





REPUBLIC OF KENYA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY



REPORT OF THE PLANNING WORKING GROUP ON CONCEPTUAL
FRAMEWORK FOR OPERATIONALIZATION OF THE NATIONAL
RESEARCH FUND (NRF) IN KENYA

PRESENTED TO:

THE CABINET SECRETARY

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

MARCH, 2015

Signature Page

Name of Member

Signature

Millicent Omukaga

Banking/Finance Expert
Chairperson

James Matata

Consultant, EOW Associates
Vice -Chairperson

Joseph Kieyah

Kenya Institute for Public Policy Research
and Analysis (KIPPRA)

Betty Njoki

Kenya Forestry Research Institute (KEFRI)

Polly Maingi

The National Treasury

Eusebius Mukhwana

Commission for University Education

John Ayisi

Department of Research Management
and Development (DRMD), MoEST

Edith Torome

Ministry of Education, Science and
Technology

Michael Kahiti

Ministry of Education, Science and
Technology

Zablone Owiti

University of Kabianga

Simon Langat

National Commission for Science
Technology and Innovation (NACOSTI)

JPR Ochieng-Odero

Consortium for National Health Research
(CNHR)



Joint Secretariat

1. Ms. Naomi Nyaboga, Program Assistant, CNHR
2. Mrs Jane Omari, Senior Science Secretary, NACOSTI
3. Ms. Winnie Kanyoro, NACOSTI



Acknowledgements

The Planning Working Group (PWG) was appointed in October, 2014 to develop a framework for operationalization of National Research Fund (NRF) following recommendations from a Consultative Stakeholders forum held on 28th August, 2014.

The PWG would like to thank the Cabinet Secretary, Ministry of Education, Science and Technology (MoEST), Prof. Jacob Kaimenyi for the privilege and confidence bestowed on us and for the honour given to us to contribute towards the research funding reform agenda in this country.

The PWG would also like to express sincere gratitude to the Director General/Chief Executive Officer (CEO), National Commission for Science, Technology and Innovation (NACOSTI) and the Director/CEO Consortium for National Health Research (CNHR) for their technical inputs to this activity and their facilitation which enabled us to successfully complete this process.

We would also like to extend our utmost appreciation and recognition to several institutions that gave valuable support to this process by nominating their staff, who dedicated extensive amount of time and effort through their participation as members of PWG. The two Principal Secretaries for State department of Science and Technology; and that of Education. The MoEST senior staff are also appreciated for their critique and inputs to the process.

The formulation of the operationalization framework for NRF has been a collaborative, consultative and contributory process involving many parties including the Government, innumerable Kenyan personalities from the Universities, Research institutes, as well as International organizations by way of stakeholder engagements. We would therefore like to appreciate their commitment, dutiful and invaluable contributions without which this final document would not be a reality.



Executive Summary

Following the establishment of the National Research Fund (NRF) through the Science, Technology and Innovation (ST&I) Act No. 28, Section 32, of 2013, the Ministry of Education, Science and Technology (MoEST) gave the National Commission for Science, Technology and Innovation (NACOSTI) the responsibility to operationalize the NRF. NACOSTI organized a national stakeholders' consensus-building workshop with support from the Consortium for National Health Research (CNHR). The workshop was held on 26th August 2014 to discuss the operationalization of the NRF. The workshop recommended a Planning Working Group (PWG) be constituted from among the stakeholders to develop a conceptual framework paper to guide the operationalization of the Fund. The PWG was appointed by NACOSTI in October 2014. Based on the Terms of Reference (ToRs) provided by NACOSTI, the PWG undertook its work through working committees that were tasked to deliberate and provide recommendations on four critical aspects, namely: legal framework and institutional design, resource mobilization, funding and grant management mechanisms, and anticipated challenges.

Relying on the provisions of the ST&I Act 2013, and in reference to government policy papers and strategies, the PWG report provides the basis for operationalization of the Fund in six chapters: introduction; review of selected case studies on research funding mechanisms; legal framework, governance and management structure of the NRF; resource mobilization for the NRF; funding and grant management mechanisms; and anticipated challenges in operationalizing the NRF. The report was reviewed during the stakeholders' validation workshop held on 17th March, 2015 before being finalized for submission to the Cabinet Secretary for MoEST. The findings, strategies and recommendations provided the basis for the MoEST and NRF Board of Trustees to develop guidelines, standards and procedures in the process of operationalizing the Fund. As provided for in the ST&I Act, 2013, the Board of Trustees, and MoEST are expected to undertake this process in consultation with NACOSTI and other key stakeholders in the ST&I sector.

Introduction

This chapter presents: the relevant background information on ST&I based on government policy papers and strategies and the African Union (AU) policies and strategies; analysis of the



current situation, focusing on the MoEST grant managed by NACOSTI since 2009; the object of the NRF and the use of funds as per the ST&I Act 2013; operationalization of the NRF based on the recommendations of the stakeholders' workshop report and the Terms of Reference (ToRs) for the PWG; and the structure of the report.

Review of Selected Case Studies of Research Funding Mechanisms

As a means of informing the process of establishing the National Research Fund (NRF) in Kenya, the PWG reviewed eight case studies: National Fund for Advancement of Science and Technology (NFAST), Tanzania; National Research Fund (NRF), South Africa; Agriculture Research Fund (ARF), Kenya; Wellcome Trust/Department of Biotechnology (DBT) India Alliance; Eastern Arc Mountains Conservation Endowment Fund (EAMCEF), Tanzania; Consortium of National Research (CNHR), Kenya; African Foundation for Research and Development (AFRAND); and the Newton Fund, United Kingdom (UK). The review focused on sources of funds, levels of funding, management structures, call for proposals and review process, successes, best practices, and challenges.

Apart from the NRF of South Africa, all the other funds were dependent on donor funding and did not attain the envisaged funding levels. Due to lack the political commitment by some African governments, the AFRAND never took-off. Based on the review of selected-cases, important lessons have been learnt, as well as key principles in the establishment and management of research funds. However, to facilitate effective and efficient operationalization of the NRF, it is recommended that the NRF Board of Trustees undertakes a Benchmarking exercise (nationally, regionally, and internationally) to expose, the Trustees to opportunities, challenges and risks in the establishment and management of research funds.

Legal Framework, Governance and Management Structure

The Science, Technology and Innovation Act No. 28 of 2013 provides the governance and management structure of NRF, comprising of the Board of Trustees and the Secretariat. Like other research funds, the PWG recommends that NRF should have two committees constituted by the Board of Trustees to assist governance and management of the Fund among other Committees of the Board. The proposed committees are Technical and Advisory Committee (TAC) and Resource Mobilization and Investment Committee (RMIC). The functions of these committees are also proposed.



To ensure that NRF is empowered to coordinate research funding in the country, it is recommended that the ST&I Act be amended to provide NRF with a mandate to coordinate other existing sector-specific funds and funding programs. This will ensure that NRF becomes a one-stop-shop in terms of accounting for and reporting on money spent on research, development and innovation on the country. It is further recommended that NRF, NACOSTI and Kenya National Innovation Agency (KENIA) establish structures to ensure that the County governments are involved in the development of research priorities, so that the development needs at the local levels are also addressed through NRF funding.

Resource Mobilization

The NRF will expect basic minimal funding of 2% of the Gross Domestic Product (GDP) annually. Due to competing demands from other sectors, this amount cannot be solely sourced from the National Treasury. For sustainability reasons, NRF should therefore have mechanisms of attracting funding from other sources including the private sector and development partners (interested parties). This will motivate the interested parties to contribute to funding of research while ensuring adequate funds allocation to national research activities. The following are specific recommendations under this pillar:

- i. Resource mobilization should be an integral part of the governance and management structure of the NRF to ensure continued visibility of the NRF by profiting its achievements, impacts and transformation of the national economic development through ST&I.

In this regard it is recommended that the a resource mobilization strategy be developed to focus on: effective fundraising mechanisms and structures aimed at fostering fundraising; and integrating resource mobilization options at different scales and time-frames.

- ii. Since the government is committed to allocating funds to NRF for ST&I every year in an increasing trend until the 2% provided for in the Act is attained, it is proposed that the seed money for the NRF will be the current government funding for research including MoEST's KES 397 million managed by NACOSTI. The NRF should also engage the National Treasury and the relevant parliamentary committees on a budgetary allocation of KES1.25 billion including the KES 397 currently under NACOSTI. The transfer of the KES 397 million from NACOSTI to NRF should be accompanied by a status report that provides all the relevant information including: cumulated funding to date, beneficiaries,



funding commitments on continuing projects and impact assessment reports.

