienting the Focus of SGCs to Economic Subsector Innovations**

The evidence derived from STI relatable datasets accessible for use by SGCs is important in locating R&D and innovation activities within specific national economic sectors. In most countries, there are many opportunities for research and innovation to contribute to socio-economic development and sustained growth. However, a deeper understanding of the status of research and innovation activities in main national economic sub-sectors of countries participating in the SGCI is crucial for insightful interventions. AUDA-NEPAD has worked with selected SGCs to provide deeper understanding and assessment of R&D and innovation in the selected economic sub-sectors of participating countries (see Section 7). This body of work also involved the design, pilot and implementation of targeted measurement instruments for selected economic sub-sectors to assess innovation performance and R&D targets. The distinctiveness of this work is twofold. First, the innovation performance assessment is not focus on business enterprises alone but on all main economic sub-sectors of participating countries. Second, the focus of the measurement or assessment is on innovation, with R&D considered as a supporting activity. In practice, R&D activities should go beyond generating knowledge and put more attention on the applications (e.g. medical procedures, diagnostic kits, processes, software applications, etc.).

#### **f) Integrated Data Infrastructure for Research and Innovation Performance Measurement**

The performance of research and innovation systems should be underpinned by good quality data and data management systems. Effective use of data enhances planning (macro and micro-level), resource allocation, policy formulation and evaluation, and design of appropriate programmes. Therefore, good data systems are vital for narrating a

country's development status and future pathways. Although some SGCs made significant progress on developing data infrastructure systems (e.g., Ethiopia), there are challenges on an integrated data-driven knowledge approach. The weak integrated data utilization imposes significant constraints on the curation as well as the development of tools and techniques needed to exploit small-to-big data. Although the strengthening of STI data infrastructure was not considered in the first phase of SGCI, there is the need to address the underlying causes of the infrastructure challenges faced by SGCs in subsequent phase of the programme.

## 9 GENDER AND INCLUSIVITY CONSIDERATIONS

As SGCI-Theme 2 is not necessarily research-based, there were no ethical considerations relating to the use of human subjects during the implementation of the project. AUDA-NEPAD ensured the integration of gender disaggregation in the data collection, analysis and reporting processes of the implementation. In the modified data collection instruments, the disaggregation of raw data is systemic. For an example, there is less value in knowing the number of female researchers in a university or public research institution compared to knowing how many females constitute the university council, senate or top management or board of directors. This is the basis of our gender mainstreaming in R&D and innovation performance measurement. Inwardly, the implementation of SGCI-Theme 2 activities at different levels ensured the representation of both women and men at different levels of implementation (see Annex 11.7). All technical reports submitted to IDRC included disaggregated gender data. These considerations are in line with the efforts being made by AU Member States and AUDA-NEPAD to increase women participation in STI and at all levels of national economic activity by ensuring that gender mainstreaming becomes a central component in all development programs.



# 10 RECOMMENDATIONS

The learning opportunities in building capabilities of SGCs on STI measurement systems has provided AUDA-NEPAD and the SGCI with the possibilities of using microdata on indicators of R&D and innovation performance to understand the effect of *framework* conditions and the policy environment in different countries. All 15 SGCs have seen significant changes in their approach to budget allocation for research programs and prioritization of investments guided by robust indicators during the 42-months period of implementation of SGCI-Theme 2. With such progress, we therefore propose the following recommendations for the next phase of the SGCI:

- **Building Strong Relations with National Statistics Offices**

Except for Ethiopia, Uganda and Senegal, the SGCs in the other 12 countries do not have strong relationships with their National Statistics Offices (NSOs). In most African countries NSOs are the backbone for the production of official statistics and they provide support data curation of other national agencies such as SGCs. In their mandate, NSOs are responsible for producing reliable, timely, accurate and unbiased statistics. As such, building strong relationships with them is one sure way of improving the micro-level data utilization with too many challenges. AUDA-NEPAD and its partners are working with 41 NSOs to integrate STI statistics into mainstream or official national statistics.

