



***THEMATIC RESEARCH: HEALTH/ICT/ENERGY
PROGRAMME***

THEMATIC RESEARCH SUPPORT AND ADVANCEMENT

Framework Document

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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Detail
AI	Artificial Intelligence
AR/VR	Augmented Reality / Virtual Reality
CoEs	Centres of Excellence
DMP	Data Management Plan
DVC	Deputy Vice Chancellor
DSTI (DSI)	Department of Science Technology and Innovation (previously Department of Science and Innovation)
FCS	Full Cost of Study
HDIs	Historically Disadvantaged Institutions
HCI	Human-Computer Interaction
HESTIL	Higher Education, Science Technology and Innovation Institutional Landscape
ICT	Information and Communication Technology
IP	Intellectual Property
IoT	Internet of Things
ISFAP	Ikusasa Students Financial Aid Programme
MESL	Monitoring, Evaluation, and Strategic Learning
MTDP	Medium-Term Development Plan
NDP	National Development Plan
NQF	National Qualifications Framework
NRF	National Research Foundation
NRDS	National Research and Development Strategy
NSI	National System of Innovation
OECD	Organisation for Economic Co-operation and Development
PCS	Partial Cost of Study
SAASTA	South African Agency for Science and Technology Advancement
SARChI	South African Research Chairs Initiative
SADC	Southern African Development Community
SDGs	Sustainable Development Goals
SE	Science Engagement
SEIMS	Science Engagement Information Management System

Acronym/Abbreviation	Detail
STI	Science, Technology and Innovation
TIES4I	Transformation, Innovation, Excellence and Sustainability for Societal Impact
TYIP	Ten-Year Innovation Plan 2008–2018

DEFINITIONS

Thematic Research Cluster	A group of no less than one Lead Principal Investigator and three Co-principal Investigators from more than one department at the same qualifying institution
Qualifying Institution	Public South African Universities and Research Institutes that are recognised by directive of the Minister of the Department of Science, Technology and Innovation
Established Researcher	Current or previous rated researchers, typically C-rated, or non-rated researchers with a track record of at least 10 years of research funding as evidenced by research publications, student graduation outputs, and leadership in collaborative research projects
Newly established Researcher	At least 6 years but not more than 9 years of evidence of research funding as evidenced by research publications, student graduation outputs (e.g. Thuthuka, Black Academic Advancement Programme, or similar). Such funding need not be NRF-funding
Emerging Researchers	Within 5 years post-PhD. Postdoctoral Fellows are also considered to be emerging researchers.
Next Generation Researchers	Postgraduate students: Honours students, Masters students or PhD candidates.
Interdisciplinary Research	The OECD defines interdisciplinary research as the interaction between two or more different disciplines that ranges from a simple exchange of ideas to the mutual integration of concepts, methodology, and data . This integration can involve combining concepts, procedures, epistemology, terminology, data, and the organisation of research and education.
Transdisciplinary Research.	The OECD defines transdisciplinary research as a collaborative approach that brings together academic researchers from different disciplines and non-academic participants to tackle complex societal problems. This integration of scientific and non-scientific knowledge is intended to create new knowledge and theory that is relevant to society and can lead to practical solutions for real-world challenges.
Knowledge Impact	Knowledge impact refers to scientific advances in understanding, interpretation, methods, theory, application, and related advances that bring about positive change within and/or across disciplines and fields.
Societal Impact	Societal impact refers to the value that research adds to society across various spheres, whether social, economic, or environmental. Societal impact reflects the direct or indirect relationship between research, or the research process, and improvement in the quality of people's lives, inclusive of innovation,

	technological advancements, improved sustainability, and policy developments.
Impact Statement	The impact statement details the activities planned across all stages of the proposed research: inputs, activities, planned outputs, how outputs will lead to expected outcomes and the link between outcomes and measurable potential impact.
Research Outputs	Outputs include, <i>inter alia</i> , postgraduate student graduations, new knowledge, publications, conference papers, policy briefs, new research networks (especially with non-academic stakeholders), new methods and processes (whether for use within the research system or outside thereof), patents, and prototypes. Science engagement outputs could include engaged research processes, community events and media reports on science and research
Research Outcomes	Outcomes refer to the application or use of outputs by the research enterprise or by society. Outcomes result from outputs being taken up to be applied and used more broadly in society and could include the use of research in policy development, product development, innovation, the development of new services or companies, or new methods and processes. Outcomes are also evident in employed postgraduates or the use of the researcher capacity for national projects and commercial research and development.
Impact	Impact refers to both the measurable tangible and intangible positive influence derived and/or caused by the research outputs/outcomes.
Science Engagement	The deliberate and sustained interaction between scientific communities and society, aimed at fostering awareness, participation, and literacy in science. It is a dynamic and inclusive process that facilitates dialogue between scientists, students, the public, learners, educators, industry, and policymakers, ensuring that scientific knowledge remains accessible, relevant, and impactful. SE interventions are structured and strategic efforts designed to enhance science awareness, literacy, participation, and capacity-building over time, creating meaningful opportunities for engagement and knowledge exchange across diverse audiences.

1. INTRODUCTION

The National Research Foundation (NRF) is mandated through the NRF Act (Act No. 23 of 1998, as amended) to contribute to national development by promoting and supporting research through funding, human resource development and the provision of the necessary facilities in order to facilitate the creation of knowledge, innovation and development in all fields of research, including indigenous knowledge and thereby to contribute to the improvement of the quality of life of all the people of South Africa.

The establishment of this new support modality aligns research investment directly with the NRF Strategy 2030 and the Science Technology and Innovation (STI) Decadal Plan 2022-2032, addressing previous gaps in funding coherence and strengthening the human capital development pipeline. This approach optimises resources by promoting capacity sharing across the National System of Innovation (NSI), ensuring sustainable support for researchers from early career stages to internationally recognised leaders who drive knowledge generation and innovation critical for South Africa's global competitiveness. The overarching objective is to ensure that research outcomes extend beyond conventional academic indicators, such as publications and graduations, to deliver tangible, verifiable societal impact in partnership with other key stakeholders including academia, government, industry, and civil society organisations (NGOs).

Thematic Research Programmes are designed to foster interdisciplinary collaboration and strategic alignment across priority areas, enabling research communities to coalesce around shared national challenges and opportunities. By embedding monitoring and evaluation mechanisms from the outset, the modality ensures accountability and continuous learning, enhancing the responsiveness and agility of the research system.

2. STRATEGIC CONTEXT

The NRF's wider research support strategy is guided by the Science, Technology and Innovation (STI) Decadal Plan (2022–2032). This plan aligns with the final phase of the National Development Plan (NDP): Vision 2030, translating the vision of the 2019 White Paper on STI into defined priorities and thematic areas. These are designed to achieve the NDP's fundamental goals of poverty eradication and inequality reduction. This targeted approach ensures that NRF investments address national challenges while aligning with global mandates such as the African Union Agenda 2063 and the United Nations Sustainable Development Goals (SDGs), positioning research as a driver of socio-economic progress and transformation.

The Decadal Plan highlights critical areas for investment through 2032, including strengthening human resources for STI, transforming the research system, and creating an enabling environment for innovation and impact. To realise this vision, the NRF adopts an integrated funding model prioritising mission-led thematic research programmes while continuing to support basic sciences and foundational disciplines that sustain South Africa's long-term knowledge base and underpin applied research. This dual approach enhances the NRF's human capital development pipeline and ensures alignment with the Decadal Plan's priorities, serving as the core delivery mechanism for the NRF Strategy 2030.

NRF Strategy 2030 provides the roadmap for achieving the aspirational goals set out in NRF Vision 2030, which envisions a globally competitive, inclusive, and impactful research enterprise. It seeks to position the NRF as a catalyst for knowledge generation and

application, ensuring that research contributes directly to national development priorities and global competitiveness.

The NRF Impact Framework is the key instrument for delivering on the Impact pillar of NRF Strategy 2030. It translates strategic intent into actionable guidance for planning, funding, and assessing research that contributes meaningfully to both knowledge advancement and positive societal change. By embedding principles such as equality, diversity, inclusion, and scientific rigour, the framework ensures that funded research aligns with national priorities and global development agendas. Complementing this, the NRF Engaged Research Framework operationalises the Transformation and Impact pillars by promoting inclusive, collaborative, and context-responsive approaches. It requires researchers to actively involve societal stakeholders throughout the research process, ensuring relevance, uptake, and measurable impact.

3. STRATEGIC INTENT

The intent of the NRF's for supporting Thematic Research Programmes is to:

- Advance knowledge and innovation in key research priority areas that are important to South Africa.
- To contribute to the development of high-level skills in critical knowledge domains, particularly in areas that will benefit the society.
- To enhance the impact of knowledge outputs generated through research in priority sectors through strategic partnerships with key stakeholders across South Africa's National System of Innovation (NSI).