- iii. While making efforts to mobilize funding from development partners; through leveraging ST&I outputs; and through commercialization of technologies and Intellectual Property Rights (IPRs), it is important to recognize that there are challenges. In this regard, it is recommended that the NRF develops capacity to: (a) prepare highly competitive and bankable proposals to enhance chances of securing increased funding from development partners; and (b) develop expertise in commercialization of technologies and innovations and application of IPR laws.
- iv. Endowments offer an effective tool that can be used to make Research and Development (R&D) funding programs more self-sustaining. Not only do endowments insulate institutions and programs from inconsistencies in government and donor funding levels, they also achieve true maturity in institutions and program management. To ensure long-term sustainability it is recommended that: (a) The Board of Trustees considers part of the 2% of GDP allocation to the NRF for establishment of an endowment fund; (b) NRF develops a realistic asset management plan to address a range of issues, including explicit strategies for managing the investment risks, ratios of liquidity needed to provide security for both staff and grantees, and explicit fund raising targets to maintain the endowments' value; and (c) a Trust Deed to be established to manage the endowment fund and other funds.

Funding and Grant Management mechanisms

NRF will essentially manage a pool of money drawn from various sources, designed to support research based on strategic development objectives of Kenya. This chapter focuses on, types and scope of funding schemes, steps in the call for proposals, merit review system, grant management procedures, reporting procedures, performance monitoring and evaluation, contractual obligations and force majeure, and publication and dissemination. These constitute the key principles and rules to ensure efficient allocation and utilization of funds to ensure that the Fund achieves its targets. The three recommended funding mechanisms are: (a) competitive funding mechanism; (b) matching grants; and (c) institutional support grants. To address the challenges of the proposed funding mechanisms, it is recommended that: (a) NRF establishes a good balance between grant funding schemes and institutional funding; and (b) to ensure transparency, integrity, credibility and enhanced responsiveness and flexibility, the NRF Board of Trustees



establishes Competitive and Matching Grants Schemes (CMGSs) as major funding mechanisms for research and development programs.

Anticipated Challenges in Operationalizing NRF

The report provides a scoping chapter that discusses the need for building institutional and policy capacity for managing opportunities and challenges that the Fund is likely to face during the implementation of the operational phase. The PWG has identified key among these that the NRF will need to pay close attention to in order to meet its mandate and deliver on its national obligations. Strategic response to these issues needs to be factored into the development of the first five-year strategic and implementation plan of the NRF. Some of the issues that need to be addressed include:

- i. Contextualizing the NRF vision, mission and strategic objectives within a modern ST&I driven paradigm of development;
- ii. Awareness building on the purpose, scope and strategic orientation of the Fund;
- iii. Implementing an integrated approach to policy setting;
- iv. Balancing competing interests of institutional goals, government priorities, and regulatory frameworks;
- v. Ensuring national accountability of the NRF;
- vi. Effectively managing applicants demand;
- vii. Coordination of other sector-specific research funds;
- viii. Coordination of donor contributions; and
- ix. Ensuring NRF impact at local level.

Some general suggestions have been made on how to best build the necessary capacity to manage these challenges to ensure effective establishment and sustainability of NRF. Key among many; is the development of a strategic plan that will contextualize the Fund's vision, mission and strategic objectives within a modern ST&I driven paradigm of development.

To help the applicants and other stakeholders, it is recommended that the NRF develops an operational manual detailing the guidelines, rules, and operational procedures for effective and efficient management of the fund.



Table of Contents

Signature Page.....	ii
Joint Secretariat.....	iii
Acknowledgements.....	iv
Executive Summary.....	v
Table of Contents.....	x
List of Acronyms.....	xiv
CHAPTER ONE.....	1
1. Introduction.....	1
1.1 Background.....	3
1.2 Analysis of the current practice.....	5
1.3 Rationale for Establishing National Research Fund.....	7
1.3 Object of the NRF and Use of Funds.....	7
1.4 Operationalization of the National Research Fund.....	8
1.5 Methodology Adopted by the Planning Working Group 8.....	9
1.5.1 Review of Relevant Documents.....	8
1.5.2 Discussions and Adoption of the Terms of Reference.....	9
1.5.3 Formation of Committees.....	9
1.5.4 Review of Selected Case Studies	10
1.6 Structure of the Report.....	11
CHAPTER TWO.....	11
2. Review of Selected Case Studies of Research Funding Mechanisms.....	11
2.1 Introduction.....	11
2.2 The National Fund for Advancement of Science and Technology (NFAST), Tanzania.....	11
2.3 The National Research Foundation of South Africa.....	12
2.4 The Agricultural Research Fund under Kenya Agricultural Research Institute (KARI).....	14
2.5 The Wellcome Trust and Department of Biotechnology of India Alliance.....	15
2.6 The Eastern Arc Mountains Conservation Endowment Fund (EAMCEF).....	16
2.7 The Consortium for National Health Research (CNHR), Kenya.....	17
2.8 The African Foundation for Research and Development (AFRAND).....	20
2.9 The Newton Fund.....	21



2.7	The Consortium for National Health Research (CNHR), Kenya.....	17
2.8	The African Foundation for Research and Development (AFRAND).....	20
2.9	The Newton Fund.....	21
2.10	Key Principles of Managing Research Funds.....	24
CHAPTER THREE.....		26
3.	Legal Framework, Governance and Management Structure for the NRF.....	26
3.1	Introduction.....	26
3.2	Legal Framework.....	26
3.3	Governance and Management Structure.....	26
3.3.1	Board of Trustees.....	27
3.3.2	Secretariat.....	28
3.3.4	Committees.....	28
3.2.5	Decentralization and Empowerment.....	29
3.2.6	Establishment of Linkages and Coordination of Research Funds.....	29
CHAPTER FOUR.....		31
4.	Resource Mobilization for the National Research Fund.....	31
4.1	Introduction.....	31
4.2	Purpose of Mobilizing Funds for NRF.....	31
4.3	Public Funding.....	32
4.3.1	Responsiveness.....	32
4.3.2	Communication Strategy.....	33
4.3.3	Accountability.....	34
4.3.4	Management of the Budgetary Process.....	34
4.4	Donor Funding.....	34
4.5	Private Sector Funding.....	35
4.6	Commercialization of Technology and Intellectual Property Rights.....	36
4.6.1	Commercialization of Technology.....	36
4.6.2	Intellectual Property Rights.....	38
4.7	Strengthening Revenue Generation and Management.....	39
4.8	Sustainability.....	40
4.9	Establishment of Endowments.....	41



4.10	Resource Mobilization Strategy.....	42
CHAPTER FIVE.....		44
5.	Funding and Grant Award Mechanisms.....	44
5.1	Introduction.....	44
5.2	Fund Objectives and Priorities of Funding.....	44
5.3	Funding Mechanisms.....	45
5.4	Types, Scope of Funding Schemes and Eligibility Criteria.....	48
5.4.1	Types and Scope of Funding Mechanisms.....	48
5.4.2	Eligibility and Screening Criteria.....	49
5.5	Steps in the Publication of the National Request for Applications (RFA).....	50
5.5.1	General Principles for Publication of RFAs.....	50
5.5.2	Screening for Eligibility.....	51
5.5.3	Review of Concept Notes and the Full Proposal.....	51
5.6	Merit Review System.....	52
5.6.1	Competitive Selection and Training of Reviewers.....	52
5.6.2	Role of Peer Reviewers.....	53
5.6.3	Guidelines for Reviewers.....	53
5.7	Procedures for Grants Management.....	56
5.7.1	Administration and Management of Funds.....	56
5.7.2	Timely Disbursement of and Accounting for Funds.....	56
5.8	Reporting Requirement, and Performance Monitoring and Evaluation.....	57
5.8.1	Reporting Requirement.....	57
5.8.2	Performance Monitoring and Evaluation.....	58
5.9	Contractual Obligations and Force Majeure.....	59
5.9.1	Contractual Obligations.....	59
5.9.2	Force Majeure.....	61
5.10	Publications and Dissemination.....	61
5.10.1	Publications.....	61
5.10.2	Dissemination.....	62
CHAPTER SIX.....		63
6.	Anticipated Challenges in NRF Implementation.....	63



- 6.1 Introduction.....63
- 6.1.1 Contextualizing the NRF Vision, Mission and Strategic Objectives within an ST&I Driven Paradigm of Development.....64
- 6.1.2 Awareness Building of on the Purpose, Scope and Strategic Orientation of the Fund.....65
- 6.1.3 Implementing an Integrated Approach to Institutional Policy Setting.....66
- 6.1.4 Balancing Competing Interests of Institutional Goals, Government Priorities, and Regulatory Frameworks.....66
- 6.1.5 Ensuring National Accountability of the NRF.....67
- 6.1.6 Effectively Managing Researcher Demand.....67
- 6.1.7 Coordination of other sector-Specific Research Funds.....68
- 6.1.8 Coordination of Donor Contributions.....68
- 6.1.9 Ensuring that NRF impacts on Local Levels.....68
- References.....70**



