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STRENGTHENING SIERRA LEONE'S RESEARCH AND INNOVATION ECOSYSTEM FOR SOCIO-ECONOMIC TRANSFORMATION

African Technology Policy Studies Network (ATPS) TECHNOPOLICY BRIEF NO. 95

Nicholas Ozor
Cynthia Nwobodo
Wentland Muhatiah
Alfred Nyambane
Joel Nwakaire





Strengthening Sierra Leone's Research and Innovation Ecosystem for Socio-Economic Transformation

Nicholas Ozor¹
Cynthia Nwobodo¹
Wentland Muhatiah¹
Alfred Nyambane¹
Joel Nwakaire¹

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The African Technology Policy Studies Network (ATPS) is a transdisciplinary network of researchers, policymakers, private sector actors and the civil society promoting the generation, dissemination, use and mastery of Science, Technology and Innovations (STI) for African development, environmental sustainability and global inclusion. In collaboration with like-minded institutions, ATPS provides platforms for regional and international research and knowledge sharing in order to build Africa's capabilities in STI policy research, policymaking and implementation for sustainable development.



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About SRIFA Project

The Science Granting Councils (the Councils) play critical and strategic roles in supporting research and innovation that contribute to the social and economic development of any country. As a creation of the law, the Councils are charged with the responsibility of research funding, quality assurance, policy and decision-making, knowledge exchange, and training/capacity building of the science system actors to ensure that outputs from the research and innovation endeavours are used to inform policy and practice. Given this important role, and in view of the dynamic nature of research and innovation developments, their capacity to perform these responsibilities to achieve desired goals needs to be continuously strengthened. In recognition of this need, the Science Granting Councils Initiative (SGCI) in sub-Saharan Africa (SSA) is providing support that will strengthen the national research and innovation funding agencies in West Africa.

Compared to other regions in Africa, only a few countries in West Africa have established agencies responsible for research and innovation funding. There is now a deliberate effort by the SGCI to strengthen the national research and innovation funding agencies where they already exist (Burkina Faso, Senegal and Côte d'Ivoire) to improve their performances as well as support the development of institutional frameworks/mechanisms for the development of new research and innovation funding agencies in countries where they do not currently exist (Ghana, Nigeria and Sierra Leone). It is based on this timely opportunity provided by the SGCI, that the African Technology Policy Studies Network (ATPS) and its partner, the African University of Science and Technology (AUST) proposed to work together in a joined-up approach with other Collaborating Technical Agencies (CTAs) to deliver on the project titled: ***“Strengthening the National Research and Innovation Funding Agencies in West Africa (SRIFA)”***. The aim is to provide the requisite training and technical support to strengthen the national research and innovation funding agencies or their equivalents in the six participating West African countries. The project goal is to strengthen the agencies where they already exist to efficiently deliver on their mandates and support the development of institutional frameworks/mechanisms for establishing new research funding agencies where they do not exist. With support from the Science Granting Councils Initiative (SGCI), the UK’s Foreign Commonwealth Development Office (FCDO), the South Africa’s National Research Foundation (NRF), the Swedish International Development Cooperation Agency (SIDA), the German Research Foundation (DFG), and the Norwegian Agency for

Development Cooperation (Norad), the SRIFA Project, therefore, aims to provide training and technical support to strengthen these national agencies to achieve their mandates, especially in areas such as monitoring research projects; financial reporting; institutional risk assessment; institutional communications capacity; mainstreaming gender in granting, Council internal processes; and using research results to inform government policy and private sector practice.

About Africa Technology Policy Studies Network (ATPS)

The African Technology Policy Studies Network (ATPS) is a transdisciplinary network of researchers, policymakers, private sector actors and civil society promoting the generation, dissemination, use and mastery of Science, Technology and Innovations (STI) for African development, environmental sustainability and global inclusion. The ATPS has over 5,000 members and 3000 stakeholders in over 51 countries in 5 continents with institutional partnerships worldwide. We implement our programs through members in national chapters established in 30 countries (27 in Africa and 3 Diaspora chapters in Australia, the United States of America, and the United Kingdom). In collaboration with like-minded institutions, the ATPS provides platforms for regional and international research and knowledge sharing in order to build Africa's capabilities in STI policy research, policymaking and implementation for sustainable development.

