SCIENCE GRANTING COUNCILS INITIATIVE SGCI IOSRS INITIATIVE DES ORGANISMES SUBVENTIONNAIRES DE LA RECHERCHE SCIENTIFIQUE

POLICY AND INSTITUTIONAL IMPERATIVES FOR STRENGTHENING THE NIGERIAN RESEARCH AND INNOVATION FUNDING ECOSYSTEM

African Technology Policy Studies Network (ATPS)
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Policy and Institutional Imperatives for Strengthening the Nigerian Research and Innovation Funding Ecosystem

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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.

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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 Tertiary Education Trust Fund (TETFund) and Federal Ministry of Innovation, Science and Technology (FMIST) of Nigeria and other stakeholders in Nigeria's research ecosystem for their active participation in the project that gave rise to this Policy Brief. The Policy Brief benefited from the excellent background studies and technical reports published earlier by SGCI, IDRC, TETFund and other stakeholders.

Key Messages

- Nigeria's research and innovation ecosystem requires a unified framework, highlighting the urgent need for establishment and operationalization of the National Research and Innovation Council (NRIC) and a National Research and Innovation Fund (NRF). This will streamline funding mechanisms, reduce resource wastage, and foster synergy among stakeholders.

- Nigeria invests only 0.13% of its GDP in research and development (R&D), significantly below the African Union's recommended 1%. Increasing investment will not only drive technological advancements but also position Nigeria as a competitive player in the global innovation landscape.

- The private sector is contributing only 1% to research and innovation funding. Innovative incentives and public-private partnerships are essential to boost their role in driving research and innovation, therefore, strengthening collaboration with industry can help bridge the gap between academic research and market needs, ensuring impactful outcomes.

- Addressing deficiencies in laboratories, ICT facilities, and skills in grantsmanship, intellectual property, and commercialization will strengthen the ecosystem's foundation and outputs. Upgraded infrastructure and skilled personnel will empower researchers to undertake ground-breaking projects and contribute to national development.

- A robust Monitoring, Evaluation, and Learning (MEL) system is critical to ensuring accountability, optimal resource utilization, and measurable impact on national development. This system will enable continuous improvement by identifying challenges early and incorporating lessons learned into future initiatives.

1. Introduction

The landscape of Research and Innovation (R&I) funding in Nigeria reflects a complex interplay of policy frameworks, institutional arrangements, and funding mechanisms that have evolved over several decades. The country's approach to R&I funding encompasses multiple stakeholders, demonstrating a recognition of the vital role that scientific and technological advancement plays in national development. The importance of R&I funding in socio-economic development has always been recognized by the Nigerian government as can be seen in the incorporation of research and development (R&D) funding in the various national development plans (Onuoha and Olanipekun 2023). The major Science, Technology and Innovation (STI) policy is the National Science, Technology and Innovation Policy (NSTIP). The first version of the policy was launched in 1986 and has gone through various revisions with the latest version launched in 2022 (Siyanbola et al, 2016; Nwachukwu and Udenze, 2019; Federal Government of Nigeria [FGN], 2022).

While Nigeria has been implementing the NSTIP through various research institutes, councils and agencies under the Federal Ministry of Innovation, Science and Technology, some research funds are also channelled through other government ministries, departments and agencies (MDAs) at the federal and state levels including: the Federal Ministries of Budget and National Planning, Agriculture, Education, Innovation, Communications and Digital Economy, Health, Petroleum Technology Development Fund (PTDF), Raw Materials Research and Development Council (RMRDC), Nigerian Content Development and Monitoring Board (NCDMB), National Agency for Science and Engineering Infrastructure (NASENI), among others. The funding agency that stands out among these MDAs is the Tertiary Education Trust Fund (TETFund) under the Federal Ministry of Education (Echono, 2023). The TETFund implements a National Research and Innovation Fund (NRF) among a number of other mandates for public tertiary institutions. However, the TETFund lacks the statutory mandate to deliver the management of a robust funding mechanism that covers all sectors both formal and informal, as well in the public and private sectors. Therefore, the need for an all-encompassing funding mechanism becomes exigent and calls for concerted efforts from the government and relevant stakeholders to ensure speedy establishment of NRIC as well as NRF to provide a sustainable funding mechanism for research and innovation to thrive in Nigeria.