List of Acronyms

AFRAND	African Foundation for Research and Development
AMCOST	African Ministerial Conference on Science and Technology
AOSTI	African Observatory for Science, Technology and Innovation
APHRC	African Population and Health Research Centre
ARF	Agricultural Research Fund
AU	African Union
BRICS	Brazil, Russia, India, China and South Africa
CEO	Chief Executive Officer
CMGSs	Competitive and Matching Grant Schemes
CNHR	Consortium for National Health research
COSTECH	Commission for Science and Technology, Tanzania
CPA	Consolidated Plan of Action
CS	Cabinet Secretary
CUE	Commission for University Education
DBT	Department of Biotechnology
DFID	Department for International Development
DRMD	Directorate of Research Management and Development
DST	Department of Science and Technology
EAMCEF	Eastern Arc Mountains Conservation Fund
EPSRC	Engineering & Physical Sciences Research Council
ERSWEC	Economic Recovery Strategy for Wealth Creation
ESAC	Expert Scientific Advisory Committee
FAQ	Frequently Asked Questions
GDP	Gross Domestic Product
GERD	Gross domestic Expenditure on Research and experimental Development
GoK	Government of Kenya
HELB	Higher Education Loans Board
ICIPE	International Centre of Insect Physiology and Ecology
ICT	Information and Communication Technology
IDRC	International Development Research Centre



IPR	Intellectual Property Rights
JSPS	Japan Society for the Promotion of Science
KARI	Kenya Agricultural Research Institute
KEFRI	Kenya Forestry Research Institute
KEMRI	Kenya Medical Research Institute
KENIA	Kenya National Innovation Agency
KICC	Kenyatta International Convention Centre
KIRDI	Kenya Industrial Research and development Institute
KPIs	Key Performance Indicators
LPA	Lagos Plan of Action
MDA	Ministries, Departments and Agencies
MDGs	Millennium Development Goals
MoEST	Ministry of Education, Science and Technology
MSc	Master of Science
NACOSTI	National Commission for Science, Technology and Innovation
NARP	National Agricultural Research Fund
NEPAD	New Economic Partnership for Africa’s Development
NFAST	National Fund for Advancement of Science and Technology
NRF	National Research Fund
NRF-SA	National Research Foundation of South Africa
NRFA	National Request for Application
NSF	National Science Fund
NSI	National System for Innovations
OECD	Organization for Economic Co-operation and Development
PFST	Portuguese Foundation for Science Technology
PhD	Doctor of Philosophy
PWG	Planning Working Group
R&D	Research and Experimental Development
RFMC	Research Fund Management Committee
RHCS	Research for Health Capacity Strengthening
RMIC	Resource Mobilization and Investment Committee
RMU	Research Mobilization Unit



SCAC	State Corporations Advisory Committee
ST&I	Science, Technology and Innovation
TAC	Technical Advisory Committee
TORs	Terms of Reference
UK	United Kingdom
UNESCO	United Nations Educational, Scientific and Cultural Organization
USAID	United States Agency for International Development



CHAPTER ONE

1. Introduction

1.1 Background

As the World moves towards knowledge driven economies, it is globally accepted that Science, Technology and Innovation (ST&I) is a critical driver of economic growth. Regionally the issue has been gradually gaining ground as seen in recent continental policy documents like: Africa's Science and Technology Consolidated Plan of Action; and the Science, Technology and Innovation Strategy for Africa – 2024 (STISA-2024), which was adopted by the African Union Heads of State and Government on 2nd July 2014 and other policy documents.

Kenya's interest in the promotion of ST&I started with the statutory establishment of National Council for Science and Technology (NCST) way back in the 1970's to guide development and integration of ST&I into the national development agenda. Subsequently, Kenya also established specialized public research institutes like: Kenya Medical Research Institute (KEMRI); and Kenya Industrial Research and Development Institute (KIRDI) among others. By the late 1990s it had become clear that there was an urgent need to place the development of research and innovation high in priority, as evidenced by its citation in government's major policy documents of the time.

Thus, consistent with the African Union (AU) position, Kenya formulated a new ST&I Policy and Strategy that elevated ST&I as part of the foundation for national transformation, embodied in the country's development blue print - Kenya Vision 2030. The Second Medium Term Plan (MTP) of the Vision has identified priorities for mainstreaming ST&I in selected strategic sectors. The overall policy goal is to build critical technical capacities in ST&I that will transform Kenya through the utilization of knowledge as the driving force. The achievement of this noble goal rests on institutional re-organization and strategic alignment. One such move was the enactment of the ST&I Act of 2013 that led to the establishment of a National Research Fund (NRF) with a mandate to mobilize, allocate and manage financial resources to facilitate an effective national innovation system that would create required knowledge and innovations in all fields of science and technology as may be used by the growing Kenyan economy.



Kenya has over time engaged directly or indirectly in addressing Research and Experimental Development (R&D), however, the efforts have been short in national coordination. This has resulted in low levels of investment in R&D activities, human resource capacity development, poor infrastructure and inappropriate prioritization both in the public and the private sectors. Given that Kenya intends to become a knowledge-led economy by 2030, activities which nurture creation, adaption and use of knowledge must be effectively supported and encouraged.

According to 2014 African Innovation Outlook, Kenya's gross expenditure on R&D in 2010 amounted to 0.98% of GDP, which was a notable increase from 0.48% in 2007/2008. This increase in expenditure notwithstanding, had minimal impact. In other words, Kenya's investment in infrastructure for science and technology has not yielded the expected contribution to economic growth. This poor performance has been attributed to several factors.

There have been other policy initiatives at the national and continental levels to integrate ST&I in national development. Examples of these are the following:

- i. Several Government of Kenya (GoK) policy papers and strategies give high priority to capacity building for ST&I and integration of ST&I into overall national development strategy in order to achieve rapid economic growth, poverty reduction, and global competitiveness; as well as achieve the Sustainable Development Goals (SDGs). Some of these include the following:
 - Economic Recovery Strategy for Wealth and Employment Creation in (ERSWEC) of 2003-2007.
 - The Science, Technology and Innovation Policy and Strategy (2008-2012) of the Ministry of Higher Education, Science and Technology aimed at securing adequate funding streams for the various science, technology and innovation components.
 - Sessional Paper No 1 of 2005 on Education, Training and Research.
 - The country's long-term economic development blue print, the Kenya Vision 2030 that proposes intensified application of ST&I to raise productivity and efficiency levels across the economic, social and political pillars. Investment in ST&I is considered very crucial in attainment of the Vision as a driver for economic growth and competitiveness.
- ii. In April 1980, African Leaders met in Lagos, Nigeria, and developed the Lagos Plan of Action (LPA) for Sustainable Economic Development in Africa for the period



1980-2000. The LPA specifically called for African countries to develop short-term,-medium-term and long-term integrated development plans, with ST&I as an integral part.

- iii. In February 2003 the Secretariat of the New Economic Partnership for Africa's Development (NEPAD) established the African Ministerial Council on Science and Technology (AMCOST) charged with continental policies and priorities pertaining to the application of the science and technology for Africa's socio-economic transformation. Kenya chaired the Committee for the period 2009-2010.
- iv. In 2005 the African Union (AU) and NEPAD came up with the Africa's Science and Technology Consolidated Plan of Action (CPA) that articulated Africa's common objectives and commitment to collective actions to develop and use science and technology for the socio-economic transformation of the continent and its integration in the World economy. CPA is an instrument to implement the decisions of AMCOST.
- v. Science, Technology and Innovation Strategy for Africa – 2024 (STISA-2024), which was adopted by the African Union Heads of State and Government on 2nd July 2014. The STISA-2024 is focused around six core goals: Eradication of Hunger and Achieving Food Security; Prevention and Control of Diseases; Communication (Physical and Intellectual Mobility); Protection of our Space; Live Together-Build the Society; and Wealth Creation. It also addresses previous barriers facing implementation of ST&I activities such as: insufficient funding for ST&I; over reliance on donor funding that tends to focus on isolated projects; weak linkages between entities in charge of ST&I policy making and other relevant policy organizations, academics and the private sector; ST&I policy officials lacking in ST&I expertise; and inadequate infrastructure, e.g. information technology, energy, water.