Acknowledgement

The African Technology Policy Studies Network (ATPS) and its partner, the African University of Science and Technology (AUST) wish to specially thank the International Development Research Centre (IDRC) for partnering with us in this research project titled: “Strengthening the National Research and Innovation Funding Agencies in West Africa (SRIFA)” under the Science Granting Councils Initiative (SGCI). We are particularly grateful to the Sierra Leone National Science, Technology, and Innovation Council (NSTIC) and other stakeholders for their active participation in the project.

Key Messages

- Sierra Leone must prioritize the development of robust research infrastructure and the cultivation of skilled human resources. By addressing critical gaps in laboratory facilities, technological tools, and professional expertise, the country can elevate its research output and foster a culture of innovation that drives socio-economic progress.
- The successful implementation of research and innovation initiatives in Sierra Leone hinges on effective collaboration among government entities, academic institutions, private sector players, and international partners. Building strong partnerships and fostering synergy among these stakeholders is essential for creating a dynamic R&I ecosystem that can address national challenges and leverage global opportunities.
- Strengthening governance frameworks and ensuring policy coherence are critical to overcoming bureaucratic inefficiencies and fostering an enabling environment for research and innovation. Sierra Leone must streamline regulatory processes, enhance transparency, and promote coordinated efforts across relevant institutions to optimize the impact of R&I funding and initiatives.
- Embracing digital tools and technologies offers a unique opportunity for Sierra Leone to advance its research and innovation capabilities. By investing in digital infrastructure and promoting digital literacy, the country can enhance data management, facilitate remote collaborations, and improve the dissemination of research findings, positioning itself competitively in the global knowledge economy.

1. Introduction

Despite gaining independence over 60 years ago, Sierra Leone remains a low-income country with a Gross Domestic Product (GDP) of just US\$4.20 billion in 2021¹. The country experienced civil war in the 1990s and has since had to cope with the Ebola outbreak in 2014 and the Covid-19 pandemic, all of which have set back the country's development by decades. The chronic lack of investment in science and the absence of ties between science and society and the economy have relegated the country to the sidelines of today's rapid scientific and technological progress (Kanu and Akinyosoye-Gbonda, 2024). The government is determined to change this and recognizes that science and innovation will play a key role in achieving the goals of the African Union's Agenda 2063: The Africa We Want, as well as the Sustainable Development Goals and other global agendas (African Union Commission, 2015).

Sierra Leone is poised to harness the transformative power of research and innovation (R&I) to drive its socio-economic development. The "Strengthening the National Research and Innovation Funding Agencies in West Africa" (SRIFA) project is a pivotal initiative designed to bolster the institutional frameworks and operational capabilities of national R&I funding bodies across the region. This policy brief focuses on Sierra Leone, where enhancing the National Science, Technology, and Innovation Council (NSTIC) is essential for fostering a robust research ecosystem. The background of this study is rooted in the broader Science Granting Councils Initiative (SGCI) in sub-Saharan Africa, which seeks to empower national science granting councils to more effectively manage research funds, support research activities, and promote innovation. Sierra Leone's participation in this initiative is crucial, given the country's current challenges and opportunities in the R&I sector. Despite having several policies in place, such as the National Science Technology and Innovation (NSTI) Policy (2023) and the National Innovation and Digital Strategy (2019-2029), the effective implementation and alignment of these policies remain a significant hurdle.

This policy brief synthesizes the findings from the country reports, offering evidence-based recommendations to strengthen the NSTIC. By addressing the critical areas of capacity building, grants management, and policy development,

¹<https://www.unesco.org/en/articles/sierra-leone-implementing-its-first-national-science-technology-and-innovation-policy>

the brief aims to guide policymakers and stakeholders in fostering a dynamic and effective R&I environment in Sierra Leone. The ultimate goal is to ensure that the NSTIC can efficiently manage and disburse research funds, thereby contributing to the country's socio-economic development and positioning Sierra Leone as a leader in innovation within the West African region.