2. Rationale for establishing and operationalizing the National Research and Innovation Funding Agency

Nigeria is yet to achieve its full potential in terms of leveraging research and innovation in achieving national socio-economic advancement. Despite its relatively high GDP and considerable achievements in R&I, Nigeria is yet to invest up to 1% of its GDP in research and innovation as recommended by the African Union Commission. Nigeria currently spends about 0.13% of GDP on research funding, compared to 2.4% for China, 0.85% for South Africa, 0.42% Africa's average and 1.7% for the Global average (Caelers and Okoth, 2023; Echono, 2023). Meeting the 1% target would require a significant increase in investment in research and development (R&D).

The low investments as well as lack of optimal supportive ecosystem have continued to hamper technological and consequent socio-economic advancement in the country. Although there exists a national STI Policy (FGN, 2022), the dominance of sector-based research and innovation funding approach still stifles innovation due to lack of coordination, and wastage of meagre resources. In addition, Nigeria is a federation made up of 36 federating states. Each of these states has sectorial policies almost similar to the federal government leading to a number of development policies at the state level. This has led to multiplicity of policies leading to a large number of institutions forming part of the research and innovation ecosystem with challenges of poor coordination, thin spreading of resources, duplication of effort and overall poor impact on the economy. There is therefore a need to systematically assess the research and innovation funding ecosystem of Nigeria with a view to understating the best practices, challenges, and opportunities for improvement of R&I in the country. The assessment will lead to the adoption of best practices in creating a central funding agency that is aligned with global best practices. The establishment of such an agency would lead to improvement of the capability of research and innovation to drive economic growth through an efficient management structure and sustainable funding streams emanating from government and private sector investments as well as through funding from international development partners especially the Science Granting Councils Initiative (SGCI).

3. Methodology

This policy brief was derived from a study of policy and institutional landscape, stakeholder mapping, and needs assessment of research and innovation funding in Nigeria. Both qualitative and quantitative data were collected through desk studies, online surveys, key informant interviews, focus group discussions (FGD) as well as a high level policy dialogue. The participants were drawn from five key stakeholder categories (Government/Policy makers, non-governmental organizations (NGOs)/Civil society, Private sector/industry, Research institutions and universities, the Media). The respondents were selected carefully to foster inclusivity and gender balance to ensure that the voice of women, persons living with disabilities and other marginalised groups were heard.

4. Major Findings

4.1 Policies and Institutions for Research and Innovation Funding in Nigeria

Nigeria's science, technology, and innovation landscape has evolved significantly since 2011, when the government introduced its National Science, Technology and Innovation Policy (NSTP 2012). This comprehensive policy established strategies for STI promotion across multiple sectors, including agriculture, health, energy, and ICT, while emphasizing intellectual property protection and increased female participation in research. The policy framework was further developed in 2013 with a draft Framework for the Nigeria National System of Innovation, followed by the 2017 National Science, Technology Innovation Roadmap of 2030, which provided a long-term vision for scientific and technological development.

In 2022, the government revised the NSTP following a decade of implementation, with a renewed focus on economic diversification and knowledge-based development. This policy revision works in conjunction with the National Development Plan (NDP) 2021-2025, which replaced the earlier National Economic Empowerment and Development Strategy (NEEDS) of 2004. The NDP aims to strengthen the economy through MSME growth, infrastructure development, and improved governance. The ecosystem is further supported by the National Policy on Public-Private Partnerships of 2018, which addresses infrastructure deficits, particularly in energy and transportation, while promoting social, economic, and environmental goals. More recently, the National Agricultural Technology and Innovation Plan (2022-2025) was introduced to accelerate agricultural development through improved inputs, research linkages, mechanization, and enhanced extension services. This plan specifically targets agricultural modernization and job creation while ensuring land security and support for agro-based investments. These policies are further supported by the Bio-fuels Research Agency's coordination efforts with various research institutions, and the 2022 National Agricultural Developmental Fund Policy, which allocates 5% of agricultural import/export funds for research, demonstrating Nigeria's evolving commitment to building a comprehensive research and innovation ecosystem despite persistent implementation challenges.

Nigeria's institutional framework for research and innovation funding operates on a sector-based model, where different Ministries, Departments and Agencies (MDAs) manage research funding through their established institutes. The governance structure, established by the 2011 Science, Technology and Innovation Policy, includes several key institutions. The National Research and

Innovation Council (NRIC), though not yet operational, is designed to be headed by the President and Federal Ministers to set national research priorities. The Ministry of Science and Technology (MoST) serves as the central coordinator of R&D activities, while the National Council on Science, Technology and Innovation (NCSTI) coordinates STI activities and monitors public STI agencies. At the state level, the State Science, Technology and Innovation Council (SSTIC) provides leadership for STI activities. The TETFund, under the Federal Ministry of Education, provides research grants but is limited to public institutions. Other significant institutions include the Central Bank of Nigeria's Healthcare Sector Research and Development Intervention Scheme (HSRDIS), the Petroleum Technology Development Fund (PTDF) established in 1973 for petroleum sector development, and the Nigeria Content Development and Monitoring Board (NCDMB) established in 2010 to promote Nigerian content in the oil and gas industry.