4. ACCOUNTABILITY

The office of the Deputy Vice Chancellor for Research and Innovation would assume responsibility for accounting to the NRF on the management and performance of the Thematic Research Programmes. The Thematic Research Cluster will fit into the normal structures of the host institution and the research cluster leaders will report to relevant structure as determined by their institutions.

Similar to other large projects supported by the NRF, each Thematic Research grant will belong to the institution of the Lead PI (the beneficiary institution), and not to the grant holder. Resignations or removals from the Thematic Research Cluster will require the replacement of that member by an alternative researcher at the same institution. To maintain the stability of the Thematic Research Clusters, grant holders are not permitted to transfer grants to another institution.

5. GUIDING PRINCIPLES

The thematic research instrument will contribute to the five pivotal success factors, namely Transformation, Innovation, Excellence and Sustainability for Societal Impact (TIES4I) as

presented in the NRF Strategy 2030. In addition, the projects supported through the Thematic Research Programmes will be guided by the key principles outlined below:

5.1 Interdisciplinary research

The Thematic Research Cluster will consist of researchers from different disciplines, with the intention to bring together diverse skills and perspectives required to develop advanced knowledge and innovative solutions. This promotes the advancement and integration of new knowledge to strategic knowledge platforms such as South African Research Chairs Initiative (SARChI) chairs and DSTI-NRF Centres of Excellence (CoEs).

5.2 Capacity development

The Thematic Research Cluster will be required to actively collaborate with emerging and next generation researchers. This requirement will foster skills-transfer between well-established, newly established, emerging and next-generation researchers through deliberate support for the development of advanced skills across disciplines, training, mentorship and succession planning, all of which serves to broaden the national and international research standing of all members.

5.3 Resource sharing

The funding model encourages the leveraging of available institutional resources, including sharing of infrastructure, and sharing of equipment with other research clusters in other institutions.

5.4 Research impact

The Thematic Research support is specifically designed to address the imperative for impact by rigorously prioritising research proposals that exhibit high potential for both knowledge and societal impact. Through the establishment of collaborative Thematic Research Clusters, the NRF will resource larger projects whose research outcomes are positioned to deliver demonstrable change for the society and the economy.

5.5 Transferability

As part of NRF strategy 2030, the NRF is increasing its investments to accelerate the translation of research outputs into tangible societal outcomes. To support this goal, through its Thematic Research Programme the NRF will actively pursue partnerships within the National System of Innovation (NSI), including organisations like the South African Local Government Association, the Technology Innovation Agency, Science Councils, industry stakeholders, and where appropriate, non-governmental organisations.

5.6 Science engagement and engaged research

The Thematic Research Programme is creating a platform that facilitates engaged citizenship where non-academic stakeholders are engaged in co-creation of research with researchers, which in turn will increase the uptake of research outputs. This will strengthen the

relationship between science and society which will ultimately underpin support for a knowledge-based economy.

5.7 NRF Rating

The NRF remains committed to promoting and supporting the rating of individual researchers through its Rating instrument. Even though an NRF Rating is not a requirement for a researcher to be funded from the Thematic Research Programmes, there is an expectation that unrated researchers will submit applications for NRF Rating during the funding cycle, and that rated researchers will improve their ratings during the funding cycle.

6. DEDICATED RESEARCH THEMES

The Thematic Research Programmes will prioritise funding for research that develop knowledge to solve South Africa's key socio-economic challenges and facilitates the move towards a knowledge-based economy. This pilot Call is focusing on three priority areas/domains included in the STI Decadal Plan, namely Health, ICT, and Energy with further priority areas to be supported as funding becomes available. By investing in areas of national importance, the NRF intends to empower established researchers to generate impactful knowledge while rapidly developing emerging researchers into globally competitive leaders.

6.1 ICT Thematic Research Support

6.1.1. Introduction

The NRF strategically advances knowledge and innovations in the Information and Communication Technology (ICT) sector by supporting research projects in partnership with universities. The areas supported through the South African Research Chairs Initiative (SARChI) include ICT for Development (ICT4D), Artificial Intelligence for Sustainable Development, and Smart Connected Economies. Additionally, the NRF also has a strategic partnerships with Telkom through the FutureTech programme, which provides short-term collaborative research grants in high-priority domains including network and fibre-optic solutions, Internet of Things (IoT), artificial intelligence, and language technologies.

The ICT Thematic Research programme will support the entire digital innovation value chain, from foundational technologies like AI and IoT and the development of robust data analytics platforms, to the deployment of smart systems for sectors such as agriculture, mining, healthcare, and governance.

6.1.2. Decadal Plan Trust Domain Thrust

The research areas supported through this programme should also be aligned to the following thrusts included in the STI Decadal Plan 2022-2032 as well as other digital economy strategies.

IT1: Checks and balances for a digital future: This area focuses on establishing a robust regulatory and ethical framework for the digital economy. It emphasizes governance, data

protection, cybersecurity, and ensuring responsible use of technology. This is crucial for building trust and security in South Africa's digital ecosystem.

IT2: ICT infrastructure and Internet access: This addresses the fundamental need for widespread, reliable, and affordable internet connectivity. It includes expanding broadband infrastructure, promoting 5G rollout, and closing the digital divide, particularly in underserved areas. This is essential for enabling participation in the digital economy.

IT3: Big data, data analytics and decision support: This area highlights the importance of leveraging data to drive informed decision-making across sectors. It focuses on developing data analytics capabilities, promoting data sharing, and using data to improve public services and economic development.

IT4: Smart and sustainable municipal service delivery: This emphasizes the use of technology to enhance the efficiency and effectiveness of municipal services. It includes initiatives such as smart grids, e-government platforms, and digital solutions for waste management and transportation, contributing to sustainable urban development.

6.1.3 Strategic Research Focus: Advancing South Africa's Digital Economy and Innovation

The ICT Thematic Research Programme will prioritise support for projects that are in line with the following research themes.

i. AI, Data Intelligence & Decision Support

This area integrates the development of advanced AI and data science with a core foundation of ethics and security. It focuses on creating transparent, fair, and accountable intelligent systems. It also includes AI-driven decision support across sectors like healthcare, finance, and public services, alongside digital twin and metaverse technologies for advanced simulation and predictive analytics.

ii. Next-Generation Connectivity & Advanced Networks

This theme establishes the high-speed backbone of the digital economy by advancing robust and adaptive communication infrastructures. Key areas include AI-driven network management, software-defined networking for enhanced performance and security, and multimodal sensing to enable seamless applications for smart cities, and autonomous systems.

iii. Intelligent & Secure IoT Ecosystems with Quantum-Enhanced Sensing

The focus of this theme is on developing secure, interoperable, and energy-efficient Internet of Things (IoT) and connected systems for smart environments, digital health solutions, precision agriculture, and industrial automation. A key differentiator is the integration of quantum-enhanced sensing to achieve unprecedented precision in biomedical diagnostics,

environmental monitoring, and structural health assessment, bolstering system resilience and capability.

iv. Smart, Sustainable Urban & Industrial Systems

This theme applies digital technologies to optimize urban living and modernize industry. It promotes the development of AI- and IoT-powered solutions for services, including intelligent traffic systems, energy-efficient smart grids, automated waste management, optimised transportation, and enhance public service delivery. For industrial growth, it encompasses robotics and autonomous systems for manufacturing, mining, and logistics, and explores Human-Computer Interaction with AI-driven interfaces and Augmented/Virtual Reality (AR/VR) to improve productivity, workplace safety, and empower a diverse workforce. Research also includes quantum-enhanced logistics and privacy-preserving smart city infrastructure.

v. Inclusive Digital Ecosystem & Sovereign Infrastructure

The focus is on Digital Inclusion and ICT for Development (ICT4D), designing accessible digital platforms, tools, and services for education, governance, and economic participation in underserved communities. A core component is building homegrown digital infrastructure to reduce external reliance, including developing a locally optimised web search engine, an open-source operating system for low-cost devices, and cloud-based AI models for local needs.

vi. Digital Innovation & Entrepreneurship

This theme focus on entrepreneurship focuses on translating research into viable economic innovations and implementations. It actively leverages breakthrough technologies, such as AI, blockchain, and IoT, to create disruptive digital start-ups and sustainable business models that address complex societal challenges. By prioritising principles of the circular economy, promoting digital longevity, and regenerating natural systems, this area ensures that digital progress contributes directly to long-term environmental and social sustainability. Advanced medical technologies tailored for the South African context, including digital health technologies will also be supported through this theme.

vii. Digital Trust, Ethics & Governance

As digital ecosystems grow in complexity, ensuring accountability, transparency, and ethical governance is critical to fostering trust in emerging technologies. This research area focuses on regulatory and ethical frameworks for responsible digital innovation, addressing issues such as data privacy, algorithmic bias, and cybersecurity threats. It explores the creation of mechanisms for algorithm accountability, ethical AI deployment, and privacy-preserving data-sharing models.

viii. Emerging Computing Paradigms

This forward-looking priority explores the next frontiers of computing that will underpin future digital capabilities. Areas include next-generation computing and intelligence such as quantum computing, neuromorphic computing, and agentic AI systems. It also encompasses sustainable technology and green computing to ensure the long-term environmental viability of the digital transformation.