2. Rationale for Strengthening the National Research and Innovation Funding Agency in Sierra Leone

Strengthening the National Research and Innovation Funding Agency in Sierra Leone is essential for enhancing the nation's capacity to drive scientific research, technological development, and innovation. A robust R&I funding framework is not only pivotal for advancing socio-economic progress but also for addressing the country's most pressing challenges and ensuring its integration into the global knowledge economy. By strategically investing in research and innovation, Sierra Leone can diversify its economy, moving beyond traditional sectors such as mining and agriculture to foster the growth of knowledge-based industries. This shift is crucial for stimulating economic growth, enhancing productivity, and creating high-value employment opportunities. Furthermore, a well-resourced R&I sector is instrumental in tackling national issues such as public health, educational deficits, environmental degradation, and infrastructural weaknesses, through the development of evidence-based solutions and innovations.

Enhancing the country's research capacity and output is another critical aspect, as it enables more impactful and high-quality research projects, thereby boosting Sierra Leone's academic reputation and its ability to attract international collaborations and funding. In the face of rapid technological change, promoting technological advancement through strengthened R&I funding agencies ensures that Sierra Leone remains competitive in emerging fields such as artificial intelligence, biotechnology, and renewable energy. Fostering a culture of innovation is also integral to this initiative, as it encourages creativity and entrepreneurial thinking, which are vital for driving long-term economic growth and addressing complex societal challenges. Additionally, robust R&I funding agencies play a crucial role in informing and shaping national policies, providing the data and insights needed to develop and implement policies that are evidence-based and effectively aligned with national priorities. Lastly, enhancing Sierra Leone's integration into regional and global research networks is vital for ensuring that the country benefits from international advancements in science and technology. By strengthening these agencies, Sierra Leone can access a broader range of funding opportunities and participate in large-scale, multinational research projects, ultimately contributing to a resilient and sustainable future for the nation.

3. Methodology

This policy brief was derived from a comprehensive study of the policy and institutional landscape, stakeholder mapping, and needs assessment of research and innovation funding in Sierra Leone. The study employed a mixed-methods approach, combining both qualitative and quantitative data collection techniques to ensure a comprehensive and nuanced understanding of the research and innovation funding ecosystem. The methodology employed for this policy brief encompassed a multi-faceted approach to data collection and analysis. Desk studies involved comprehensive literature reviews spanning policy documents, reports, academic publications, and secondary sources, providing a foundational understanding of the subject matter.

Structured online surveys were administered to a diverse range of stakeholders, including government officials, policymakers, researchers, civil society organizations, and private sector representatives. These surveys aimed to quantitatively capture perceptions, experiences, and challenges related to research and innovation funding. Key informant interviews complemented the quantitative data by offering nuanced insights from key stakeholders such as government officials, research institution leaders, and industry experts. Furthermore, focus group discussions provided a platform for open dialogue among diverse stakeholder groups, ensuring that a range of perspectives on research and innovation funding were considered. Adopting a participatory and inclusive approach, the study prioritized gender balance and representation of marginalized groups, ensuring that the voices and perspectives of all stakeholders were incorporated into the findings and recommendations. The collected data underwent rigorous analysis, triangulation, and synthesis to identify key themes, patterns, and insights related to policies, stakeholders, capacity needs, challenges, opportunities, and best practices in research and innovation funding in Sierra Leone.

4. Major Findings

The key findings of the study are presented in the following sections, highlighting the policy and institutional landscape, stakeholder mapping, capacity needs assessment, challenges and opportunities, and best practices related to research and innovation funding in Senegal.

4.1 Policy and Institutional Landscape for Research and Innovation Funding in Sierra Leone

Sierra Leone has recognized the importance of research and innovation in driving socio-economic development and has established several policies and institutional frameworks to promote and fund these activities. Table 1 summarizes the key policies and their objective on research and innovation funding in the country.