1.2 Analysis of the current practice

Public commitment to research is disbursed through various ministries responsible for the different sectors of the economy. The National Commission for Science, Technology and Innovation (NACOSTI) and its predecessor, the National Council for Science and Technology (NCST) have managed a research grant which has over the years risen to KES 401 million. Experience and expertise accumulated over the years has seen the grant succeed in promoting local innovation and addressing local priorities, consistent with the aspirations of CPA. Some products have



been launched in the market following successful research and development supported by the grant.

Since 2009, about 2,000 research projects have been competitively funded with about KES 2 billion disbursed. On average a project takes about three years and is allocated about three million shillings. Around 2011, it was decided that funding would be made through clusters so that there are several "products" for applicants to choose from. Consequently, funding for post graduate research, PhD and MSc studies was launched to enhance development of national human capacity. It was determined that the country needs about one thousand PhD graduates every year as opposed to the current rate of less than 200 per year. It was also possible to purchase scientific equipment that could be hosted by institutions and availed to scientists from other institutions that need such equipment. This made it possible to create centres of excellence in various counties outside the capital city where most equipment tended to be concentrated. A special call for funding for women scientists was developed to cater for the gender disparity and mainstream gender in research and ST&I activities, which is currently skewed against women. This is aimed at gaining gender balance in the process of integrating ST&I in national economic development.

NACOSTI developed a network of reviewers around the country who can be called upon to review proposals. The major review method used was bringing the reviewers together for about a week. Online review has also been developed but has not been used.

The National Treasury provide all the funds disbursed for the Grants. Disbursement had to be done as per exchequer releases and calls for proposals had to follow the strict timelines and disbursement levels as were determined by the National Treasury. NACOSTI received funds from other sources through strategic partnerships such as grant matching. Trends in disbursement of funds by NCOSTI from 2009 are provided in **Figure 1**.



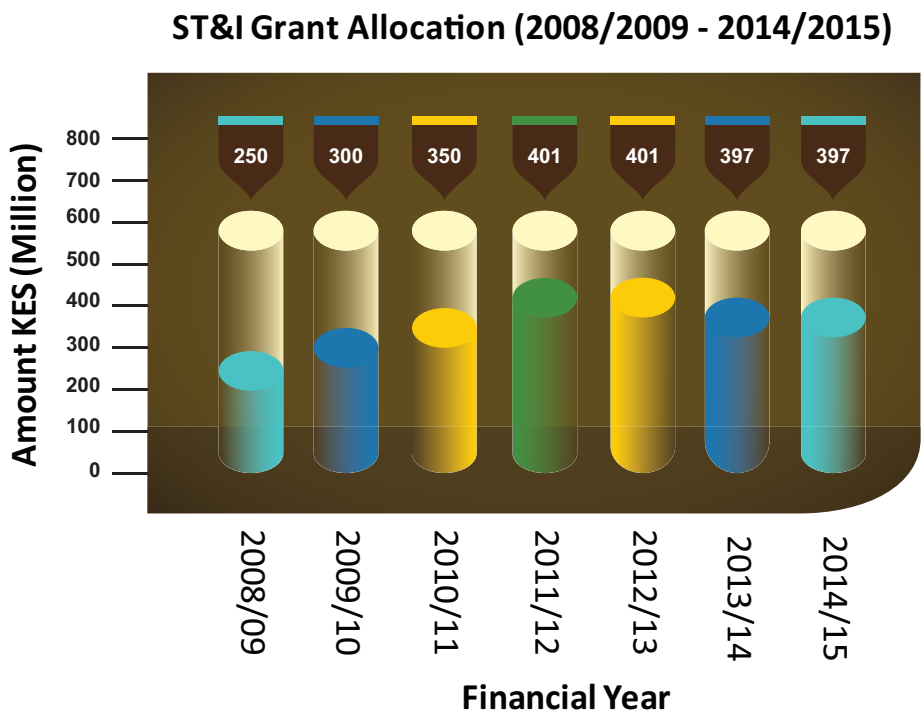


Figure 1: NACOSTI ST&I Grant budget allocation from 2009-2014

1.3 Rationale for Establishing National Research Fund

A recent study on science, technology and innovation policies and strategies in Kenya found that investment in research and development in Kenya is limited. Furthermore, a proportion of funding is given by donors and is driven by donors' own interests, which might not be in conformity with local interests. One of the identified strategic policy issue in the 2008 - 2012 strategic plan, that has not been implemented was funding measures and mechanisms. Specifically, the strategic policy aimed at securing adequate and sustainable funding for various science, technology and innovation components that would facilitate cost effective implementation of the policy. Such as:

- i. Development of mechanisms to mobilize financial resources from both public and private sector for ST&I;
- ii. Development and promotion of a robust institutional framework for mobilization and management of ST&I resources for strategic national priorities;
- iii. Support for establishment of a mechanism for regular review of the funding mechanisms in science, technology and innovation; and
- iv. Review of administrative and financial procedures for ST&I funding to enhance realization of set targets.



The rationale for establishing the National Research Fund (NRF) is therefore based on the following factors:

- i. Currently, ST&I activities are undertaken independently by government institutions, universities (both public and private), and private sector organizations (including non-governmental organizations NGOs). The organization/institutions set their own priorities and are funded from different sources, including development partners. There is need for harmonization and coordination of these funding streams.
- ii. The role of ST&I as a driver of economic growth is globally accepted. In Africa, the issue of investing more in research and development (R&D) is gradually gaining ground as embodied in the African Science and Technology Consolidated Action Plan. However, investment in R&D is still low.
- iii. The 2010 African Innovation Outlook (NEPAD, 2010) shows that Kenya's gross expenditure on (R&D) was 0.48% of the country's Gross Domestic Product (GDP) for 2007/2008, while the 2014 African Innovation Outlook shows that Kenya's gross expenditure on R&D amounted to 0.98% of GDP in 2010, with over 40% being financed from abroad. This shows clearly that there is high dependence on development partners with regard to investing in R&D.
- iv. The scientifically and technologically advanced countries, such as Finland, Japan, South Korea, Germany and Singapore spend between 2.5% and 3.5% of their GDP on investment in R&D. The African Heads of State under NEPAD, advocated for investment of at least 1% of each country's GDP in R&D.
- v. In Kenya, a number of policy papers and strategies give high priority to integration of ST&I into the national development process. Vision 2030 was founded on the tenets that seek to address the development challenges faced by Kenya. One of these challenges is inadequate investment in R&D, yet R&D is an excellent weapon for ground-breaking scientific and technological innovations.
- vi. While addressing participants during the Third National Science, Technology and Innovation Week at the Kenyatta International Convention Centre (KICC) in May 2014, His Excellency President Uhuru Kenyatta noted that the current investment in R&D in the country is low. To address the gap, the President promised that the government will enhance investment in R&D to at least 2% of the country's GDP as provided for in the ST&I Act of 2013.



- vii. R&D expenditure as a percentage of GDP has become one of the most widely used indicators of a country's commitment to scientific knowledge, growth and technology development.

Based on the above factors, the Government of Kenya (GoK) established the National Research Fund (NRF) through the Science, Technology and Innovation Act No. 28, Section 32, of 2013. The Cabinet Secretary for Education, Science and Technology formally published a Legal Notice No. 129 in the Special Issue of Kenya Gazette Supplement No. 144 dated 19 November 2014 announcing the commencement of the establishment of NRF as provided in the ST&I Act of 2013. The funding of the NRF is to be provided through the National Treasury at the level of 2% of GDP annually. Other sources of funds to the NRF will include money as may be received in the form of donations, endowments, grants or gifts from whatever source designated for the Fund, and other such sums of money levied on licenses for research.

1.3 Object of the NRF and Use of Funds

The object of the National Research Fund (NRF) is to facilitate research for the advancement of science, technology and innovation. The funds will be used for the following purposes:

- i. Award of contracts, grants, scholarships, or bursaries to persons or institutions;
- ii. Provision of financial support for the acquisition or establishment of research facilities;
- iii. Development of appropriate human resources and research capacity in the areas of science, technology and innovation;
- iv. Financing research systems in all sectors and at all levels of education;
- v. Funding the co-operation and sharing of research information and knowledge, including supporting conferences, workshops, seminars, meetings and other symposia; and
- vi. Compilation and maintenance of a national database of research and innovations funded by the fund and other agencies.

1.4 Operationalization of the National Research Fund

The responsibility to develop a framework for operationalization of the National Research Fund (NRF) was given to the National Commission for Science, Technology and Innovation (NACOSTI) by the Cabinet Secretary, Ministry of Education, Science and Technology. Following this decision by the Cabinet secretary, NACOSTI in collaboration with the Consortium for National Health



Research (CNHR), organized a workshop for stakeholders on 26th August 2014 to discuss and agree on a framework for the operationalization of the NRF.