6.1.4 Expected Outcomes

The projects supported through the ICT Thematic Research Programme are expected to deliver the following outcome:

i. Locally Developed Digital Infrastructure and Inclusion: Expansion of locally developed digital solutions and infrastructure (e.g., search engines, cloud AI models) coupled with the promotion of digital inclusion for education, governance, and economic participation in underserved communities.

ii. AI-Driven Decision Support and Human-Centric Interfaces: Implementation of enhanced AI-powered decision support systems across healthcare, finance, and public services, resulting in improved productivity and safety through Human-Computer Interaction (HCI), including AR/VR and intelligent interfaces.

iii. Smart Environments and Urban Optimisation: Deployment of secure, interoperable, and energy-efficient IoT solutions for smart cities, precision agriculture, and industrial automation, leading to the optimisation of urban living through intelligent traffic systems, smart grids, and automated waste management.

vi. Advanced Sensing and Quantum Technologies: Integration of quantum-enhanced sensing for high-precision applications in health, environmental monitoring, and mining, alongside the development of multimodal sensing networks to support autonomous systems and smart infrastructure.

v. Autonomous Systems and Robotics: Successful implementation of robotics and autonomous systems in manufacturing, logistics, and municipal service delivery, thereby strengthening national capabilities in autonomous technologies for responsive and efficient operations.

vi. Next-Generation Computing and National Capability: Advancement of national computational capacity through next-generation computing technologies, ensuring the strategic integration of high-performance computing into key economic sectors to drive innovation and competitiveness.

6.2 Energy Thematic Research Programme

6.2.1 Introduction

The NRF strategically advances knowledge and innovations in South Africa's energy sector by supporting both basic and applied research in collaboration with universities and Science Councils. One of the key long-term NRF initiative in energy research is its industrial collaboration with Sasol, which addresses pressing energy priorities through specific mechanisms such as the SARCHI Chairs in fields like Green Hydrogen and Energy and Power Systems Modelling. This is further augmented by short-term NRF-Sasol collaborative research grants in areas such as Energy Storage, Waste Utilisation for a Circular Economy, and Fischer-Tropsch Catalysis for power-to-liquids conversion. In parallel, the NRF supports research in renewable energy such as solar, wind, as well as the development of advanced materials through its competitive programmes for both rated and unrated researchers.

The NRF Energy Thematic Research programme aims to strengthen research and innovation across the entire energy value chain, from exploring renewable energy sources such as solar and wind, to developing advanced storage solutions, including battery and green hydrogen technologies, as well as modernising energy infrastructure through smart grids and demand-side management systems. The research areas supported through the Energy Thematic Research programme will be aligned with the following thrusts outlined in the DSTI Decadal Plan (2022-2032).

6.2.2 STI Decadal Plan Domain Thrusts

EN1: Clean, Affordable and Sustainable Energy for All: This focus is on optimizing energy systems to achieve universal energy access, affordability, and deep sustainability, particularly for underserved rural and peri-urban communities. It addresses the energy demands from lighting, basic appliances, and productive uses by promoting off-grid, decentralized renewable energy generation and increasing local energy self-reliance.

EN2: Renewable Energy Sources and Technologies: The primary objective of this theme is to support South Africa's transition from carbon-intensive sources to cleaner and renewable alternatives. It aims to address critical issues related to climate change, the relatively high costs associated with micro-generation, the accessibility of affordable renewable energy technologies, and the adoption of biofuels. The focus is on research and development that will improve the efficiency and cost-effectiveness of renewable energy systems.

EN3: Energy Efficiency Solutions for Industry and Household use: Energy-efficient solutions are crucial for both industry and households to reduce costs and environmental impact. Industries are achieving this through high-efficiency motors, heat recovery systems, and combined heat and power generation. For households, especially in marginalised communities, simple steps like LED lighting and improved insulation offer significant savings.

Accessible solutions like solar lanterns and efficient cookstoves provide clean, affordable energy where grid access is limited; additionally, the rollout of solar water heaters is also a key focus.

EN4: Distributed Energy Generation and Storage: This theme focuses on decentralised private and communal generation and storage of energy, which would be enabled on a small scale, addressing both off-grid and grid-tied systems. The thrust addresses the potential of private electricity generation, empowering excluded communities to produce their own affordable power, and contributing to the development of energy for small-scale consumption.

6.2.3 Strategic Research Focus: Advancing South Africa's Sustainable Energy Future

The Energy Thematic Research Programme will prioritise support for projects that are in line with the following research themes.

i. Integrated and decentralised energy systems for resilience, decarbonisation, and equitable access

This theme addresses the entire spectrum of the energy transition, from large-scale national and regional integration and high-volume sectoral decarbonisation to community-led self-reliance and equitable energy access. It promotes research into the socio-economic and policy frameworks necessary to manage the energy transition, ensure resilience across all scales, and support the strategic planning and management of both complex, interconnected infrastructure and decentralised energy systems. Potential research areas for exploration include the following:

- **Macro-System Optimisation and Resilience:** Advanced modelling, simulation, and control of hybrid power systems (electricity, gas, heat) to maximise stability, security, and resilience across national and regional infrastructure.
- **Energy Policy, Markets, and Regulation:** Designing regulatory, fiscal, and market mechanisms (e.g., capacity markets, carbon pricing) to attract investment, ensure energy security, and foster equitable deployment models for all scales of energy systems.
- **High-Volume Sectoral Decarbonisation:** Strategies for transitioning extensive industrial processes (e.g., cement, steel), commercial fleets, and heavy transport to low-carbon solutions.
- **Mini- and Micro-Grid Development and Equity:** Establishing standard technical, financial, and regulatory models for the rapid and scalable, community-based, and private (C&I) deployment of decentralised systems, specifically addressing energy poverty and localised infrastructure to empower marginalised communities.

ii. Clean energy technology and advanced feedstocks

The primary objective of this theme is to accelerate fundamental and applied research to significantly improve the efficiency, durability, and cost-effectiveness of the core energy conversion and storage technologies. The following research areas may be explored:

- **Advanced Generation and Storage Materials:** Materials science and component engineering to boost the performance and longevity of solar PV, wind turbine components, and battery technologies.
- **Green energy carriers:** Efficient production, purification, storage, and transport of **green Hydrogen** and high-yield, sustainable **biofuels**.
- **Power electronics and conversion:** Developing robust, high-efficiency power electronics and inverter technologies critical for connecting renewables and storage to renewable energy advancement and grid integration.
- **Energy storage and system flexibility:** This area includes next-generation battery systems such as solid-state, Sodium-ion & Lithium-ion phosphate; bulk & long duration-Redox flow batteries, compressed air energy storage; thermal energy storage; and hydrogen-based storage among others.
- **Wind energy:** This area includes advancing both onshore and offshore wind energy capabilities to diversify its renewable energy mix. Some possible areas of research include customised turbine design including materials innovation and aerodynamic optimization, among others.
- **Ocean and Hydropower:** This includes assessing the potential for tidal and wave energy along the South African coastline and supporting the development of relevant technologies such as the development of small-scale hydropower.

iii. Energy efficiency, conservation, and demand management

This theme focuses on the demand side, driving research and behavioural studies aimed at significantly reducing energy consumption and actively managing power usage across all end-use sectors (residential, commercial, industrial). It is dedicated to achieving the national target of doubling the global rate of improvement in energy intensity. The following research areas may be explored:

- **Industrial and Process Efficiency:** Developing energy-saving audits, waste heat recovery, advanced thermal insulation, and efficient motor/pump systems for industrial operations.
- **Building Energy Performance:** Research into smart building management systems, building codes, passive design, efficient appliances, and deep energy retrofitting strategies for existing **household** and commercial structures.
- **Demand Response and Flexibility:** Developing technologies, financial incentives, and behavioural models to enable consumers to voluntarily shift or curtail electricity consumption during peak times.
- **Efficiency, Demand Management, and Decarbonisation:** This includes reducing energy intensity and reshaping consumption patterns. Example of research areas

include building efficiency; industrial and mining decarbonisation, and Demand-Side Management.