Table 1: A Summary of Key Policies in the Research and Innovation Funding Ecosystem in Sierra Leone

No.	Policy	Year gazetted	Objectives
1.	National Science, Technology and Innovation (NSTI) Policy	2023	Build a strong science, technology and innovation capability and capacity needed to evolve a modern economy” while taking cognizance of leadership, funding, partnership, indigenization, and acculturation.
2.	National Open and Distance Learning (ODL) Policy	2015	Regulate open and distance learning programmes in the TEIs in Sierra Leone based on the statutory mandate of the TEC, adopting the Information and Communication Technology (ICT) or internet for effective delivery of the programme.
3.	Sierra Leone National Research for Health (R4H) Policy (2021-2030)	2021	Provide guidance on research for health, knowledge generation and technological innovations to improve health and wealth being. Importantly, this policy seeks to promote outstanding research for health and health related activities and contribute to productive strategic relationships with partners in academia and private research for health, as well as industry, commerce, government and communities in Sierra Leone.

4.	National ICT Policy	2009	<ol style="list-style-type: none"> 1) promote transparency and effective communication through e-governance, 2) facilitate and support freedom to affordable access to information, as well as to identify and implement all relevant procedures related to cyber security, electronic security and data protection to protect ICT users, and 3) improve efficiency in the public sector through the use of ICT infrastructure, applications and services.
5.	Sierra Leone National Innovation and Digital Strategy (NIDS) (2019-2029)	2019	Guides the country to focus on effective service delivery, citizen engagement, and digital economy driven by innovation and entrepreneurship, thereby reducing the cost of governance and corrupt practices, while also increasing productivity.
6.	Gender Equality and Women Empowerment Act	2022	Provides for the promotion of gender equality in employment and training, for implementation of gender mainstreaming and budgeting, and for financial institutions to prescribe procedure for the empowerment of women's access to finance.
7.	Sierra Leone Basic and Senior Secondary Education Act	2023	This Act informs the adaptation of the education system such that the basic and senior secondary education will be more inclusive, accessible and rights based.
8.	Education Sector Plan (ESP) 2020-2026	2020	Developed for all learners in Sierra Leone to have equal opportunity to access quality basic, secondary, technical, vocational, and higher education that enables them to participate in public life, contribute to national and global economy and fulfil their potential.
9.	Sierra Leone National Medium-Term Development Plan (2019-2023)	2019	Driven by the use of science, technology and innovation (STI) to establish Sierra Leone as an 'innovation nation' where agile, exploratory and research-driven start-ups and initiatives led by the citizens.

10.	Food and Feed Safety Act	2017	Provides for food and feed safety in Sierra Leone, and ensures the safety and quality of food and feed in order to protect the public against health hazards.
11.	The National Technical and Vocational Training (TVET) Policy	2019	Set up a common vision for the TVET system in Sierra Leone, facilitate alignment with both national development framework and coherence with other policies, enhance coordination of planned actions and reforms for improving outcomes and output of TVET.
12.	National Policy on Radical Inclusion	2021	Provides a roadmap for identifying and addressing the unique needs of marginalised groups of students including students with disabilities, pregnant girls and parent learners, children from poorest house and children in rural and underserved areas.
13.	Right to Access Information Act	2013	Allows for every person to have the right to access information held by or under the control of a public authority.
14.	University Act	2021	The Act aims to enhance the country's higher education system by providing a framework for the establishment, administration, and governance of universities. In relation to research and innovation funding, the Act mandates the creation of a conducive environment for research and innovation. This includes the provision of adequate scientific and technical infrastructure, promotion of innovation strategies, and building a strong local research capacity to drive national development. The Act also emphasizes the importance of universities in fostering research and innovation through funding, partnerships, and collaborations with various stakeholders.

The national funding ecosystem for research and innovation in Sierra Leone involves multiple stakeholders with distinct roles and linkages. At the center of this ecosystem is the government, which plays a critical role in formulating policies, providing funding, and creating an enabling environment for research and innovation. Key institutions responsible for research and innovation funding in Sierra Leone include the Ministry of Technical and Higher Education and the National Science, Technology, and Innovation Council (NSTIC). These institutions are tasked with overseeing and implementing various policies and funding mechanisms that support the growth and development of research and innovation in the country. Their collaboration and effective coordination are essential for building a robust and sustainable R&I ecosystem that can drive socio-economic progress and address the pressing challenges faced by Sierra Leone.