The workshop recommended that the process of establishing NRF needs to be guided by a well-considered conceptual framework paper, taking into consideration the inputs of stakeholders. The workshop recommended that the following steps be followed:

- i. A Planning Working Group (PWG) be appointed from among the stakeholders with the broad Terms of Reference (ToRs) and mandate to develop a well thought-out Conceptual Design Framework for Establishing the National Research Fund (NRF) in Kenya. The PWG should meet severally over a period of not exceeding 3-4 months;
- ii. The draft concept paper developed by the PWG should be circulated widely to all stakeholders for their input, critique and comments;
- iii. The PWG should consider all comments from the stakeholders and prepare an updated paper to be discussed in a National Stakeholder Validation Workshop;
- iv. The PWG should use the input from the validation workshop to finalize the conceptual framework and submit it to MoEST; and
- v. MoEST would use the framework recommendations to develop guidelines to operationalize the establishment of the Fund.

Following the recommendations of the workshop and decision of the Cabinet Secretary for Education, Science and Technology, NACOSTI appointed a Planning Working Group (PWG) to provide guidance on how to operationalize the NRF in the best manner. The following were the Terms of Reference (TORs) for the PWG:

- i. Develop a mandate and functions of the NRF from the Science, Technology and Innovation Act No. 28 of 2013;
- ii. Study foreign organizations with similar mandates and determine the best mode of operations for the NRF;
- iii. Develop principles and guidelines for managing the Fund including its administration, grants management and mobilization of resources and sustainability;
- iv. Consider any other issues that may affect the operation of the NRF; and
- v. Prepare and submit a report and Cabinet memo to the Cabinet Secretary within two months from the date of appointment.



1.5 Methodology Adopted by the Planning Working Group

The Planning Working Group (PWG) undertook its work through discussions and adoption of the Terms of Reference (TORs); formation of the three committees of the PWG to address the TORs; and review of relevant documents and selected case studies of research funding mechanisms.

1.5.1 Review of Relevant Documents

The PWG reviewed relevant policy papers and strategies relating to ST&I and establishment, funding and management of research funds. In addition the PWG members reviewed other relevant documents to provide the background information necessary for operationalizing the NRF. The report of the 1st stakeholders' workshop on conceptual framework for the operationalization of the NRF that among others recommended the establishment of the PWG is one of the documents that were reviewed.

1.5.2 Discussions and Adoption of the Terms of Reference

In the first meeting, the Terms of Reference (TORs) were discussed by the PWG members to understand the deliverables and make any adjustments and/or additions. In addition to the TORs prepared by NACOSTI, the members agreed that the PWG should:

- i. Develop a draft Trust Deed for establishment of a Trust for the Fund; and
- ii. Prepare a Cabinet Memorandum for Cabinet approval of the establishment of a Trust Fund.

1.5.3 Formation of Committees

To effectively address the TORs and submit the report within the specified time period, the members of the PWG were grouped into three committees to undertake tasks related to the following:

- i. Mobilization of resources;
- ii. Funding mechanisms and grant award procedures; and
- iii. The legal instruments and institutional design.

Each committee had a convener and the findings of the committees were circulated to all members of the PWG for comments and value addition to ensure that the TORs and related issues were adequately addressed.



1.5.4 Review of Selected Case Studies

To provide examples of funds that have been established to fund research as a means of informing the processes of operationalizing the NRF, the following funds were selected and reviewed as case studies:

- i. National Fund for Advancement of Science and Technology (NFASTI), Tanzania;
- ii. iNational Research Fund, South Africa;
- iii. Agricultural Research Fund, Kenya;
- iv. Wellcome Trust/DBT India Alliance;
- v. Eastern Arc Mountains Conservation Endowment Fund (EAMCEF), Tanzania;
- vi. The Consortium for National Health Research (CNHR) Kenya;
- v. African Foundation for Research and Development (AFRAND); and
- vi. The Newton Fund, United Kingdom (UK).

The reviews of these case studies are presented in chapter 2 of this report. In addition to these case studies, members of the PWG reviewed other relevant cases through the internet or otherwise.

1.6 Structure of the Report

The report is presented in six chapters, the first chapter is the introductory Chapter providing the background and rationale for the establishment of the NRF. Chapter 2 presents the reviews of 8 selected case studies relating to research funds as a means of informing the operationalization of the NRF and key principles of managing research funds. Chapter 3 presents the Governance and Managing Structure for the National Research Fund covering the legal framework, Board of Trustees and their functions, the Secretariat and its functions, committees and their functions, and decentralization and empowerment. Chapter 4 focuses on public funding, donor funding, private sector funding, commercialization of technology and intellectual property rights, strengthening revenue generation and management, sustainability, establishment of endowment funds and resource mobilization strategy. Chapter 5 presents funding and grant awards mechanisms, covering guiding principles, grant funding mechanisms, types and scope of funding schemes, eligibility criteria, merit review system, procedure for management of grants, reporting requirements, performance monitoring and evaluation, contractual obligations and force majeure and publications and intellectual property rights.



In chapter 6, the anticipated challenges in the operationalization of the NRF, are highlighted, including recommendations on immediate actions that should be taken to address the challenges.



CHAPTER TWO

2. Review of Selected Case Studies of Research Funding Mechanisms

2.1 Introduction

This chapter provides case studies of competitive fund mechanisms that have been set up to fund research as means of informing the Kenyan process in terms of their structures, review process, successes, best practices, challenges and lesson that can be learnt from them. The research funding mechanisms reviewed are:

- i. National Fund for Advancement of Science and Technology (NFAST), Tanzania;
- ii. National Research Fund, South Africa;
- iii. Agricultural Research Fund, Kenya;
- iv. Wellcome Trust/DBT India Alliance;
- v. Eastern Arc Mountains Conservation Endowment Fund (EAMCEF); Tanzania;
- vi. The Consortium for National Health Research (CNHR), Kenya
- v. African Foundation for Research and Development (AFRAND)
- vi. The Newton Fund, UK

2.2 The National Fund for Advancement of Science and Technology (NFAST), Tanzania

The Tanzanian Science and Technology (S&T) Policy (1986) stipulated the allocation of about 3.5% of the GDP for the advancement of S&T in the country. Realizing that spending 3.5% of the GDP had been impractical since the policy was promulgated, the reviewed version, Tanzania S&T Policy (1995) revised the recommendation to be at least 1% of the GDP. As at 2003, the expenditure was still below 0.2% of GDP.

Part V of the Commission for Science and Technology (COSTECH) enabling Act, provides for the establishment of the National Fund for the Advancement of Science and Technology (NFAST). The Act stipulates that, the Fund shall be managed and administered by the Commission for the purposes of:

- i. Financing, by way of loan or grant any research or study carried out by or for the benefit of persons or organizations engaged in research in matters related to the development of science and technology;



- ii. Financing by way of loan or grant, the training of citizens of the United Republic of Tanzania by or for the benefit of organizations engaged in research in the development of science and technology;
- iii. Making an award or awards to a person or body of persons qualifying;
- iv. Providing support for scientific research and technology development and the application of the results in compliance with the national priorities determined by the Government upon the advice by the Commission; and
- v. Commissioning the carrying out of research and development by an individual, group of individuals, institutions or groups of institutions.

Research activities in the country have benefited from this Fund in many ways, including: provision of grants to scientists to conduct research; financial support for conducting scientific meetings, workshops and seminars; and funds for publishing and disseminating scientific and technological information among others.

Lessons learnt: the fund has not been able to meet its target set at 3.5% of GDP or the revised recommendation of at least 1% of GDP. Strategies for attracting donor funding and sustainability are key to achieving the targeted funding level. Another lesson, is the potential of financing research by way of loaning. Due to the similarity of this fund with the NRF, it is recommended that it be considered for benchmarking.

2.3 The National Research Foundation of South Africa

The National Research Foundation of South Africa (NRF-SA) was established as an independent government agency, through the National Research Foundation Act (Act No 23 of 1998). The mandate of the Foundation is to promote and support 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.

NRF-SA rating system is a key driver in the Foundation's aim to build a globally competitive science system in South Africa. It is a valuable tool for benchmarking the quality of South African researchers against the best in the world. NRF-SA ratings are allocated based on a researcher's



recent research outputs and impact as perceived by international peer reviewers. The rating system encourages researchers to publish high quality outputs in high impact journals/outlets. Rated researchers, as supervisors are expected to impart cutting-edge skills to the next generation of researchers.