6.2.4 Expected Outcomes

The projects supported through the Energy Thematic Research Programme are expected to deliver the following outcome:

i. Affordable Energy Access: Ensuring affordable energy access particularly for underdeveloped communities through innovations that substantially lower the overall cost of energy service delivery.

ii. Just Transition Policy Frameworks: Development of evidence-based policies and robust legal frameworks directly driven by socio-economic data and cost-benefit analysis to effectively manage and support the Just Energy Transition.

iii. Local Innovation Roll-Out: Facilitate the rapid and effective roll-out of locally developed clean energy innovations, strengthening domestic technological self-reliance and energy security.

iv. Integrated System Resilience: Integration of large-scale national infrastructure with decentralised energy systems, supported by robust socio-economic and technical policy frameworks to ensure overall system stability and resilience.

v. Reduced Energy Demand: Achieving reductions in energy demand and consumption patterns across the household, commercial, and industrial sectors, exceeding the global rate of energy intensity improvement.

vi. Advanced Materials and Component Efficiency: Development of advanced materials, components, and high-efficiency power electronics that significantly boost the performance, durability, and cost-effectiveness of next-generation solar, wind, and battery technologies.

vii. Optimised Demand Flexibility: integration of advanced demand response technologies and behavioural models that enable consumers and industries to actively manage power usage, leading to significant grid flexibility and reduced peak-time stress voluntarily.

6.3 Health Innovations

6.3.1 introduction

The NRF currently supports established researchers who are working on cutting-edge health topics in medical and health sciences who are doing research in infectious diseases such as tuberculosis, and non-communicable diseases like diabetes through its competitive research programmes for rated and unrated researchers. In addition longer term research projects are supported through the SARChIs and Centres of Excellences. Working with other partners such

as Human Science Research Council and international bodies, the NRF will also be intentional in supporting other areas of importance to the South African communities such as mental health amongst others. Through various instruments, the NRF will continue to support research in all areas related to health research including biomedical health, clinical health, as well as public health.

Funding of research through the Health Thematic Research Programme will prioritise research support that is closely aligned to the two Health Innovation STI Domain thrusts presented below which are part of the Decadal Plan, and will mainly be for human health. The Decadal Plan promotes continued support of critical areas related to the burden of diseases while strengthening capabilities and interventions in converging technologies, building new capabilities in the emerging health 4IR priorities to accelerate scientific discovery for new treatment and diagnostics, strengthening precision medicine outputs, and digitalising health and healthcare systems. The plan emphasises broadening the scope of health research beyond traditional clinical sciences to include societal and systems level factors. Other areas that are not aligned to the following thrusts will be supported in partnership with other key research funding stakeholders such as South Africa Medical Research Council.

6.3.2 The STI Decadal Plan Domain Thrusts

HE1: Optimisation of health systems

This is a universal discipline focused on maximising the performance and value of healthcare. The goal is to balance the "quadruple aim" (improving the patient experience, improving the health of populations, reducing the cost of care, and improving the work life of healthcare providers) by architecting more intelligent system-wide processes. This is achieved through technical methodologies like Operations Research, which uses mathematical modelling to streamline patient flow and resource scheduling, and advanced Data Analytics, which powers predictive forecasting and real-time operational adjustments.

ii. HE2: Improving the quality of healthcare

Improving healthcare quality is a context-specific mission centered on ensuring that available services are fundamentally effective and safe within resource-constrained environments. This necessitates a targeted research agenda focused on the practicalities of delivery, primarily through Health Systems Research. The critical work involves co-designing feasible strategies with communities, such as validating the efficacy of simplified clinical protocols, and establishing resilient local supply chains to eliminate stock-outs of essential medicines. The ultimate goal is to build a foundational level of trustworthy care that makes Universal Health Coverage a tangible reality for all communities

6.3.3 Strategic Research Focus: Improving the quality of healthcare and optimising the health systems

The Health Thematic Research Programme will prioritise support for projects that are in line with the following research themes.

i. Point-of-Care Diagnostics: Affordable, and accurate diagnostic tests for communicable and non-communicable diseases, for use in resource-limited areas and primary healthcare settings, improving early detection and treatment.

ii. Pharmaceutical development: Successful transformation of locally relevant compounds into safe, effective, and accessible medicines which contribute to improved public health, and equitable access to essential treatments across African communities. This excludes traditional medicines as their development will be supported through the Indigenous Knowledge Systems programme.

6.3.4 Expected Outcomes

Some of the outcomes that are expected from the projects supported through the Health Thematic Research Programme include the following.

- i. Cost-Effective, Point-of-Care Diagnostic tools for communicable and non-communicable diseases.
- ii. Increased number of locally developed new treatment and prevention innovations
- iii. Reduced diagnosis-to-treatment time especially for remote communities
- iv. Improved detection of outbreaks of drug-resistant strains
- v. Cost-effective diagnostic and management protocol for undiagnosed rare genetic disorders
- vi. Affordable locally produced drugs and enhanced biomanufacturing capabilities for active pharmaceutical ingredients

7. MANAGEMENT OF THE THEMATIC RESEARCH CLUSTERS

The large size of the Thematic Research Clusters to be supported through the Thematic Research Programmes will require proper management support and structures to be put in place. The following structural arrangement is envisaged:

- i. A Thematic Research Cluster management steering committee which will provide guidance to all researcher clusters of a single institution. This committee will comprise of institutions research executives, NRF management, project leaders of all the research clusters in a particular institution. The expectation is for this committee to meet once a year.
- ii. A grant holders' structure which consist of PIs for each Thematic Research Cluster, which will be expected to meet at least twice a year. In this meeting the cluster members are expected to discuss progress, make adjustments where required, and consolidate outputs.

8. ELIGIBILITY CRITERIA

8.1 Institutional Eligibility

Full-time employees based at an NRF recognized public South African University that are resident in South Africa and receive a salary from the institution are invited to apply as Lead PI's or Co-PI's of a Thematic Research Cluster. Researchers based at Science Councils, National Facilities or Research Institutes are not eligible to hold a grant in the Thematic Research programme, however they may participate as collaborators in the Thematic Research Cluster supported at South African public universities.

8.2 Role of members of the Thematic Research Cluster

i. Lead PI Eligibility

The Lead PI must hold a PhD and must be an established researcher with a track research record of more than 10 years research experience as evidenced by the research outputs, student supervision, and research projects leadership. The Lead PI should be an expert in the area under which the project will be submitted. The Lead PI must have the capacity to make a serious commitment to the project and cannot assume the role of a supplier of resources for work that will largely be placed in the hands of others. An NRF-rating is not a requirement. The main roles of the Lead PI includes:

- Leading the conceptualisation and implementation of the project
- Management of the cluster resources
- Submit relevant reports to the NRF
- Facilitating meetings as required above

ii. Co-PI Eligibility

The Co-PI must hold a PhD and should have experience of either a well-established researcher or of a newly established researcher. S/he should be an active researcher who provides significant commitment, intellectual input and relevant expertise into the design and implementation of the research application and cannot assume the role of a supplier of resources. The Co-PI will be involved in various work packages and defined research activities within the scope of the application.

iii. Collaborators

These individuals make a relatively small, but meaningful contribution to the research endeavors outlined in the application and participate in the research design. They are considered a part of the core research team and are not eligible to independently hold a Thematic Research Cluster grant. However they may benefit from the resources of the Thematic Research Cluster.

Contract employees, retired researchers and postdoctoral fellows are not eligible to receive a grant from Thematic Research Programmes, however they may participate as collaborators.

8.3 Thematic Research Cluster Composition Requirements

Each member of the Thematic Research Cluster will receive funding directly from the NRF, based on their individual work packages as detailed in their full proposals. This funding model will enable both well-established and newly established researchers to improve their individual research grant award track record and develop capacity in collaborative research project management, financial management, and reporting. The Thematic Research Cluster must satisfy the following conditions for a cluster be recognised:

- The majority members of a Thematic Research Cluster should be based at the same institution. The participation of **one** additional public South African university is permitted for cases where certain research expertise are not available at the host institution.
- The research cluster should be interdisciplinary and is required to submit an interdisciplinary proposal.
- Each Thematic Research Cluster must contain at least one newly established researcher and at least 1 well-established researcher, and must have at least three Co-PIs who may either be newly established or well-established, thus consist of no fewer than four qualifying members
- The Lead PI in a particular thematic area should be an expert in the thematic area of the project that s/he is leading. The members of the Thematic Research Cluster should not submit more than one application to this call.
- The Lead PI in a particular thematic area should be an expert in the thematic area of the project that s/he is leading. The members of the Thematic Research Cluster may not submit more than one application to this call.
- The Lead PI and the Co-PIs may participate as collaborators in more than one Thematic Research Cluster, however they will not receive a direct grant in more than one Thematic Research Cluster.
- The members of the Thematic Research Cluster may not hold any alternative NRF research grants in 2026. This will exclude funding from instruments that support Incentive Funding for Rated Researchers, funding for Mobility, or funding for equipment received from programmes such as the National Equipment Programme.
- Each Thematic Research Cluster must include the capacity building and collaborative participation of emerging researchers, and/or postdoctoral fellows and postgraduate students?
- Thematic Research Clusters are strongly encouraged to include non-academic collaborators/partners, which could be the possible end-user of the research outputs. Even though non-academic collaborations/partnerships are not compulsory, it is understood that the involvement of possible end users in the process of co-creation of the research proposal facilitates taking into account the needs of the end users.