4.2 Stakeholders in Research and Innovation Funding in Sierra Leone

The R&I funding ecosystem in Sierra Leone is a complex and interdependent network of stakeholders, each of whom plays a critical role in advancing the nation's R&I agenda. This ecosystem comprises government entities, academic institutions, private sector actors, and international partners, all of which contribute distinct perspectives, resources, and expertise that are indispensable for cultivating a robust and dynamic research environment.

At the core of this ecosystem are the government entities responsible for policy formulation, funding allocation, and the creation of an enabling environment for research and innovation. The Ministry of Technical and Higher Education, alongside the National Science, Technology, and Innovation Council (NSTIC), are the principal governmental bodies charged with overseeing and managing research and innovation activities in Sierra Leone. The Ministry of Technical and Higher Education is instrumental in developing and implementing policies related to technical and higher education, including the allocation of funds to support research initiatives. This ministry's role is vital in aligning educational outcomes with national development goals and ensuring that research activities are effectively supported through appropriate funding and policy frameworks. The NSTIC, serving as the lead agency for coordinating and promoting research and innovation, is tasked with crafting national strategies for science, technology, and innovation, administering research grants, and facilitating partnerships among researchers and other stakeholders. The NSTIC's strategic direction and funding decisions are crucial for fostering a research-driven culture and catalyzing scientific advancements within the country.

Academic institutions are central to the research ecosystem, acting as hubs for knowledge generation, innovation, and the development of skilled talent. Universities and research institutes in Sierra Leone engage in research that addresses both local and global challenges, thereby contributing to the global scientific knowledge base and driving technological innovation. These institutions are essential in conducting cutting-edge research, developing innovative solutions, and training the next generation of researchers and scientists. They engage in collaborations with government bodies, industry partners, and international organizations to secure funding, execute research projects, and disseminate their findings. The outputs from these institutions are critical for informing policy decisions, advancing technological capabilities, and enhancing societal well-being.

The private sector is increasingly recognized as a pivotal stakeholder within the R&I funding ecosystem. Businesses and industry partners contribute not only through research funding but also by driving the commercialization of research outputs and applying innovative solutions to real-world problems. Private sector entities invest in research and development to foster innovation, enhance their competitive edge, and address sector-specific challenges. They collaborate with academic institutions and government bodies to co-fund research initiatives, provide practical insights, and facilitate the transition of research findings into marketable products and services. The involvement of the private sector is essential for translating research into economic value, thus driving broader economic growth and development.

International organizations and development partners provide indispensable support to Sierra Leone's R&I activities. These entities offer funding, technical assistance, and capacity-building programs that enhance the country's research capabilities and facilitate global collaborations. International partners, such as the United Nations, the World Bank, and various bilateral aid agencies, play a significant role in bolstering R&I activities in Sierra Leone. They provide grants, technical expertise, and capacity-building initiatives that strengthen national research infrastructure, promote international research collaborations, and ensure that research activities adhere to global standards and best practices.

4.3 Capacity Needs for the National Research and Innovation Funding Agency in Sierra Leone

Addressing the capacity needs of the National Research and Innovation Funding Agency in Sierra Leone is pivotal for establishing a resilient and effective R&I ecosystem. Enhancing the agency's capabilities requires a comprehensive

approach that includes strengthening institutional frameworks, building human resource capacities, improving infrastructure, and fostering strategic partnerships.

Strengthening institutional frameworks involves developing clear policies, robust governance structures, and transparent processes for fund allocation and management. Establishing comprehensive guidelines and rigorous monitoring and evaluation mechanisms ensures efficient and equitable distribution of funds, maximizing the impact of research initiatives and maintaining accountability. Building human resource capacities is equally critical. The agency needs a skilled workforce adept at managing complex research funding processes, from proposal evaluation to project monitoring and impact assessment. Investing in continuous professional development through targeted training, workshops, and international exchanges equips staff with the latest knowledge and skills in research management, financial administration, and policy development.

Improving infrastructure is another essential component. Upgrading information and communication technology (ICT) systems, establishing secure online platforms for grant applications, and creating databases for information sharing among researchers are necessary for streamlining operations and enhancing service delivery. Modern infrastructure not only boosts operational efficiency but also strengthens the agency's ability to attract and manage international research collaborations. Fostering strategic partnerships is crucial for expanding the agency's capacity. Collaborating with local and international stakeholders including government departments, academic institutions, private sector entities, and development partners provides additional resources, expertise, and networking opportunities. These partnerships facilitate joint funding initiatives, capacity-building programs, and research collaborations that align with national priorities, while engagement with regional and global networks allows the agency to adopt international best practices and innovations.