The rating of individuals is based primarily on the quality and impact of their research outputs over the past eight years, taking into consideration the evaluation made by local and international peers. It identifies researchers who count among the leaders in their fields of expertise and gives recognition to those who constantly produce high quality research outputs. Several South African universities use the outcomes of the NRF-SA evaluation and rating process to position themselves as research-intensive institutions, while others provide incentives for their staff members to acquire and maintain a rating and give special recognition to top-rated researchers.

The rating process is coordinated by members of academia who are represented in the following committees:

- i. 22 Specialist Committees coordinated by a Convener;
- ii. The Executive Evaluation Committee; and
- iii. The Appeals Committee.

The ratings that are awarded fall within the following categories:

- A – Leading international researchers
- B – Internationally acclaimed researchers
- C – Established researchers
- P – Prestigious Awards
- Y – Promising young researchers

Lessons learnt: benchmarking and rating of researchers acts as an incentive to publish in high impact journals and ensures quality research and innovation due to competition based on researchers' capacity. The pool of NRF-Kenya reviewers should include experts from other countries. Further more, there is need for a special grant to target disadvantaged groups and institutions and the funding streams for a research fund should be a blend of the national treasury, private sector and commercialization of innovations. Since the NRF-SA has a long experience in managing research funds it should therefore be considered for benchmarking.



2.4 The Agricultural Research Fund under Kenya Agricultural Research Institute (KARI)

The Agricultural Research Fund (ARF) was established as a discrete entity within the Kenya Agricultural Research Institute (KARI) to provide a mechanism through which scientists from other institutions, public and private, as well as individual scientists can complement and/or supplement KARI's efforts in agricultural research.

The fund was managed by a Research Fund Managerial Committee (RFMC) appointed by the KARI Board of Management. The management committee had two sub committees: Administration and Finance sub-committee and Technical Advisory sub-committee. The Administration and Finance Sub-Committee was responsible for mobilization of funds, disbursement and accountability of the funds including, auditing of the funds; while the Technical Advisory Sub-Committee was responsible for advising the Management Committee on proposals approved for funding, management of approved grants, and monitoring and evaluation of the approved projects.

KARI provided a Secretariat to administer and manage the Fund at no cost to the ARF, but all operational costs were met by the Fund. The ARF manual provided the basis for the administration and management of the Fund. According to the revised ARF manual (February, 1997), the objectives of the Fund were:

- i. Improving cooperation between KARI scientists and those in public and private sector institutions and hence achieving synergies and more cost-effective research;
- ii. Promotion and expansion of opportunities for innovative research;
- iii. Broadening of the participation of the private sector in agricultural research and development; and
- iv. Enhancing the quality of agricultural training, particularly at the postgraduate level.

These objectives were to be met through a competitive grants programme for KARI and non-KARI scientists. The call for proposals was widely advertised in the major daily newspapers and the ARF maintained a pool of 120 to 150 peer reviewers. The peer reviewers were competitively selected. A proposal was sent to three reviewers and was considered for funding when reviewed and approved by all or at least two reviewers.



The ARF became operational in July 1991 and was funded by the United States Agency for International Development (USAID), through a grant of US\$ 741,000 over the period July 1991 - September 1997 and the World Bank, through a credit of US\$ 4 million over the period July 1996 - September 2003. Under the approved proposals, the ARF supported research work (but not tuition fees) for Masters and doctoral degrees, as well as support for researchers to attend workshops/conferences and publishing of research findings in referred journals. Through the ARF, 57 researchers obtained Masters Degrees, while 25 obtained doctoral degrees.

With the end of USAID support to the ARF in September 1997 and the anticipated end of the World Bank support in December 2003, KARI through the World Bank support, started the process of establishing a trust fund as a sustainable source of funding for the ARF in 2001. After going through the process of preparing the Trust Deed for establishing a trust fund, the government and the donors advised that, it would be better to establish a trust fund for the entire agricultural research system and natural resource management and not for KARI alone. Since there was no further funding, the ARF wound up with an end of project conference in June 2004 under the support of the World Bank.

Lessons learnt: ARF was managed as an independent entity within KARI contributing to its credibility. However, the major limitation was that it depended mainly on the donors for funding, although KARI provided the secretariat. There is therefore need to seek for experiences of those who managed the fund in terms of challenges they faced and missed opportunities.

2.5 The Wellcome Trust and Department of Biotechnology of India Alliance

The Wellcome Trust (UK) and Department of Biotechnology (DBT) of India formed an a partnership known as the India Alliance (IA) some five years ago to provide strategic funding to help support the scientific careers of young Indian scientists working in the country and to provide attractive funding mechanisms for those young scientists working abroad but willing to set up laboratories in India. Support is also provided to students who recently finished their doctoral work and are now trying to expand their scientific horizons as postdoctoral trainees. Both India and Wellcome Trust provide equal funding for the Alliance, by each contributing US\$ 30 million.

The competitive grant schemes provided include three fellowships schemes at key stages in a



scientific career, namely Early Career, Intermediate and Senior. A specific award is also provided for senior researchers to relocate and nucleate centers of excellence in India.

Lessons learnt: NRF should have a strategy on matching grants to attract additional funding using the available funds through strategic partnerships.

2.6 The Eastern Arc Mountains Conservation Endowment Fund (EAMCEF)

The Eastern Arc Mountains Conservation Endowment Fund (EAMCEF) is a Trust Fund that has established as a funding mechanism to support conservation efforts in the Eastern Arc Mountains of Tanzania. The main intention of the Trust Fund is to address the need for long-term sustainable approach to funding the conservation of forest diversity in the important ecosystem.

Governed by a Board of Trustees, the Fund operates as a not-for-profit, Non-Governmental Organization (NGO). Initially EAMCEF used money from the Government of Tanzania/World Bank to finance activities and operations of the establishment phase.

The second phase was an implementation one, which used incomes from the endowment capital secured from the Global Environmental Facility (GEF) of US\$ 7.0 million. EAMCEF's secure source of funds will be derived from the income earned on its capital investments. The organization's future sustainability depends on effective financial management of the endowment capital and then reinvesting those funds to increase the total capital available. The organization needs to develop an investment strategy that will maximize returns within a secure portfolio. EAMCEF should enjoy an average net return of 5% on its investments. Estimates place annual EAMCEF funding needs between \$600,000 and \$ 1 million. This would require an endowment capital of between \$12 and \$20 million.

Lessons learnt: setting up of an endowment fund and investment policy is key to ensuring sustainability of a fund. This fund should also be a candidate for benchmarking to gain experiences in specific sector funding. The African Fund for Endangered Wildlife in Kenya, which is also a specialized area fund, should also be considered for benchmarking.



2.7 The Consortium for National Health Research (CNHR), Kenya

The Consortium for National Health Research (CNHR) is an international not-for profit, non-political, non-sectarian and non-partisan organization that brings together key players in health research; including health institutions, universities, research institutions, government agencies, non-governmental organizations and other research groups concerned with health in Kenya. CNHR was established in 2008 with the sole purpose of addressing a broad spectrum of issues affecting health research, including research coordination, prioritization of research activities, training, strengthening the legislative environment and enhancing the sharing of knowledge in order to strengthen the capacity of health research in Kenya. To this end, the main objective of the Consortium is to improve the quality of health in the country through promotion of quality research, encouraging the practice of evidence-based health policy formulation to improve health care and its delivery, building the research capacity of Kenya's talented youth and the creation of functional strategic partnerships. The Wellcome Trust and Department of International Development (DFID) of the UK, as well as the International Development Research Centre (IDRC) of Canada have funded CNHR.

CNHR believes that the success of a good merit review process relies on the ability and willingness of the reviewers to be fair and reasonable. Furthermore, the reviewers should be willing to exercise rigorous scientific judgment and to strive to understand and take into account, in a balanced way, the particular context of each application. Reviewers must also understand that CNHR has an obligation to nurture the competitive ability of the applicants that apply for the various research or training grants. The Expert Scientific Advisory Committee (ESAC) is an independent peer review body that reviews scientific proposals and makes recommendations to the Board of Management of CNHR on the applications that should be considered for funding. In addition, ESAC members also provide constructive comments on each application they review which are then sent back to the applicants in order to assist them in improving their applications, whether for funding by CNHR or for submission to other funding bodies.

There are generally three stages in the CNHR proposals review process:

Stage 1 (Desk review of the pre-proposal): This involves the reviewing of concept notes and giving recommendations on whether or not the applicants should be invited to submit full proposals.



Stage 2 (Desk review of the full proposals): This involves the detailed review of the full proposals.

Stage 3 (Interview of the applicants): The shortlisted applicants are invited to a face-to-face interview session with ESAC.