9. CONFIGURATIONS OF THE THEMATIC RESEARCH CLUSTER

Researchers that are part of the NRF Thematic Research Clusters will receive funding directly from the NRF based on their work packages. This will enable researchers to improve their individual researcher grants track record while they are part of the research cluster.

Established researchers who receive a grant from the research clusters are categorised as either newly established or well-established researchers. The structural arrangement of the research cluster will be the prerogative of the team; however each thematic research cluster will be expected to have a Co-PI who is a newly established researcher from the same institution in addition to other Co-PIs who may be in the same or another qualifying institution.

- **Newly established researchers:** These are researchers that will have a track record of at least 6 years, but less than 10 years of research experience as evidenced by research publication and student graduation outputs from emerging researcher programmes (2 x 3-year cycles) such as Thuthuka, Black Academic Advancement Programme, Development Grants for Y-Rated Researchers or from other similar NRF programmes at the NRF or other funders, are invited to apply.
- **Well-established researchers:** These are researchers that will have a track record of at least 10 years of research experience as evidenced by research outputs, student graduated, and research projects leadership.

The newly and well established researchers will be funded for a maximum of 10 years under the Thematic Research Programmes. The funding modality is represented in **Figure 1** below.

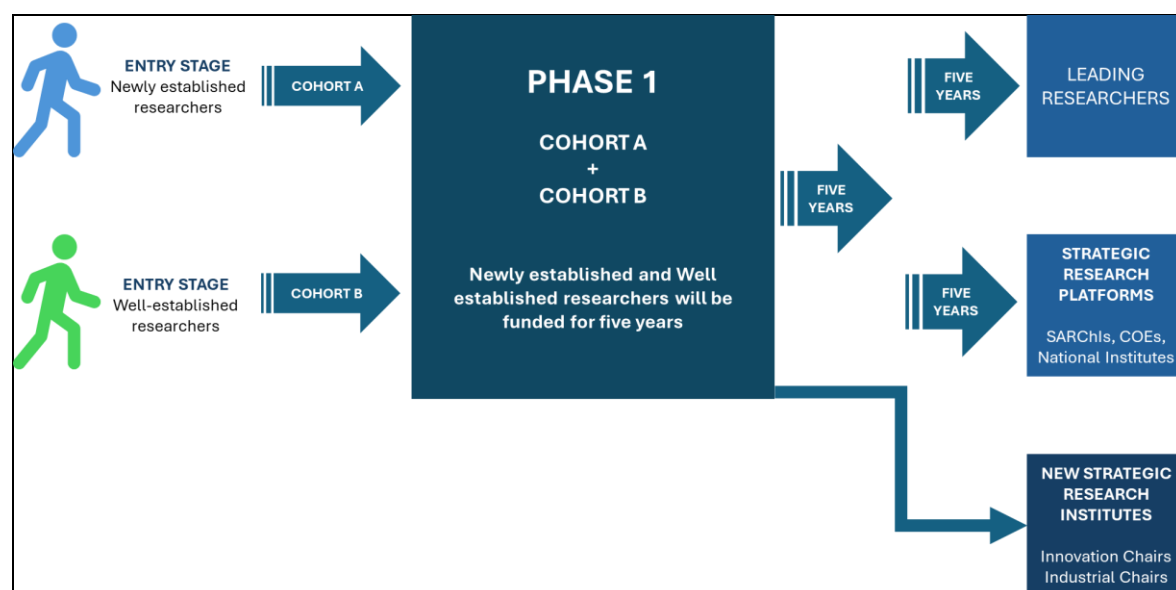


Figure 1: Thematic Research Programme funding modality

Thematic Research Clusters will be classified as either “Cohort A” Thematic Research Cluster members, or “Cohort B” Thematic Research Cluster members. The following applies to Phase 1:

- Cohort A Thematic Research Cluster members will be newly established Co-PI’s upon entry to Phase 1. Cohort B Thematic Research Cluster members will be well-established Lead or Co-PI’s upon entry to Phase 1.
- At the end of Phase 1 (the first cycle), projects will undergo peer review to identify Phase 1 projects that will be invited to apply for a second 5-year funding cycle in Phase 2.
- During Phase 1 researchers are expected to attain the NRF rating or should be in the process of being rated.
-

The following aspects relate to Phase 2:

- Phase 2 funding is not guaranteed and will depend on the outcome of the peer review process, and the availability of funds.
- Thematic Research Clusters that are led by researchers who were cohort A in Phase 1 will be prioritised in Phase 2.
- Funding for Phase 2 will be prioritised to research clusters that have more newly established researchers.
- Thematic Research Clusters in Phase 2 will be encouraged to leverage funds from external partners as most funds will be prioritised for Thematic Research Clusters in Phase 1 due to limited funds.

10. APPLICATION GUIDANCE

All applications are to be submitted online via NRF Connect (link: <https://nrfconnect.nrf.ac.za>). Thematic Research Cluster members (Lead PIs **AND** Co-PIs) are **required to register on the NRF Connect System** and will require an Orcid number to do so. Such registration will be essential in both stages of the application process as detailed below. Lead PIs and Co-PIs must ensure that their Curriculum Vitae are updated on NRF Connect, as these will be used in the review of applications. Incomplete or outdated documents could jeopardise the success of a Thematic Research Cluster application.

The application process will consist of two stages:

Stage 1 is the **mandatory** submission of a Concept Note via an **open call** for proposals. Successful Concept Notes will be invited to submit a Full Proposal

Stage 2 is the submission of a Full Proposal via a **closed call** for proposals **(February 2026)**. Only participants listed in successful Concept Notes will have access to the closed call for proposals.

10.1 STAGE 1: Submission and Assessment of Concept Notes

Submission of Concept Notes

The following conditions for submitting concept notes must be met by the Thematic Research Cluster:

- The submission of a Concept Note is mandatory. Applicants that have not submitted concept notes will not be able to access the closed call for full proposals and will thus not be able to submit a full proposal.
- Each Thematic Research Cluster will submit a single consolidated Thematic Research Cluster Concept Note.
- The Concept Note will be submitted by the Lead PI on behalf of the proposed Thematic Research Cluster (Co-PI's).
- The Lead PI will identify the Co-PI's in the cluster from a drop-down menu. If the Co-PI's details are not found on the drop-down, this means that the Co-PI is not registered on the NRF Connect System.
- Failure to submit a Concept Note in accordance with the requirements for a Thematic Research Cluster will disqualify the Concept Note.

The following documents should be submitted to the NRF by the applicants who submit the concept notes:

- An online application through the NRF Connect system as guided in the online application template
- Capacity development plan
- Research partnership plan
- Impact Statement as outline in the guideline provided below

Assessment of Concept Notes

The Concept Note is a concise, high-level expression of interest in which the PI will submit a high-level summary of the scientific and social and/or economic importance of proposed project. Concept Notes will require the information as detailed in **Table 1** and will be assessed accordingly. Feedback will be provided to applicants of both successful and unsuccessful Concept notes.

Table 1: Concept Note Scorecard

Criteria	Acceptable/Not acceptable
Alignment with Thematic focus of the Programme The research team addresses a problem relevant to one of the thematic foci and/or outcomes of the Thematic Research programmes.	Acceptable/Requires strengthening/Not acceptable
Evidence of an interdisciplinary research approach There is evidence of an integration of knowledge from at least 2 different academic disciplines that emphasises collaboration, mutual	Acceptable/Requires strengthening/Not acceptable

Criteria	Acceptable/Not acceptable
learning and co-creation of knowledge to generate solutions that are scientifically sound and socially/economically relevant.	
Capacity Development Plan There is convincing evidence of a capacity development plan that includes the development of newly established researchers (including succession planning/mentoring where appropriate) within the Thematic Research Cluster AND the development of next generation and emerging researchers (including postdoctoral fellows where necessary) in the collaboration.	Acceptable/Requires strengthening/Not acceptable
Impact statement How would the potential outcomes that emerge from the outputs produced by this project contribute to economic, societal, or environmental impact?	Acceptable/Requires strengthening/Not acceptable

10.2 STAGE 2: Submission and Assessment of Full Proposals

Successful concept notes applicants will be invited to participate in the closed call for proposals for the Thematic Research Programmes.