Finally, promoting a culture of innovation and continuous improvement within the agency is essential. Encouraging staff to embrace innovative problem-solving approaches and implementing feedback mechanisms for regular policy and procedure review ensure the agency remains responsive to emerging challenges and opportunities in the R&I landscape.

4.4 Challenges and Opportunities for Research and Innovation Funding in Sierra Leone

The landscape of R&I funding in Sierra Leone is characterized by a complex

interplay of challenges and opportunities. Addressing these challenges while capitalizing on emerging opportunities is crucial for building a robust and sustainable R&I ecosystem that can drive the country's socio-economic development. A comprehensive understanding of these dynamics is essential for formulating effective strategies and policies that support and enhance R&I activities.

4.4.1 Challenges

One of the most significant challenges facing R&I funding in Sierra Leone is the limited financial resources available for research activities. The allocation of government funding for R&I is often constrained by competing national priorities, which hampers the ability of researchers to secure the necessary financial support for their projects. This financial limitation is exacerbated by the lack of alternative funding sources, such as private sector investments and international grants, which further restricts the scope and scale of research initiatives.

Another critical challenge is the inadequate infrastructure and facilities necessary for conducting high-quality research. Many research institutions in Sierra Leone lack the essential laboratories, equipment, and technological tools required to carry out cutting-edge research. This infrastructural deficit not only impedes the ability of researchers to undertake complex and impactful studies but also affects their competitiveness in securing international collaborations and funding.

Human resource capacity is also a significant challenge in the R&I sector. There is a scarcity of trained researchers and professionals with expertise in research management, grant writing, and advanced scientific methodologies. This skills gap limits the effectiveness and efficiency of research projects and undermines the potential for innovation. Additionally, the limited opportunities for professional development and training further exacerbate this issue, making it difficult to build and sustain a skilled research workforce.

The governance and regulatory environment poses another challenge. The absence of coherent and comprehensive policies for R&I funding, coupled with bureaucratic inefficiencies and lack of transparency, creates obstacles for researchers seeking funding and support. This situation is compounded by the weak coordination among various stakeholders, which leads to fragmented efforts and duplication of activities, ultimately reducing the overall impact of research initiatives.

4.4.2 Opportunities

Despite these challenges, there are significant opportunities that can be leveraged to enhance R&I funding in Sierra Leone. One of the key opportunities lies in the growing recognition of the importance of research and innovation for national development. This recognition is reflected in the government's commitment to strengthening the NSTIC and other related institutions. By prioritizing R&I in national development plans, there is potential to secure increased funding allocations and create a more supportive environment for research activities.

The increasing interest and involvement of international partners and development agencies present another opportunity. Organizations such as the United Nations, World Bank, and various bilateral aid agencies have shown a willingness to support R&I initiatives in Sierra Leone through funding, technical assistance, and capacity-building programs. By strategically engaging with these partners, Sierra Leone can access additional resources, expertise, and collaborative opportunities that enhance its R&I capabilities.

The private sector also offers untapped potential for R&I funding. Encouraging private sector investment in research and innovation can provide alternative funding sources and promote the commercialization of research outputs. Establishing public-private partnerships and creating incentives for businesses to invest in R&I can drive innovation, enhance competitiveness, and address industry-specific challenges.

Furthermore, the global trend towards digital transformation and the increasing availability of digital tools and platforms present opportunities for advancing research in Sierra Leone. Embracing digital technologies can improve data management, facilitate remote collaborations, and enhance the dissemination of research findings. Investing in digital infrastructure and promoting digital literacy among researchers can significantly boost the efficiency and impact of R&I activities.

4.5. Best Practices in Research and Innovation Funding in Sierra Leone

-Implementing best practices in R&I funding is essential for enhancing the effectiveness, efficiency, and impact of research activities in Sierra Leone. These best practices, drawn from successful models globally and adapted to the local context, significantly contribute to developing a robust and sustainable R&I ecosystem. Sierra Leone is making significant efforts to strengthen its R&I funding ecosystem, and several best practices implemented in the country serve as valuable models for other nations in the West African region and beyond.