In both the concept note and full proposal review stages, the exercise is carried out through assessment of documents availed to the reviewers online. The face-to-face interviews are normally conducted in Nairobi, Kenya over a 2-3 day period. Thus, in any given year, ESAC members set aside time for online review of proposals as well as for time to travel to Nairobi (for those based outside Kenya) for the final face-to-face interviews. For the 2014 exercise, Stage 1 (pre-proposal) has been omitted, since the proposals being reviewed are for supplementary grants. Hence, applicants (who are all current CNHR grantees) were requested to submit full-proposals for Stage 2 Desk review. Those shortlisted have been invited for Stage 3 of the review process, i.e. the face-to-face interviews.

In terms of composition, ESAC comprises of 12 members who have a wide experience in research-for-health as well as in health policy matters. A few (currently two) experts are identified as alternate members to fill in, for any member unable to undertake their review function. Regional balance in composition is achieved through the selection of one third of the members from Kenya, another third from the Africa region while the rest come from the international scientific community. The selected members of ESAC are people of high integrity, who have wide experience in the review of scientific proposals and grants, and possess excellent analytical and writing skills. ESAC members are appointed on a two-year contract that spells out the terms of reference for their engagement, which include:

- i. To advise CNHR on the scope and strategy for Research for Health Capacity Strengthening (RHCS);
- ii. To review and make recommendations for funding on new and ongoing grant applications covering research, training, infrastructure upgrading as well as the establishment of Centres of Research Excellence;
- iii. To submit reports of desk reviews at least 10 days before scheduled ESAC meetings; and



- iv. To meet for at least once each year for a period of up to three days (excluding travel) to interview short-listed applicants and make recommendations on funding to CNHR's Board of Management.

Those nominated to serve on ESAC are required to submit their resumes detailing their experience and qualifications for assessment by CNHR's Board of Management. Upon appointment, ESAC members are expected to sign a contract signifying their acceptance to abide by the CNHR's regulations, including those that are related to conflict of interest. CNHR provides a modest honorarium in recognition of the professional services rendered by ESAC members.

Since CNHR's establishment in 2007, ESAC has undertaken five merit reviews including the current (2014) review, namely:

- i. Research Leadership Grants (RLGs) in 2009;
- ii. Centres of Research Excellence (CoReS) in 2010;
- iii. Research Career Development Grants (RCDGs) in 2012;
- iv. Supplementary Research Grants (SRGs) in 2014; and
- v. Consultancy Research Grants (2014).

As part of this programme CNHR has selected and supported four Centres of Research Excellence to enable collaborative research in areas of strategic relevance to Kenya including vector biology, pharmacology and health systems research. Postdoctoral Research Career Development schemes are linked to these centres.

Six senior research leadership grants have been competitively awarded, with associated PhD studentships, to create research teams. A popular and highly competitive internship programme now has a cohort of 40 graduate interns, twenty-six of whom have already gone on to receive further funding for postgraduate training.

Lessons learnt: rigorous review procedures, allow for wide participation of researchers and transparency in the review process. Further there is need for face-to-face interaction with funding applicants in some funding types, especially where the application is from a consortium of researchers from different institutions.



2.8 The African Foundation for Research and Development (AFRAND)

The African Foundation for Research and Development (AFRAND) was proposed in the early 90s and negotiated by the late Professor Thomas R. Odhiambo as an autonomous, non-profit, Africa-wide organization dedicated to the generation and mobilization of an enduring resource base, including human capital, institutional capacities, and financial resources, for promoting and sustaining the advancement of science-led development in the continent.

Obtaining endorsement of nine African Heads of State and government in 1994, AFRAND was expected to operate a system of competitive grants and contracts to groups of researchers and programmes, and to promote these into centres of excellence and productivity. Each grant or contract was to be supplemented by a technical support package as well as an overhead component to the institution of affiliation.

This approach was expected to achieve two main objectives: institutional capacity building; and the recruitment and retention of the best talents in R&D, entrepreneurship, business and industrial management, as well as the trickling down of resources to the benefit of other units of the institution.

Functionally, AFRAND was expected to undertake five core programmes, largely implemented by Africa-based national, regional or international institutions. The programmes targeted were:

- i. The reintegration of ST&I into the African culture and everyday life;
- ii. Basic food, nutritional and health security;
- iii. Technological innovations for competitive production, marketing and social services;
- iv. The conversion of excessive military hardware and human capital; and
- v. Computer software design, development and applications.

Towards the successful implementation of its operations and core programmes, AFRAND upheld to adhere to:

- i. Operate as a minimum bureaucracy, with a small overhead, and a highly decentralized organizational style, having a set target of not more than 20% of its annual budget allocated to administration costs;
- ii. Appealed for one-time substantial contribution as initial investment base to support immediate and medium-term future activities; and



- ii. Solicit financial assistance from a broad range of funders as well as utilizing the 'debt-for-science-swap' scheme.

Lessons learned: since AFRAND failed due to lack of political commitment by some governments, political support is important for the survival of a research fund. Debt-for-science-swap scheme, supported by a relevant Government policy, should be included in the mix of fund mobilization strategies.

2.9 The Newton Fund

The Newton Fund is part of the UK's official development assistance. Its aim is to develop science and innovation partnerships that promote the economic development and welfare of developing countries. The fund will receive £75 million each year from 2014 for 5 years. It is expected that the UK funding will lead to extra funding from partner countries, private foundations, multi-lateral organizations and corporate partners. The Fund is part of the UK's Official Development Assistance (ODA), which forms part of the UK's commitment to spend 0.7% of her Gross National Income on development aid.

The fund's primary focus is to develop partner countries long-term sustainable growth and welfare through building research and innovation capacity. Bids for activity under the Fund are assessed against strict criteria and are allocated only if projects demonstrate that they will address poverty alleviation and the development problem identified effectively and efficiently. The countries considered are countries that have developed beyond the need for permanent aid programmes. Instead, the Newton Fund uses its joint strengths in scientific research to promote development across the world and build long-term collaborations with countries that will produce leading innovations in the future. Investing in science is at the heart of the government's long term economic plan and sustainable growth is key to tackling global challenges. The fund lays the foundation for on-going collaboration between the partner countries and the UK, promoting the UK as an international partner of choice and seeking opportunities for commercial collaboration as we work towards sustainable global growth. These countries are on the OECD Development Assistance Committee's list of Official Development Assistance recipients (available at www.oecd.org/dac/stats/dac/directives), which means they are eligible to receive ODA funds.



The countries under the fund have been assessed to be at a stage of development to benefit most from research and innovation capacity building. There are no plans for the list to be expanded, but this could be open to review. The development topics vary across the countries and are dependent on the partner countries development needs. Delivery partners will publish these when they issue their call for proposals. The countries the fund will work with are: Brazil, Chile: Newton-Picarte, China: Newton UK-China Research and Innovation Partnership, Colombia: Newton-Caldas Fund, Egypt: Newton-Mosharafa Fund, India, Indonesia, Kazakhstan: Newton-Al Farabi Partnership Programme, Malaysia, Mexico, Philippines, South Africa and wider Africa, Thailand, Turkey: Newton - Katip Çelebi Fund and Vietnam.

Newton Fund projects will address poverty alleviation and develop partner countries' long-term sustainable growth and welfare through building research and innovation capacity. It will use the joint strengths in scientific research to promote development across the world and build long-term collaborations with countries that will produce leading innovations in the future.

Investing in science is at the heart of the government's long-term economic plan and sustainable growth is key to tackling global challenges. The fund will lay the foundation for ongoing collaboration between the partner countries and the UK, promoting the UK as an international partner of choice and seeking opportunities for commercial collaboration as we work towards sustainable global growth.

The Newton Fund's primary aim is to promote economic development and social welfare in developing countries through building their research and innovation capacity. The Department for Business, Innovation and Skills is responsible for managing the Government's core science budget. It is therefore appropriate that the Department is in the lead. However, DFID is closely involved in the top-level governance of the Fund. The Fund will cover three broad categories of activity:

- i. People: capacity building, people exchange and joint centres;
- ii. Programmes: research collaborations on development topics; and
- iii. Translation: innovation partnerships.



The fund will support projects, which promote the economic development and welfare of the partner country and will be focused around their priority areas. For example, these might include energy security, climate change adaptation, and translation of research into innovation.

The types of activities are likely to include:

- i. Joint research on development topics;
- ii. Student and researcher fellowships and mobility schemes;
- iii. Challenge funds to develop innovative solutions on topics of interest to developing nations;
- vi. Science and innovation capacity building.