Submission of Full Proposal

The following requirements should be met for submitting full proposals:

- Only Lead PIs and Co-PIs identified who were successful during Stage 1 will be eligible to apply. Full proposals that are not aligned to the approved concept note will not be considered for funding.
- All members of the Thematic Research Cluster as proposed in the concept note are required to be part of the full proposal. Failure to do so will disqualify the application of the Thematic Research Cluster, exceptions will be made in cases where changes are clearly motivated and deemed as acceptable by the review panel committee
- All applications are to be submitted online via NRF Connect (link: <https://nrfconnect.nrf.ac.za>).
- The Lead PI will submit a consolidated proposal for the Thematic Research Cluster.
- This consolidated proposal will detail the overall project aims and objectives and will detail the workplan for all the proposed work packages. The consolidated objectives, outputs, outcomes of the proposal will be included here.
- The Lead PI will detail their own contribution to the consolidated proposal and will include a budget request for his/her contribution to the consolidated proposal.
- Each Co-PI will detail their own contribution to the consolidated proposal and will include a budget request for his/her contribution to the consolidated proposal.

- Members of the Thematic Research Cluster will provide details of the emerging researchers, postdoctoral fellows and/or the postgraduate students embedded in their portion of the proposal and will include their capacity development plans for these collaborators.
- The overall budget submitted by the Thematic Research Cluster may not exceed R2 500 000.00 pa.

The following documents should be submitted to the NRF by the applicants who submit the full proposals:

- An online application through the NRF Connect system as guided in the online application template.
- Capacity development plan aligned to that submitted with the Concept note application.
- Data management plan as guided below.
- Research partnership plan aligned to that submitted with the Concept note application.
- Impact statement aligned to that submitted with the Concept notes applications
- Science Engagement plan aligned to the science engagement categories
- Commitment letter from the office of DVC-Research and Innovation of the Lead-PI's institution.

It should be noted that the NRF Connect System uses a single template for all research grants. Not all categories listed in the application template are required for the Thematic Research Programmes. **Unless specified otherwise in this framework document**, it will not be necessary to submit attachments or complete all non-compulsory sections.

Assessment of Full Proposals

- Full proposals will be reviewed by an inter-disciplinary panel of experts with expertise aligned to each priority area.
- Full proposals will be adjudicated according to the scorecard in **Table 2**.

Table 2: Full Proposal Scorecard

Criteria	Details	Score / 4	Weight
Scientific Merit and Feasibility	Reflect on the scientific merit of the proposal including its potential to advance discovery and understanding. Reflect on the methodological, scientific, technical and financial feasibility as proposed.		30%
Wider Collaboration	Are the appropriate collaborations proposed in the application? Are non-academic partners involved? Are the roles of the proposed collaborators clearly presented?		10%
Capacity Development Plan	Does the proposal present a comprehensive, innovative capacity development plan for all collaborators and thematic research cluster members? Does the development plan consider development beyond the lifespan of the project?		15%
Impact	Does the research address an important societal, economic, or cultural problem? Are the potential users of the research (e.g., policymakers, patients, industry, the public) clearly identified? Are the right non-academic stakeholders (potential users/beneficiaries) involved or consulted, and are the engagement methods appropriate for driving use and adoption?		25%
Data Management Plan	Does the data management plan comprehensively address the requirements as listed in the Data Management checklist?		10%
Science Engagement	Does the Science Engagement management plan comprehensively address at least two of the following areas: science communication, science education, science awareness, public participation, and outreach		10%
TOTAL			100%

11. FUNDED CATEGORIES AND CONDITIONS

11.1 Funded Categories

All awards will be made in line with the detailed Thematic Research Programme funding rules and guidelines as outlined below. Qualifying funding categories are specified in the application template, and detailed budget submissions per category are required to assist the review panel and the NRF in assessing financial feasibility and making funding decisions.

The application assessment process will consider proposed budget items in terms of cost, risk, and reward ratios. Funding decisions will also be governed by the availability of funding for the period.

11.1.1 Eligible categories for support

Eligible categories include research-related materials and supplies, research running expenses including travel and subsistence, technical assistance, joint conferences and workshops, community engagement and science engagement and equipment. All requests should be well motivated and must detail alignment with the aims and objectives of the proposal. Support under eligible sub-categories should include support for the activities of the Thematic Research Cluster, including emerging researchers, postdoctoral fellows and postgraduate students as applicable. Postdoctoral fellows funded as part of the Thematic Research Cluster do not qualify for additional, independent running costs.

i. Research-related materials and supplies

These items would be used in normal course of operations in all fields of research. They are typically consumables. All requests should be well motivated and must detail alignment with the aims and objectives of the proposal.

ii. Research running expenses

Travel and subsistence:

Thematic Research Cluster collaborators, including emerging researchers, postdoctoral fellows and postgraduate students' travel and subsistence costs can be accommodated in the proposal.

- **Local travel** will include local airfare (economy class), car hire, e-hailing services and/or the use of private or institution vehicles, where the institutional mileage compensation rates will apply.
- Travel to local conferences or research visits will be included here. Local conference attendance will require active participation, such as hosting or participating in side events, keynote addresses, conference presentations or poster exhibits.
- All local travel requests will include details of who will travel, and in the case of road travel, the estimated distances and the institutional rates applicable.
- Local travel costs and subsistence for visiting scientists (local and international) can be accommodated.

- Support for local accommodation is limited to establishments not exceeding a three-star rating. Accommodation requests will include the details on who will be accommodated, and for how long.
- Local accommodation for visiting international scientists will be considered.

iii. International travel

Includes visa costs, subsistence, airfare (economy class), public transport and e-hailing services. Such travel may be for conference attendance or research visits (inbound or outbound).

- Details of the individuals traveling and the nature of their active participation is required.
- Allocations for international travel will be considered against the overall availability of funding, and team members are encouraged to access alternative mobility-related Programmes such as Knowledge, Interchange and Collaboration where applications will be prioritized where possible.
- International accommodation will include hotels, bed and breakfasts, Airbnb rentals or equivalent.
- Long-term accommodation requests for postdoctoral fellows and postgraduate student exchanges (or equivalent) will be considered but will require a strong motivation clearly linked to the capacity development plan for the student or fellow, will and should detail the benefit for the wider Thematic Research Cluster and to the overall project.

iv. Ad hoc research/technical assistance This category is designed to support access to specialised instrumentation, to pay for short-term support for specialized skills vital to meeting the aims and objectives of the proposal, specialised sample analysis or testing, and similar. Generally, the NRF encourages the use, where possible, of students to undertake the research rather than employing research consultants. Stipends for students to undertake research or research-related activities is not supported.

v. Costs to host Joint Conferences and Workshops

Large international conferences should be submitted through the NRF Conference Fund where applications from Thematic Research Clusters will be prioritised where possible. The active participation of emerging and newly established researchers, postdoctoral fellows and postgraduate students in such events will be required.

vi. Science engagement

Community member incentives, community member travel and subsistence, community event catering, and similar will qualify for support. Science engagement activities, especially those that extend beyond information-sharing events, will qualify for support.

viii. Research equipment

Funding for research equipment will be limited to R1 000 000.00 per application per annum. This is included in the overall grant of R2 500 000.00 per annum.

- Equipment requests will require a strong motivation and will include plans for shared access and mutual benefit within the Thematic Research Cluster, and within the institution where possible.
- Equipment will remain under the ownership of the host institution.
- Requisitions for large items of equipment exceeding this limit should be submitted through the NRF National Equipment Programme where applications will be prioritised where possible.
- Small items of equipment that would typically not require an institutional asset number are excluded from this category.

11.1.2 Categories not eligible for support

The Thematic Research Programme does not provide funding for salaries, overheads/indirect costs or lecture replacements. The instrument also does not provide funding for basic office equipment, furniture, stationery, printing costs, development of infrastructure or similar.

11.2 Funding Conditions

It is projected that approximately 50 Thematic Research Clusters will be funded in the three targeted priority areas, this translates to 200 to 240 grants taking into account that each research cluster will have 4 to 6 grant holders. Additional factors for consideration in the funding decision process will include the institutional spread of the fundable applications, and the required profile of NRF-funded researchers as outlined in the NRF's Annual Performance Plan.

12. ADDITIONAL APPLICATION GUIDELINES

12.1 Research Impact

12.1.1 The imperative for impact

The National Research Foundation (NRF) Vision 2030 places research impact at the heart of its strategic direction, alongside transformation, excellence, and sustainability. It distinguishes between knowledge impact (scientific advancements that foster progress across disciplines), and societal impact, which reflects the tangible benefits research brings to communities, economies, and the environment. The NRF is committed to strategically supporting research that directly contributes to South Africa's national development goals. This includes embedding impact planning from the outset of research initiatives and employing both prospective (ex-ante) and retrospective (ex-post) evaluations to assess the effectiveness and societal relevance of funded projects.