- **Data and Digital Infrastructure for SGCs**

Inadequate data infrastructure and digital platforms impose constraints on the curation as well as the development of processes and techniques needed to manage STI indicator dataset. However, establishing the required data infrastructure and digital platforms for SGCs require significant investments, funding and resources. This was built into the first phase of the SGCI and may require considerations for the next phase of the programme.

- **Accelerating Domestication of STISA 2024 M&E Indicators**

AUDA-NEPAD through the work under SGCI-Theme 2 has guided SGCs on domesticating and implementing STISA 2024 indicators. However, more work is required to accelerate the implementation by reaching out to all actors in the national research and innovation systems.

- **Increasing Advocacy Support for Female Participation in STI**

The number of female participants for SGCI-Theme 2 engagement sessions was relatively low. The cause for this low level may be the inherent selection bias against females because participants came from many different organizations apart from the SGCs. There is need to increase efforts and advocacies to encourage SGCs to recommend the inclusion of females in the discourse of STI indicators.

- **Working Toward Making the SGCI as a Flagship Programme of the AU**

Although AUDA-NEPAD shared the work under the SGCI-Theme 2 with AU Ministers of Education and Science & Technology and urged Member States to actively support the SGCI, we recommend future preparations to secure an African Union decision that recognizes the SGCI as a Flagship Programme of the African Union under STISA 2014. This will increase the *commitment* and *political will* from central governments in support of the SGCI.

# 11

## ANNEXES

### 11.1. Impact Oriented Monitoring Guide for SGCs

#### **Impact Oriented Monitoring Guide for SGCs**

*(Attached: Impact\_Oriented\_Monitoring\_Guide\_for\_SGCs.pdf)*

#### **Project Information and Results Framework**

*(Attached: Project\_Information\_and\_Results\_Framework.docx)*

#### **Project Leader Data Instrument**

*(Attached: Project\_Leader\_Data\_Instrument.docx)*

#### **Stakeholders & Beneficiaries Opinion Instrument**

*(Attached: Stakeholders\_Beneficiaries\_Opinion\_Instrument.docx)*

#### **Scoring Matrix for Assessing Impact Areas**

*(Attached: Scoring\_Matrix\_for\_Assessing\_Impact\_Areas.docx)*

### 11.2. Policy Paper 1

#### **Using Micro-Data to Understand the Interactions within National Research and Innovation System: The Case of Ethiopia,**

*(Attached: SGCI-Theme\_2\_Policy\_Paper\_1.pdf)*

### 11.3. Policy Paper 2

#### **Capacity Strengthening on Economic Subsector Innovation Performance Systems for SGCs in Sub-Sahara Africa**

*(Attached: SGCI-Theme\_2\_Policy\_Paper\_2.pdf)*

### 11.4. Modified STI Measurement Instruments

#### **Health Sector Innovation Performance Instrument**

*(Attached: Health\_Sector\_Innovation\_Performance\_Instrument.docx)*

#### **Higher Education Sector Innovation Performance Instrument**

*(Attached: Higher\_Education\_Sector\_Innovation\_Performance\_Instrument.docx)*

#### **Public Sector Innovation Performance Instrument**

*(Attached: Public\_Sector\_Innovation\_Performance\_Instrument.docx)*

#### **General Business Sector Innovation Performance Instrument**

*(Attached: General\_Business\_Sector\_Innovation\_Performance\_Instrument.docx)*