Sierra Leone has established a dedicated funding agency, the National Commission for Science, Technology, and Innovation (NCSTI), as the central funding body for research and innovation activities. The creation of this specialized agency ensures focused attention on research funding and streamlines the allocation of resources to deserving projects. This structural improvement is critical for providing a coherent and strategic approach to funding, addressing the needs of the research community, and aligning research initiatives with national priorities.

-Effective strategic planning and prioritization are crucial for maximizing the impact of limited R&I funds. In Sierra Leone, research and innovation funding is closely aligned with the country's national development priorities. The funding agencies prioritize projects that address key societal challenges and contribute to economic growth, poverty reduction, and sustainable development. Establishing a national research agenda that focuses on these critical areas ensures that resources are directed toward projects with the highest potential for positive outcomes.

-Transparency and competitiveness in the allocation of research funds are fundamental to fostering a merit-based research environment. Although there have been some complaints about the transparency of grants awards in Sierra Leone, the country has made significant efforts to ensure grant allocation processes are transparent and competitive. Robust evaluation mechanisms are employed to ensure the fair and unbiased selection of projects based on merit and potential impact. Implementing transparent procedures for grant application, evaluation, and award helps build trust in the funding process and ensures that funds are awarded to the most promising projects.

-Investing in capacity building and training programs is another critical best practice. The funding agencies in Sierra Leone invest in capacity building and training programs for researchers, innovators, and entrepreneurs. These programs enhance the skills of individuals, promote technology transfer, and support the commercialization of research outcomes. Providing training programs, workshops, and mentorship opportunities helps researchers develop essential skills in research design, grant writing, project management, and data analysis. Supporting continuous professional development ensures that researchers remain updated on the latest scientific advancements and best practices.

-Collaboration among multiple stakeholders is a cornerstone of Sierra Leone's R&I funding ecosystem. The country promotes multi-stakeholder collaboration

involving government entities, academia, private sector organizations, and international partners. This collaborative approach fosters knowledge sharing, leverages expertise, and maximizes the impact of research and innovation initiatives. Establishing partnerships with international research institutions, development agencies, and private sector entities can provide additional funding, expertise, and resources. Collaborative research projects that involve multiple stakeholders can address complex challenges more effectively and facilitate knowledge exchange.

-Providing adequate infrastructure and resources is fundamental to the success of research activities. The research and innovation funding ecosystem in Sierra Leone prioritizes support for startups and small and medium-sized enterprises (SMEs). Financial assistance, mentorship, and networking opportunities are provided to nurture and scale innovative ideas from these enterprises. Additionally, investing in modern laboratories, research facilities, and technological tools enables researchers to conduct high-quality and cutting-edge research. Ensuring the availability of essential resources such as research materials, databases, and access to scientific journals is also crucial. Improving infrastructure enhances the capacity of researchers to undertake complex studies and attracts international collaborations and funding.

-Promoting innovation and commercialization is key to translating research into tangible socio-economic benefits. Encouraging innovation and the commercialization of research outputs involves establishing innovation hubs, incubators, and technology transfer offices that support researchers in developing and commercializing their innovations. Providing funding and support for startup ventures and facilitating access to markets helps bridge the gap between research and industry. Public-private partnerships are actively promoted in Sierra Leone. Collaborations with industry partners facilitate technology adoption, market-driven research, and developing innovative solutions to address real-world challenges.

-International collaborations are another significant opportunity for Sierra Leone's R&I funding ecosystem. The country leverages international collaborations with organizations like the World Bank, the African Development Bank, and other donor agencies. These partnerships provide additional funding opportunities, technical expertise, and exposure to global research networks.

-Robust monitoring and evaluation (M&E) mechanisms are essential for assessing the effectiveness and impact of funded research projects. The funding

agencies in Sierra Leone prioritize impact assessment and monitoring of funded projects. Regular evaluations help measure the effectiveness of research and innovation initiatives, allowing for continuous improvement and learning. Implementing systematic M&E frameworks allows for the continuous tracking of project progress, identification of challenges, and measurement of outcomes.