To operationalise this vision, the NRF has developed a Research Impact Framework that defines impact as beneficial change in society or knowledge. It outlines high-level pathways for achieving impact and commits to aligning Programmes with national plans such as the Decadal Plan and the Medium-Term Development Plan (MTDP). The framework emphasise the development of impact pathway for research supported by NR programmes.

The NRF Impact Pathway is a structured, conceptual framework grounded in the Theory of Change, designed to help researchers plan, implement, and demonstrate how their work contributes to meaningful societal, economic, and environmental change. It maps the progression from inputs and activities through outputs and outcomes to long-term impact, ensuring that research investments deliver value aligned with the national priorities. A key component of this approach is the impact statement, which researchers must prepare as part of their funding proposals.

The diagram below (Figure 2) illustrates the NRF Impact Pathway, which demonstrates the progression from foundational inputs to long-term societal impact.

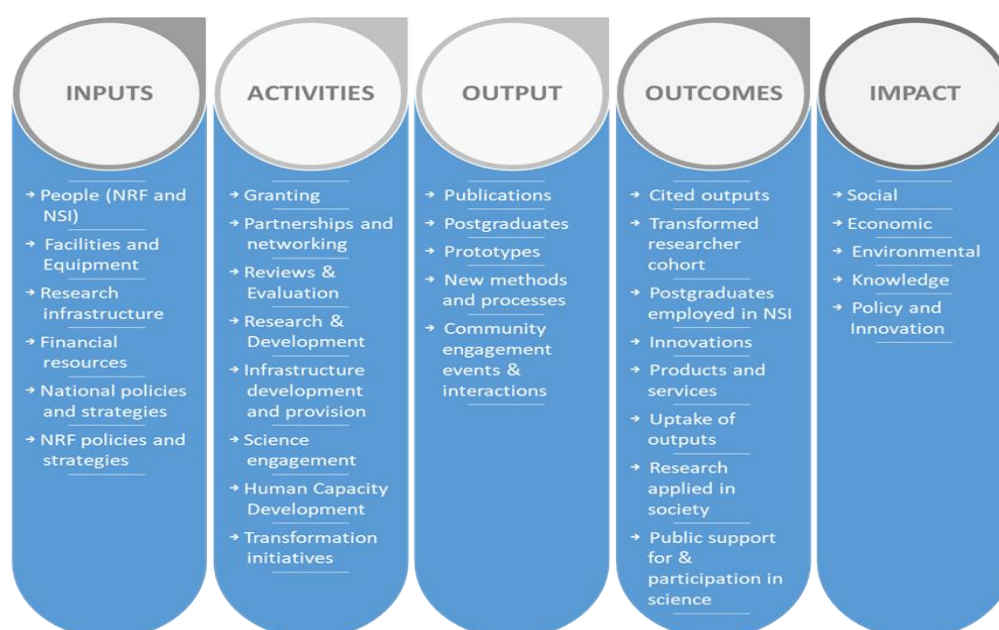


Figure 2: NRF impact pathways

12.1.2 Impact Statement

An impact statement is a concise, strategic narrative within your research proposal that explains how and why your research will create measurable, meaningful change. It is not an isolated section but the golden thread that connects your research objectives, activities, and outputs to societal, economic, environmental, and policy outcomes. The statement should articulate the intended benefits, identify key beneficiaries and stakeholders, and outline the pathways through which your research will achieve impact.

This guideline is designed to help researchers craft a strategic and compelling impact statement that aligns with the NRF's vision 2030, the principles of the NRF Impact Framework, as well the outcomes for targeted priority area which are aligned to the STI Decadal Plan thrust 2022-2032. The impact statement should be structured around the 5Cs, namely Challenge, Communities & Constituencies, Channels, Communication, and Collaboration. It should clearly defines the problem, identifies beneficiaries and enablers, outlines pathways to impact, specifies tailored communication strategies, and demonstrates strong partnerships for implementation.”

The framework for developing an impact requires the structuring of a narrative that includes the following components to form a clear Impact pathway:

i. Challenge: Define the problem and mission

- What critical societal or economic challenge does your research address?
- Guidance: Provide a concise problem statement, explain its urgency, and link it to targeted priority areas and outcomes (ICT, health, energy).
- Key Addition: State the baseline conditions so that progress and impact can be measured.

ii. Communities & Constituencies: Identify Stakeholders

- Beneficiaries (Receivers of Impact): Specify who will benefit from the outcomes of your research, e.g. patients, policymakers, educators, particular community; and describe the expected improvement in their lives.
- Constituencies (Enablers of Change): Identify actors who will amplify or implement your research (government, industry, NGOs) and explain their role in uptake and translation.

iii. Channels: Outline Your Pathways to Impact

- What to Answer: How will you move from outputs to outcomes?
Examples: Policy briefs, prototyping, IP licensing, training postgraduates, skill transfer, high-impact publications.

iv. Communication: Tailor Your Message & Evidence

- What to Answer: How will you communicate findings to different audiences and track success?
- Key Addition: Define Indicators of Success (e.g. policy adoption, technology piloting, measurable health improvements).

v. Collaboration: Build Your Impact Team

- Who are your partners and what is their role?

- Guidance: Detail formal structures (steering committees, co-funding agreements) and specify contributions (e.g., implementation sites, co-supervision, product uptake).

12.2 Capacity Development Plan

This structured pipeline approach begins by enhancing support for postgraduate students and creating opportunities for co-supervision and mentorship. It prioritises funding and mentorship for emerging researchers while also focusing on strengthening the leadership capabilities of established researchers, enabling them to contribute meaningfully to strategic knowledge platforms with both national and international relevance.

The capacity development plan is the applicant's detailed roadmap, outlining the intentional academic and career progression of postgraduate students, early career researchers, newly established researchers and well-established researchers in the Thematic Research Cluster necessary to transition successfully along the pipeline towards internationally recognised researchers and scholars in their fields, capable of generating high-impact research and innovative solutions for society.

The goal is to provide support for researchers and scholars at all career stages along the pipeline to be exposed to various avenues that will enrich both their research project and their academic careers. With the expectation that all Thematic Research Cluster members establish extensive research networks that could potentially drive new research collaborations, support for training and time spent at other institutions (locally and internationally) will be encouraged and supported.

A capacity development plan may include, *inter alia*:

- Identified international opportunities for gaining further research experience.
- Plans to strengthen scholarship, relevant skills and knowledge, management and leadership training, research administration, and engaged research.

12.3 Data Management and Use

The submission of a Data Management Plan is a mandatory requirement for the Thematic Research Programme. Researchers should note that publicly funded research data should be in the public domain, with free and open access, by default. Due to this public funding requirement and the funder mandate, the NRF expects research data generated through NRF-funded research to be shared as openly as possible. This requirement is not limited to publication data.

As such, the NRF requires the submission of a data management plan (DMP), which is a formal document that describes the data the applicant expects to acquire or generate during a research project, how this data will be managed, described, analysed and stored (including digital data repositories) and what mechanisms will be used to ensure that the research data

will be made available in the public domain with free and open access. This plan should extend beyond findings reported in peer-reviewed publications to include research data that underlies findings reported in journal articles/conference papers/theses as set out in the NRF Open Access Statement¹. It is the applicant's responsibility to consider confidentiality, ethics, security, and copyright. It is acknowledged that some data generated are more sensitive than others, and the management of such data will be included in the DMP. Possible data sharing challenges and envisaged embargo periods should be detailed in the DMP, alongside possible solutions to optimise data sharing where appropriate/required.

The NRF has adopted and has permission to use the [DCC Checklist for Data Management Plan](http://www.dcc.ac.uk/sites/default/files/documents/resource/DMP/DMP_Checklist_2013.pdf), which should be used as a guide for developing the DMP. (http://www.dcc.ac.uk/sites/default/files/documents/resource/DMP/DMP_Checklist_2013.pdf). Applicants should consider the checklist and use this to guide the submission of their DMP. The DMP may be included as an attachment to the application, or the information can be placed into the application template text, as preferred. Character limits should be considered against the required detail when submitting as an attachment or as text within the application template. Applications that do not submit a comprehensive DMP will not be prioritised for support.

12.4 Science Engagement

Science Engagement (SE) is the deliberate and sustained interaction between scientific communities and society, aimed at fostering awareness, participation, and literacy in science. It is a dynamic and inclusive process that facilitates dialogue between scientists, students, the public, learners, educators, industry, and policymakers, ensuring that scientific knowledge remains accessible, relevant, and impactful. SE interventions are structured and strategic efforts designed to enhance science awareness, literacy, participation, and capacity-building over time, creating meaningful opportunities for engagement and knowledge exchange across diverse audiences.