### 11.5. Mapped National Research & Innovation Systems

*(Attached: Mapped\_National\_Research\_and\_Innovation\_Systems.pdf)*

### 11.6. AU STC-EST 2 Decision

*(Attached: AU\_STC-EST\_2\_Decision.pdf)*

## 11.7. List of SGCI-Theme 2 Delivery Activities and Engagements

NO	COUNTRY	CTA & TITLE OF WORKSHOP OR ENGAGEMENT	DATES	NUMBER OF PARTICIPANTS		
				Total	Female (%)	Male (%)
1	Namibia <sup>1</sup>	<b>AUDA-NEPAD/SARIMA:</b> Inception Meeting back-to-back with the Needfinding Training Session	3-7 Oct., 2016	22 (6 & 16)	27	73
2	<b>Zimbabwe</b> Namibia, Malawi, Mozambique, Zambia, Botswana	<b>AUDA-NEPAD:</b> Regional Training Workshop: Cham-pioning the Use of Science, Technology and Innova-tion Indicators in Public Policy Making	1-4 Nov., 2016	26 (6 & 26)	23	77
3	<b>Senegal</b> Burkina Faso, Ivory Coast, Ghana	<b>AUDA-NEPAD:</b> Regional Training Workshop: Cham-pioning the Use of Science, Technology and Innova-tion Indicators in Public Policy Making	28 Nov - 3 Dec, 2016	50 (5 & 45)	10	90
4	<b>Uganda</b> Kenya, Tanzania, Ethiopia, Rwanda	<b>AUDA-NEPAD:</b> Regional Training Workshop: Cham-pioning the Use of Science, Technology and Innova-tion Indicators in Public Policy Making	5 - 10 Dec., 2016	27 (3 & 24)	11	89
5	<b>Ghana</b>	<b>AUDA-NEPAD and SARIMA:</b> R&D/Innovation Data Collection for the Production of Related Core Indica-tors and Research and grants Management	13 - 17 Mar., 2017	27 (6 & 21)	12	78
6	<b>Ivory Coast</b>	<b>AUDA-NEPAD:</b> Capacity building workshop for the collection of R&D and Innovation data for the pro-duction of related indicators	20 Mar. – Mar. 22, 2017	73 (20 & 53)	27	73
7	<b>Malawi</b>	<b>AUDA-NEPAD:</b> Championing the Use of Science, Technology and Innovation Indicators in Public Poli-cy Making	2 Apr. – 8 Apr., 2017	35 (11 & 24)	31	69
8	<b>Burkina Faso</b>	<b>AUDA-NEPAD:</b> Strengthening the Ability of Science Granting Councils to Collect, Analyze and Dissemi-nate Indicators Relevant to STI policy and Associat-ed Instruments	9 Apr.- 15 Apr., 2017	20 (4 & 16)	20	80
9	<b>Namibia</b> Senegal, Burkina Faso, Ivory Coast, Ghana, Malawi, Mozambique, Zimbabwe, Zambia, Botswana, Uganda, Kenya, Tanzania, Ethiopia, Rwanda	<b>AUDA-NEPAD and SARIMA:</b> Joint meeting on STISA 2024 and the African Science, Technology and Innovation Indicators (ASTII) Initiative Continen-tal Validation Workshop	21 May – 27 May, 2017	58 (21 & 37)	36	64