4.2 Stakeholders in the Research and Innovation Funding in Nigeria

Although there is no central national Research and Innovation Funding Agency in Nigeria, funding of research is currently achieved through budgetary allocations in a large number of Ministries, Departments and Agencies (MDAs). Nigeria's research and innovation ecosystem is distributed across multiple federal ministries, each contributing to different aspects of scientific and technological development. The Federal Ministry of Innovation, Science and Technology serves as a central authority with 18 parastatals under its supervision. The education sector's research capacity is managed by the Federal Ministry of Education, which oversees more than 300 public tertiary institutions and key research funding agencies including TETFund, National Universities Commission (NUC), and the Nigeria Educational Research and Development Council (NERDC).

Health-related research is coordinated through the Federal Ministry of Health, which manages over 40 tertiary hospitals and medical research institutes. The technology sector is supported by the Federal Ministry of Innovation, Communications and Digital Economy, primarily through the National Communications Commission (NCC) and the National Information Technology Development Agency (NITDA), which focus on ICT innovation and start-up development. Agricultural research falls under the Federal Ministry of Agriculture and Food Security, where the Agricultural Research Council of Nigeria (ARCN) oversees approximately 20 sector-based research institutes within the National Agricultural Research System. Other specialized research areas are covered by various ministries: the Petroleum Technology Development Fund (PTDF) under the Ministry of Petroleum Resources, the Bank of Industry's innovation

support through the Ministry of Trade, Commerce and Industry, and the Rural Electrification Agency's research initiatives under the Ministry of Power.

The ecosystem is further complemented by the Ministry of Defense's research arms, including the Defense Industries Corporation of Nigeria, and the Central Bank of Nigeria under the Ministry of Finance, which provides additional research support. This distributed structure enables specialized research and innovation activities across different sectors of the Nigerian economy. Nigeria enjoys research and innovation funding from other international bodies including non-governmental organizations, development agencies, civil society organizations some of which include the European Union (EU), Water Aid, Africa-Japan Collaborative Research (AJCORE), Intervention Fund for the Environment (FIE), Leap-Agri, Long-term EU-AU Research and Innovation Partnership for Food and Nutrition Security and Sustainable Agriculture (LEAP 4 FNSSA), UKAID, USAID, GIZ. Some private sector organizations are involved in innovation funding through support for innovation competitions and projects. These include organized private sector groups such as Chamber of Commerce and Industry of Nigeria and Manufacturers Association of Nigeria; Professional Societies such as Nigeria Academy of Science; Nigerian Academy of Engineering; Foundations such as Tony Elumelu Foundation, T.Y. Danjuma Foundation, MTN Foundation, Dangote Foundation; Financial Institutions mostly commercial and development banks are involved in supporting and promoting innovations.

4.3 Capacity Needs of the Research and Innovation Funding Agency in Nigeria

From the findings of the study, the technical support needs focus primarily on establishing and operationalizing R&I funding agency in Nigeria through strategic stakeholder engagement and capacity building. Key priorities include bringing together stakeholders from government, academia, and industry; advocating for increased R&I funding through high-level policy dialogue, stakeholder consultations, national and international collaborations, parliamentary engagement, and institutional framework development through regular workshops and consultations. Additionally, the support requirements emphasize the importance of implementing gender-inclusive policies and developing digital infrastructure for grant management, as well as research commercialization. The aim is to establish efficient systems for managing research outputs, promoting transparency in funding allocation, and ensuring inclusive participation across all social groups, while leveraging digital technologies for effective program administration and monitoring.

The capacity training needs of Nigeria's research and innovation funding agency encompasses a comprehensive range of skills focusing on research management and implementation. Core areas include developing expertise in fundraising and grantsmanship, protecting and commercializing research outcomes, maintaining ethical standards, and implementing effective project management practices with proper monitoring and evaluation systems. The findings also emphasize inclusive practices through gender equality strategies, while building competencies in policy development, public-private partnerships, and impactful research communication including policy brief writing and results dissemination.