Adopting best practices in research and innovation funding is essential for building a dynamic and sustainable R&I ecosystem in Sierra Leone. By strategically planning and prioritizing research, ensuring transparent and competitive funding processes, investing in capacity building, leveraging partnerships, improving infrastructure, and promoting innovation, Sierra Leone can significantly enhance the effectiveness and impact of R&I funding. These efforts will ultimately contribute to the nation's socio-economic development and position it as a leader in the West African region. Emulating these best practices can lead to the effective utilization of resources, accelerated scientific advancements, and the transformation of innovative ideas into tangible solutions that positively impact societies and economies across the region.

5. Conclusion

Strengthening Sierra Leone's national research and innovation funding ecosystem is crucial for advancing the country's socio-economic development. The strategic establishment of NCSTI, alignment of research priorities with national goals, and fostering multi-stakeholder collaboration demonstrate the country's commitment to enhancing its research capabilities. Despite challenges such as limited financial resources, inadequate infrastructure, and a shortage of skilled human resources, Sierra Leone's proactive investments in capacity building, transparent funding processes, and international collaborations are essential for creating a conducive environment for high-quality research and innovation. The opportunities provided by international partnerships, private sector engagement, and digital transformation offer promising avenues to further strengthen the R&I ecosystem. By leveraging these opportunities, Sierra Leone can improve research infrastructure, resource availability, and foster a culture of innovation that translates into tangible socio-economic benefits. The country's focus on inclusivity and impact assessment ensures that research and innovation efforts are equitable and effective, contributing to sustainable development. As Sierra Leone continues to refine its approach and address existing challenges, it is well-positioned to build a resilient and dynamic R&I ecosystem that drives scientific advancements, economic growth, and positions the country as a leader in research and innovation in West Africa.

6. Policy Recommendations

Recommendation 1: The government of Sierra Leone should increase financial allocations for research and innovation. The government should prioritize increasing the budgetary allocations for research and innovation. This includes dedicated funding lines within the national budget to support R&I activities, ensuring sustainable and long-term financial support for research institutions and projects. Leveraging international funding opportunities and engaging with development partners can also augment domestic funding efforts.

Recommendation 2: The government of Sierra Leone together with other stakeholders such as development partners should strengthen research infrastructure and facilities. Investment in modern research infrastructure and facilities is crucial for enabling high-quality research. The government and other relevant stakeholders such as development partners like IDRC should help in establishing state-of-the-art laboratories, research centers, and technological hubs to support scientific inquiry and innovation. Additionally, ensuring the availability of essential resources such as research materials, databases, and access to scientific journals will enhance the research capacity of institutions.

Recommendation 3: Foster multi-stakeholder collaboration and public-private partnerships: Promote and facilitate collaboration among government entities, academia, private sector organizations, and international partners. Establishing formal mechanisms for multi-stakeholder engagement will enhance knowledge sharing, leverage expertise, and maximize the impact of research initiatives. Encouraging public-private partnerships can drive market-driven research and support the commercialization of research outputs.

Recommendation 4: The government of Sierra Leone should ensure that there are transparent and competitive funding processes which is quickly implemented: Ensure that the allocation of research funds is transparent, competitive, and merit-based. Establishing independent review panels composed of experts from various fields will enhance the objectivity and rigour of the evaluation process. Regularly publishing funding decisions and performance metrics will promote accountability and build trust in the funding system. Additionally, addressing any complaints about the transparency of grant awards through robust monitoring and evaluation frameworks will ensure fair and unbiased selection of projects.

Recommendation 5: The government should leverage digital transformation and technological advancements: Embrace digital technologies to enhance the efficiency and impact of research activities. Investing in digital infrastructure and promoting digital literacy among researchers can improve data management, facilitate remote collaborations, and enhance the dissemination of research findings. Supporting the development and adoption of digital tools and platforms will drive innovation and create new opportunities for research and development.

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African Technology Policy Studies Network (ATPS)
Contact Executive Director:
executivedirector@atpsnet.org
8th Floor Chancery Building,
Valley Road
P.O. Box 10081-00100 Nairobi
Tel: +254 (020) 2714092
www.atpsnet.org

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