10	<b>Kenya</b> Uganda, Tanzania, Ethiopia, Rwanda	<b>AUDA-NEPAD and SARIMA:</b> Championing the Use of Science, Technology and Innovation Indicators in Public Policy Making.	4 Jun. – 10 Jun., 2017	41 (11 & 30)	27	73
11	<b>Mozambique</b> Namibia, Malawi, Zimbabwe, Zambia, Botswana	<b>AUDA-NEPAD:</b> Needfinding Workshop on Exploring Ways for SGCs to Advocate for Increased Research and Development (R&D) Investment Levels	9 Jul. – 14 Jul., 2017	33 (13 & 20)	39	61
12	<b>Zimbabwe</b> Namibia, Malawi, Mozambique, Zambia, Botswana	<b>AUDA-NEPAD:</b> STI-Policy Instruments Mapping for Harnessing Socio-economic Growth	24 Jul. – 29 Jul., 2017	47 (15 & 32)	32	68
13	<b>Tanzania</b> Kenya Uganda	<b>AUDA-NEPAD and SARIMA:</b> Research and Grants Management and STI-Policy Instruments Mapping for Harnessing Socio-economic Growth and Advocat-ing for Increased Research and Development (R&D) Investment Levels	4 Sep. - 8 Sep., 2017	49 (15 & 34)	31	69
14	<b>Egypt</b>	<b>AUDA-NEPAD:</b> AU Specialized Technical Committee on Education, Science and Technology (STC-EST 2)	21 Oct.-23 Oct., 2017	N/A		
15	<b>Ivory Coast</b> Burkina Faso, Senegal, Ghana	<b>AUDA-NEPAD and ATPS:</b> Understanding Research & Development and Innovation Performance for In-creased Productivity and Socio-economic Growth	23 Oct. - 27 Oct., 2017	33 (9 & 24)	27	73
16	<b>Ethiopia</b> Uganda, Rwanda	<b>AUDA-NEPAD:</b> Understanding Research & Devel-opment and Innovation Performance for Increased Productivity and Socio-economic Growth	30 Oct. – 3 Nov., 2017	25 (5 & 20)	20	80
17	<b>Zambia</b>	<b>AUDA-NEPAD:</b> GRC Africa Regional Consultation and SGCI Annual Learning Forum	22 Nov. - 24 Nov, 2017	N/A		
18	<b>Rwanda</b> <sup>2</sup> Uganda	<b>AUDA-NEPAD:</b> In-country (On-site) training workshop and engagement on R&D and Innovation measure-ment instruments for evidence-based policy imple-mentation	19 Feb. – 22 Feb., 2018	51 (18 & 33)	35	65
19	<b>Zambia</b> Malawi, Namibia, Zimbabwe, Botswana	<b>AUDA-NEPAD:</b> Designing and Monitoring of Re-search Programmes using Micro-Level STI Indicators	23 April - 25 April, 2018	36 (15 & 21)	41	59