4.4 Challenges and Opportunities for Research and Innovation Funding in Nigeria

The Nigeria research and innovation funding ecosystem is faced with a myriad of challenges ranging from poor funding; uncoordinated implementation of STI policies, low participation of private sector, corruption and poor management of funds, low emphasis on commercialization of innovations, poor infrastructure, skills gap in writing, implementation and management of research and innovation grants. However, opportunities exist in research and innovation funding in Nigeria such as in activating of the NRIC and NRF, organized private sector (OPS) groups partnering with government to promote grant funds under public private partnership arrangements, encouraging and empowering finance institutions (e.g. Bank of Industry, Development Bank of Nigeria, Bank of Agriculture, Nigerian Export-Import Bank) to get involved in funding of research and innovation or contribute towards a common fund; attracting international funding for R&D and innovation in Nigeria, promoting and supporting the establishment of venture capital schemes, including risk capital to small and medium technology-based businesses, utilizing the output of R&D and innovation to ensure effective valorization of research outputs among others.

4.5 Best Practices in Research and Innovation Funding in Nigeria

-Partnership and Collaboration with International Organizations: Foreign donor interventions in Nigeria supporting the use of STI for job creation and youth employment can bring positive impacts by providing funding, expertise, and access to technology, which can improve skills, productivity, and entrepreneurship among youth, leading to economic growth and development. This is exemplified by the Feed the Future Project which is a collaboration between USAID and the Ministry of Agriculture. It has not only stimulated economic growth but also increased employment opportunities, empowering women and youth, promoting innovation, advancing trade and lifting people out of extreme poverty. Other international organizations partnering with Nigeria in this regard include IFAD, CIDA, JICA, World Bank, AfDB etc.

-Functional institutional setup: The policies and institutions in Nigeria's research and innovation ecosystem demonstrate both strengths and limitations in promoting best practices. The comprehensive policy framework, from the NSTP 2012/2022 to sector-specific initiatives, shows a clear commitment to establishing structured approaches for research and innovation development. However, the sector-based institutional framework, while providing specialized focus areas, leads to fragmentation, potential duplication of efforts and wastages of resources.

-Setting up Centres of Excellence and Research Institutions across the country: Through the provision of a US $70 million, the World bank has supported the establishment of Centres of Excellence across Nigeria (World Bank Group, 2014). The project has contributed a great deal towards enhancing research and education infrastructure. The TETFund and NCMB have also adopted this practice in setting up some Centres of Excellence in Nigeria.

-Private Sector contribution to innovation, entrepreneurship and youth employment: The Tony Elumelu Foundation Entrepreneurship Programme, has supported over 10,000 African entrepreneurs including Nigerian youths with a $100 million fund to boost their businesses. The programme provides training, mentoring, and seed capital to young African entrepreneurs, including those in Nigeria, which has resulted in job creation and economic growth. The Tony Elumelu Foundation (TEF) Entrepreneurship Program (TEFEP) has empowered 4,470 entrepreneurs, using a robust selection, training and implementation process to create visible and sustainable impact across all 54 African countries.

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

Policies in research and innovation funding	Aims and objectives	Impact on research and innovation funding	Remarks
Revised National Science, Technology and Innovation Policy (NSTP 2022)	Aims to produce world-class scientists and engineers, support continuous training, strengthen technological entrepreneurship, and create STEMA education incentives.	Established STI television for knowledge sharing, promotes indigenous technologies, supports women women empowerment in STI.	Focuses on diversifying the Nigerian economy and promoting knowledge-based economy; implementation is ongoing.
National Science, Technology and Innovation Policy (NSTP 2012)	STI promotion and capacity building, sectoral R&D development, technology transfer.	Female participation in research, established framework for STI promotion and development across multiple sectors including agriculture, health, energy, and ICT.	Led to creation of Framework for Nigeria National System of Innovation (2013) and STI Roadmap 2030.
The National Economic Empowerment and Development Strategy (NEEDS) of 2004	Poverty reduction, wealth creation, job creation, value re-orientation. Recommended an increased share of renewable energy in the national energy mix. This involves a suggestion to create a renewable energy agency and technologies that will be funded by the government.	Created framework for renewable energy funding and development.	The policy was ambitious but was dropped with change in government. Replaced by the National Development Plan (2021-2025).
The Presidential Executive Order 005 of 2018	For planning and execution of projects, promotion of Nigerian content in contracts and science, engineering	Supported STI policies in improving local skilled manpower and boosting the	Implementation is ongoing with no change in the objectives