Aligned with the Department of Science and Innovation's Science Engagement Strategy, the NRF integrates science engagement across all its funded projects and activities to reach the DSTI-identified publics, researchers, policymakers, government, industry, science centres, NGOs, educators, learners, and the general public. These initiatives ensure that communities throughout South Africa are both informed about opportunities in science and empowered to engage actively and critically with scientific knowledge. With the rapid rise of AI and other emerging technologies, these objectives have become even more essential.

¹ NRF Open Access Statement. <https://www.nrf.ac.za/wp-content/uploads/2022/02/NRF-Open-Access-Statement.pdf>

In this context, the NRF requires that funded research, projects, and initiatives include a strong element of science engagement, ensuring that research outcomes are accessible, relevant, and meaningful to the public. The SAASTA plays a central role in supporting this mandate by offering a range of platforms, programmes, and services through which researchers can connect with communities and enhance the societal impact of their work. SAASTA is coordination support to NRF grant holders in engaging with diverse publics, it will support projects funded through the Thematic Research Clusters on the following areas:

- i. **Coordination and Support for Engaged Research:** This includes citizen science, participatory research, and related community-driven activities. SAASTA provides grants for engaged research and can provide support to initiate projects.
- ii. **Science Communication and Engagement Training:** host capacity-building initiatives designed to strengthen the communication and engagement skills of researchers and students. These include, but are not limited to: media training, science writing, and public speaking.
- iii. **Access to activities coordinated by SAASTA and coordination support for grant holder-initiated activities:** facilitate the participation in National Science Week, Science festivals and involvement in activities at the Network of Science Centres across the country.
- iv. **Products, Facilities, and Support Services:** provision of tools, platforms, and resources to enhance the reach and impact of research. These include access to a recording studio, access to the Science Centre network, access to labs for engaged research, science journalism internship and volunteer programs, media networking support
- v. **Reporting:** Assistance in developing effective reporting practices to capture and communicate science engagement outputs.

Expected Outputs for Science Engagement: media briefs, published articles; digital content; Public lectures, school outreach visits, presentation to communities, participation in SAASTA events (National Science Week).

12.5 Postgraduate Student Support

Applicants may not nominate their own students for support. All postgraduate students are required to apply on the NRF Connect system by accessing the postgraduate call when it opens via <https://nrfconnect.nrf.ac.za>. The postgraduate call will be guided by the DSTI-NRF Postgraduate Student Application and Funding Framework for the 2027 Academic Year. All applying students will be required to familiarise themselves with the contents of the framework to ensure that all eligibility requirements and submission deadlines are met. Thematic Research Cluster members should encourage postgraduate students that meet the minimum pass mark of 65%, and who are interested in pursuing research in the proposed project to apply. It is essential that these students apply to the correct application category. Students must apply to the application category “Scholarships linked to NRF-funded researchers” and NOT to the application category “General Scholarships”. Students applying

in the incorrect category will not be prioritised for support. It is essential that students link themselves to existing or potential grant holders by including either the grant award reference number or the grant application number of the grant holder. Thematic Research Cluster members need to make these reference numbers available to their prospective students to allow the NRF to link them to active projects.

It is important to note that the Postgraduate Student Funding call is exceptionally competitive, and whilst grant holder-linked students will be prioritised, the success of the applications of these students is not guaranteed. This is especially the case for students that are not South African, do not achieve a 75% GPA, are not financially needy or are not disabled. The age restriction for applicants has been removed, but 80% of the awards will be made to students with the maximum entry ages: honours (28 years), master's (30 years) and doctoral studies (32 years) in the year of application, regardless of the first year of registration. Only South African citizens and permanent residents are eligible to apply for honours scholarships. Student bursary approval will depend on the available budget and **will be made in accordance with the policy equity targets as detailed below**. The NRF reserves the right not to award or adjust a grant from PCS to FCS under any circumstances. The high-level summary of the eligibility criteria, as well as the policy equity targets for NRF postgraduate funding can be seen in **Table 4** below.

Table 4: Eligibility criteria for NRF postgraduate funding for FCS and PCS

Study Level	Full Cost of Study (FCS) (South African Citizens and Permanent Residents only)		Partial Cost of Study (PCS) (South African Citizens; South African Permanent Residents and 5% Non-South African Citizens)
	Exceptional Achievers	Financially needy & Students with Disability	Other
Honours	≥ 75% Mark in Final Year of study	≥ 65% Mark in Final Year of study	≥ 65% Mark in Final Year of study
	Non-South African Citizens are not eligible for Honours Scholarships.		
Masters	≥ 75% Mark for Honours Completed Honours in one year	≥ 65% Mark for Honours Completed Honours in one year	≥ 65% Mark for Honours Completed Honours in one year

Doctoral	≥ 75% Mark for Masters Completed Masters in two years	≥ 65% Mark for Masters Completed Masters in two years	≥ 65% Mark for Masters Completed Masters in two years
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The NRF will allocate all postgraduate bursaries under its management control as follows:

- 95% South African citizens and permanent residents.
- 5% students from SADC countries and from the rest of the world, and
- 55% women.

The NRF disaggregates these targets for South African citizens and permanent residents as follows:

- 90% Black (African, Coloured, and Indian).
- 10% White; and
- 1% students living with a disability

12.6 Postdoctoral Fellow Support

Applicants may not nominate their own postdoctoral fellows for support. The NRF Thematic research instrument implementation team will engage with the Thematic Research Cluster members to identify and prioritise postdoctoral fellows linked to their projects for funding. All Thematic Research Cluster applicants will include their intention to assign postdoctoral fellows in their full proposals. The number of postdoctoral fellows required must be indicated by each applicant in their full proposal and must be accompanied by a motivation that details how each fellow will contribute to the research aims and objectives. A capacity development plan per fellow will be required. It is not necessary to name the fellows at application stage. All postdoctoral fellows are required to apply independently on the NRF Connect system by accessing postdoctoral fellow call via <https://nrfconnect.nrf.ac.za>. Postdoctoral Fellowship funding will support candidates who focus on research aligned to the priority areas of the Thematic Research Programme. Support for postdoctoral fellows in a successful Thematic Research Programme application is not guaranteed. In line with the national imperative of equity and redress, the programme prioritises support for appropriately qualified applicants from designated groups who are Black (African, Coloured, and Indian), women and people with disabilities.

The equity targets for the postdoctoral Fellowships are:

- 80% South African citizens and permanent residents;
- 20% citizens from other countries including Southern African Development Community;
- 80% Black (African, Indian and Coloured);

- 55% Female; and
- 2% disabled.

All applications will be screened based on the eligibility criteria and application requirements. Should an application not be eligible, it will be rejected without review. Successful applicants will receive funding for a maximum period of two (2) years. Postdoctoral fellows assigned to the Thematic Research Programmes will qualify for a non-taxable stipend of R320 000.00 per annum. They will not receive an additional contribution to research costs, as these costs will be embedded in the budget of the Thematic Research Cluster member/s. Host institutions will be expected to supplement the fellowship with a minimum of R15 000.00 per annum as part of the institutional commitment. In addition, the host institutions will ensure the provision of an enabling environment for Fellows' research training and skills development.

13. MONITORING AND REPORTING

Each Collaborative Research Cluster will also be required to submit Monitoring, Reporting and Evaluation Plan.

13.1 Monitoring

Thematic Research Clusters will also be subject to a mid-term review (end of year 3 of the funding cycle) and an end-term review.

13.2 Reporting

The Grant holders are expected to submit quarterly reports, this is in addition to the Annual Progress Reports. Failure to submit a Progress Report will result in the cancellation of the grant award. The Annual Performance Reports are to be submitted by 15 February of the following year and are a prerequisite for the release of the subsequent year's funding. Failure to submit a Progress Report will result in the cancellation of the grant award.

14. CLOSING DATE

All application materials must be submitted electronically via the NRF Connect System at <https://nrfconnect.nrf.ac.za/>. All applications must be endorsed by the research office of the Lead PI institution before submission to the NRF. The application closing date is set on the NRF Connect system, after this date the applicant will not be able to open the application for amendments.

Institutions also set their own closing dates for their applicants, it is the responsibility of each applicant to familiarise himself / herself with the internal closing dates set by their institution. Incomplete OR late submissions will not be accepted for review.

The NRF will host weekly information webinars from the opening of the call for Concept notes to assist applicants interested in submitting Concept notes, and thereafter from the opening of the closed call for Full Proposals.

15. CONTACT DETAILS

System-related technical queries:

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