NO	COUNTRY	CTA & TITLE OF WORKSHOP OR ENGAGEMENT	DATES	NUMBER OF PARTICIPANTS		
				Total	Female (%)	Male (%)
20	Zambia <sup>3</sup>	<b>AUDA-NEPAD:</b> On-site Training Session on R&D Project Design and Management for NCST	26 April - 27 April, 2018	24 (11 & 13)	46	54
21	South Africa	IMT and CTA Meeting on SGCI Implementation in Partnership	28-29 May 2018	N/A		
22	Ghana	SGCI 2018 Annual Regional Meeting	2-7 July 2018	N/A		
23	Ethiopia <sup>3</sup>	<b>AUDA-NEPAD:</b> On-site training on the Use of Micro-data and the Impact Oriented Monitoring Methodology for Designing Research Programmes	3 Sept. - 6 Sept., 2018	39 (14 & 25)	36	64
24	Senegal <sup>3</sup>	<b>AUDA-NEPAD:</b> On-site training on the Use of Micro-data and the Impact Oriented Monitoring Methodology for Designing Research Programmes	10 Sept. - 13 Sept., 2018	19 (6 & 13)	31	69
25	Tanzania	<b>AUDA-NEPAD:</b> Regional Training Workshop for Group 3 on Using Microdata and the Impact Orient-ed Monitoring (IOM) Methodology to Design Research and Innovation Programmes for Social and Economic Benefits	25-27 Feb., 2019	27 (9 & 18)	33	67
26	Tanzania <sup>3</sup>	<b>AUDA-NEPAD:</b> On-site training and engagement with COSTECH on Using Microdata and the IOM Methodology to Design Research and Innovation Programmes for Social and Economic Benefits	28 Feb-02 March, 2018	21 (7 & 14)	33	67
27	Burkina Faso <sup>3</sup>	<b>AUDA-NEPAD:</b> On-site training and engagement with FONRID on the Use of Microdata and the IOM Methodology for Designing Research Programmes	29 Oct.- 01 Nov., 2018	24 (7 & 17)	29	71
28	Botswana <sup>3</sup>	<b>AUDA-NEPAD, SARIMA, ACTS:</b> Joint On-site SARI-MA/NEPAD/ACTS training in Botswana on Research management, use of STI indicators, and partnerships and private sector engagement	15-19 October, 2018	23 (14 & 9)	61	39
29	Cote d'Ivoire	<b>AUDA-NEPAD:</b> Regional Training workshop for Group 2 on the Use of Microdata and the IOM Methodology for Designing Research Programmes	01-02 October, 2018	26 (8 & 18)	31	69
30	Cote d'Ivoire <sup>3</sup>	<b>AUDA-NEPAD:</b> On-site training and engagement with PASRES on the Use of Microdata and the IOM Methodology for Designing Research Programmes	03-05 October, 2018	19 (5 & 14)	26	74
31	Senegal <sup>3</sup>	<b>AUDA-NEPAD:</b> On-site training and engagement with DGES and DGRI on the Use of Microdata and the IOM Methodology for Designing Research Programmes	10-13 September, 2018	23 (6 & 17)	31	69
32	Ethiopia <sup>3</sup>	<b>AUDA-NEPAD:</b> On-site training and engagement with TECH-IN on the Use of Microdata and the IOM Methodology for Designing Research Programmes	03-06 September, 2018	39 (14 & 25)	36	64
33	Burkina Faso <sup>3</sup>	<b>AUDA-NEPAD:</b> On-site Engagement with FONRID on " <i>Understanding Economic Sub-Sector Innovations and R&amp;D Targets in Burkina Faso</i> "	11-15 March, 2019	21 (8 & 13)	38	62
34	Burkina Faso <sup>3</sup>	<b>AUDA-NEPAD:</b> Stakeholders Consultative Meeting and On-site Training for the Survey on Economic Sub-Sectors Innovation Performance Measurements in Burkina Faso	06-10 May, 2019	33 (11 & 22)	33	67
35	Ethiopia <sup>3</sup>	<b>AUDA-NEPAD:</b> On-site Engagement with TECH-IN on " <i>Understanding Economic Sub-Sector Innovations and R&amp;D Targets in Ethiopia</i> "	18-22 March, 2019	31 (7 & 24)	23	77
36	Ethiopia <sup>3</sup>	<b>AUDA-NEPAD:</b> On-site Training for the Survey on Economic Sub-Sectors Innovation Performance Measurements in Ethiopia	22-26 March, 2019	37 (9 & 28)	24	76
37	Ethiopia	<b>AUDA-NEPAD, ATPS, ACTS, SARIMA:</b> The Science Granting Council Initiative (SGCI) Regional Meeting	24-28 May, 2019	N/A		
38	Mozambique <sup>3</sup>	<b>AUDA-NEPAD:</b> On-site Engagement with FNI and the Ministry of Science and Technology, Higher and Technical Vocational Education (MCTESTP) on " <i>Understanding Economic Sub-Sector Innovations and R&amp;D Targets in Mozambique</i> "	29 April-3 May, 2019	31 (10 & 21)	32	68
39	Senegal <sup>3</sup>	<b>AUDA-NEPAD:</b> On-site Engagement with DGES and DGRI (Ministry of Higher Education, Research and Innovation) on " <i>Understanding Economic Sub-Sector Innovations and R&amp;D Targets in Senegal</i> "	27-31 May, 2019	38 (9 & 29)	24	76
<b>CUMULATIVE TOTALS</b>				<b>1128 (338 &amp; 796)</b>	<b>30</b>	<b>70</b>

<sup>1</sup> Namibia hosted the Inception meeting back-to-back with the Needfinding training session attended by seven out of the 15 SGCI.

<sup>2</sup> Namibia This was a joint ASTII and SGCI-Theme 2 engagement and capacity building programme aimed at strengthening the STI measurement instruments in Rwanda for evidence-based policy implementation. The NCST of Uganda also participated in this training

<sup>3</sup> The On-site engagement was meant to accelerate progress towards meeting the SGCI output indicator 1.2 target

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