	and technology projects using local expertise. Aligns with broader STI policy objectives.	data base. Mandated use of indigenous professionals in national projects and established experts database through NOTAP	
The National Policy on Public-Private Partnerships 2018	To identify the huge deficits in the national infrastructure as one of the key challenges constraining the economic growth of the country, especially in the energy and transportation sectors. Encourages innovation and efficiency in public services through private sector participation. The goals of this policy are social, economic and environmental.	Impact on economic and social dimensions.	Implementation is ongoing.
National Agricultural Technology and Innovation Plan (2022-2025).	To fast-track the agricultural revolution in Nigeria by enhancing access to improved inputs and linkages among research and teaching institutions, job creation, as well as improve the level of agricultural mechanization.	Establishment of cottage industries and agro-processing zones for priority commodities, the establishment of functional models of ranches, grazing reserves, and integrated meat and dairy processing facilities.	Development of local innovations but funding is still a challenge.
National Science, Technology Innovation Roadmap of 2030	Focuses on linking research in all areas to national development and supporting industrial innovation. It aims to facilitate the creation and acquisition of knowledge for production, adaptation, replication, and utilization of technologies, support the establishment and strengthening of STI organizations, institutions, structures and processes.	Coordinate and manage STI activities and promote the creation of innovative enterprises.	There is yet no information on the impact.

5. Conclusions

Nigeria's research and innovation funding ecosystem has demonstrated remarkable progress through the establishment of comprehensive policies, sector-specific funding mechanisms, and the active engagement of diverse stakeholders. However, challenges such as fragmented structures, inadequate investment, and limited private sector participation continue to hinder its full potential. By addressing current challenges and leveraging opportunities, including international partnerships and policy alignment, Nigeria can establish a robust National Research and Innovation Funding Agency as well as a National Research and Innovation Fund. This unified structure will ensure coordinated efforts, efficient resource allocation, and enhanced innovation outputs, driving the nation's progress toward becoming a knowledge-based economy. Collaborative action among government, private sector, and international stakeholders is essential to ensure the establishment and sustainability of this agency and achieve these transformative goals.

6. Policy Recommendations

In order to establish and strengthen the National Research Funding Agency in Nigeria, the following policy recommendations are proffered:

Recommendation 1: Establish and Operationalize the National Research and Innovation Council (NRIC) and National Research and Innovation Fund: The Presidency, National Assembly, Ministry of Innovation, Science and Technology and other relevant stakeholders should expedite the passage and implementation of the NRIC and NRF Bill currently at the National Assembly to create a unified and robust framework for research and innovation funding and coordination in Nigeria. This will streamline funding mechanisms and reduce resource wastage. It will also enhance coordination among stakeholders, build synergy and improve research output thereby promoting Nigeria's global competitiveness in innovation.

Recommendation 2: Increase R&D Funding to 1% of GDP: The Federal Executive Council and the Federal Ministry of Finance should work to align Nigeria's research and innovation funding with the African Union's recommendation by raising investments from the current 0.13% of GDP to at least 1%. This will drive technological advancement, ensuring sustainable development through enhanced financial commitment.

Recommendation 3: Enhance Private Sector Contribution: The Federal Ministry of Commerce, Trade and Investment, the Chambers of Commerce and Industry should incentivize and strengthen mechanisms to increase private sector funding for research and innovation from the current 1% to at least 20%, leveraging public-private partnerships for sustainable innovation ecosystems. This will ensure increased funding from the private sector, bridge the gap between academic research and market needs, and promote commercialization of innovations, boosting economic growth.

Recommendation 4: Improve Research Infrastructure and Capacity Building: The TETFund and the Federal ministry of Education should invest in modern laboratories, ICT facilities, and Centres of Excellence while providing training on grantsmanship, science communication, intellectual property, and commercialization to bridge skills gaps in research and innovation. This will enhance research capacity for ground-breaking projects, improve human capital development and strengthen foundational support for innovation ecosystems.

Recommendation 5: Implement a Robust Monitoring, Evaluation, and Learning (MEL) Framework: The Ministry of Innovation, Science and Technology as well as other independent auditing entities should develop and deploy an effective MEL system with feedback mechanisms to ensure transparency, accountability, and measurable impact of research and innovation funding on socio-economic development. This ensures transparency and accountability in research funding, promotes continuous improvement in research outcomes, and demonstrates measurable impact on national development.

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