Activities under the fund will be managed by a core group of Delivery Partners: the Academies; British Council; Research Councils; TSB; and Met Office. They will allocate all funding through competitive processes which will be open to all interested parties and assessed against a set criteria central to which will be a demonstration of how the project or programme will address poverty either because it is focused on poor people in ODA eligible countries or addresses the issue of poor people in a low-income country.

Calls are likely to be opened at different times according to the country and the programme area. These will be advertised through delivery partners and via the Newton Fund gov.uk webpage. An independent researcher could get funding if their proposal meets the agreed criteria central to which, will be a demonstration of how the project or programme will address poverty either because it is focused on poor people in ODA eligible countries or addresses the issue of poor people in a low- income country. Delivery partners in charge of the process will lead calls.

The intention of the Fund is to use the UK's science and innovation strengths to support development in partner countries. Part of this will be through building partnerships to ensure sustainability. It is therefore expected that relevant UK institutions, providers and researchers will take part in the majority of programmes under the Fund.

All funding will be allocated through a competitive process, which will be open to all interested parties and assessed against a set criteria. The size of the allocated amount will depend on the type of activities being funded. The level of spend across the three streams (People, Programmes and Translation) will depend on the countries development requirements.



Lessons learnt: NRF needs to anticipate and position itself to respond to such funds. This includes, building capability to negotiate for the funds and initiating contacts with such funds well in advance.

2.10 Key Principles of Managing Research Funds.

Based on the foregoing case studies and available literature on funding of R&D, the following may be regarded as best practice in management of research funds:

- i. Autonomous status of the organization, with an independent pluralistic board that represents the entire spectrum of the stakeholders and has no majority of any one;
- ii. A set of priority areas clearly derived from, and supportive of, national policy priorities in ST&I;
- iii. A set of rules that encourages the widest possible participation in the scheme, a practical operations manual and application forms and procedures that facilitate wide national participation;
- iv. Wide advertisement of the funding programmes and conditions for application using all available media;
- v. Procedures for merit-based peer review that are clear and transparent and that facilitate professional, anonymous, constructive and independent assessments with minimum delays;
- vi. A financial and administrative review process that results in a prioritized final list of projects for each round of funding that balances priority and quality with cost;
- vii. Integrity, independence, and quality of management and adequate financial provision for discharging management responsibilities;
- viii. Strict adherence to the agreed schedule of fund disbursement on the basis of timely reporting and sound progress review procedures;
- ix. Non-intrusive monitoring and evaluation of the funded projects by competent persons; and
- x. Institutionalization of follow-up impact evaluation involving independent experts.

The eight case studies provide lessons learnt in the establishment and management of research funds, particularly with regard to funding mechanisms, operational procedures in the disbursement and management of research funds and key principles in managing research funds.



However, for effective and efficient operationalization of the NRF, it is recommended that the NRF Board of Trustees undertakes a benchmarking exercise nationally, regionally and globally to expose the Trustees to a wide range of opportunities, challenges and risks in the management of research funds.



CHAPTER THREE

3. Legal Framework, Governance and Management Structure for the NRF

3.1 Introduction

In this chapter, the legal framework, governance and management structure for the National Research Fund (NRF) are presented, since legally constituted and sound governance and management structure is critical for efficient operation, credibility and integrity of the Fund. The Governance and Managing Structure for the NRF covers the legal framework, Board of Trustees and their functions, the Secretariat and its functions, two committees and their functions, decentralization and empowerment of local communities, and establishment on linkages and coordination of research funds.

3.2 Legal Framework

The NRF shall be a body corporate with perpetual succession and a common seal and shall have powers to sue and be sued in its corporate name and acquire, hold and dispose of movable and immovable property for its own purposes. It shall be governed and managed according to the legal regulatory framework for statutory bodies, and in particular according to the following:

- i. The Constitution of Kenya;
- ii. The Science, Technology and Innovation Act No. 28 of 2013;
- iii. The Public Financial Management Act CAP 412 ; and
- iv. Any other relevant Law.

3.3 Governance and Management Structure

According to the Science, Technology and Innovation Act No. 28 of 2013, the governance and management structure comprise the Board of Trustees and the Secretariat. Like other research funds, the NRF will have committees constituted by the Board of Trustees to assist in the governance and management of the Fund. In this regard two committees are envisaged, namely: Technical and Advisory Committee (TAC) and Resource Mobilization and Investment Committee (RMIC) among other committees of the Board.

3.3.1 Board of Trustees

Appointment of Members of the Board of Trustees will be in accordance with the Science,



Technology and Innovation Act No. 28 of 2013, which stipulates that the NRF shall be managed by a Board of Trustees which shall consist of nine members to be appointed by the Cabinet Secretary as follows:

- i. A chairperson, being a person with knowledge and experience in matters related to finance, investment and fundraising;
- ii. The principal secretary in the ministry responsible for finance;
- iii. The principal secretary in the ministry responsible for science and technology;
- iv. One person nominated by the Kenya private sector alliance;
- v. Two persons with knowledge and experience in finance and investment nominated by the Kenya bankers association;
- vi. One person from a body with functions similar to those of the fund in Kenya;
- vii. The director of the Kenya innovation agency; and
- viii. The director general of the commission for science, technology and innovation.

The Board of Trustees shall be responsible for establishment of policies and priorities for the NRF and shall have the following specific functions as specified in the Science, Technology and Innovation Act. No. 28, of 2013.

- i. Mobilize resources, and prudently manage and invest the funds so mobilized;
- ii. Support the development of human resources through grants to persons or research institutions or universities pursuing postgraduate programs in prioritized areas of science, technology and innovation with priority being given to marginalized indigent communities,
- iii. Support the development of research capacities in national priority areas of science, technology and innovation;
- iv. Allocate funds for research and promote multi-disciplinary collaboration among universities and research institutions, including the innovation delivery agencies;
- v. Evaluate the needs, status and results of research financed through the NRF;
- vi. Provide financial support for the development of research facilities by universities, research institutions and other bodies identified by the commission;
- vii. Provide financial support for participation in international scientific activities through maintaining membership to appropriate international science organizations;
- viii. Provide financial support for collaboration, co-operation and sharing of research information and knowledge, including supporting conferences, workshops, seminars, meetings and other symposia;



- ix. Promote the provision of an information infrastructure linking research institutions to facilitate co-operation and sharing of research information and knowledge;
- x. Compilation and maintenance of a national database of research and innovation funded by the NRF and other agencies; and
- xi. Oversee the monitoring and evaluation of the results and impact of the research and development activities financed by the NRF.

3.3.2 Secretariat

The NRF shall have a Secretariat headed by a Director who will be appointed through a transparent and competitive process. The staff of the Secretariat shall have financial management and technical expertise necessary for efficient day-to-day operations of the NRF. The Secretariat shall have the following functions:

- i. Day-to-day management and operations of the Fund;
- ii. Identification and consolidation of diverse funding sources;
- iii. Development of proposals to attract additional funding;
- iv. Development of innovative business and investment plans aimed at enhancing sustainability of funding;
- v. Disbursement of funds for implementation of approved proposals;
- vi. Development and implementation of a communication strategy aimed at effective communication with policy makers and funding agencies and other relevant stakeholders;
- vii. Preparation of the annual estimates of the revenue and expenditure of the NRF;
- viii. Preparation of accounts reports for distribution to relevant institutions and for audit purposes; and
- ix. Any other duties that may be assigned by the Board of Trustees.

3.3.4 Committees

The Board of Trustees will constitute a Technical Advisory Committee (TAC), a Resource Mobilization and Investment Committee (RMIC), and any other committees as need arises.

a) Technical Advisory Committee

Technical Advisory Committee (TAC) will be a committee of the Board responsible for advising



the Board on modalities of managing the Grant in terms of reviewing, disbursement of funds to beneficiaries and monitoring funded projects. Members of the Technical Advisory Committee (TAC) will be composed of members of the Board and co-opted members experienced in preparation and review of proposals.

b) Resource Mobilization and Investment Committee

The Resource Mobilization and Investment Committee (RMIC) will be a committee of the Board to advise on resource mobilization and investment strategies. The Committee will be composed of members of the Board and co-opted members with relevant expertise and experience in fund-raising and investment of funds.

3.2.5 Decentralization and Empowerment

To be successful, the NRF must forge closer links with its clients. Decentralization and empowerment are particularly important in fostering demand-driven research that will meet the needs of local communities. Strategies must therefore be put in place to ensure that local communities and special interest groups participate in setting priorities for R&D programs supported by NRF. Further, the structure of NRF should enable the participation of the devolved government in ST&I. In accordance with the Ministry of Education, Science and Technology Second Medium Term Plan of the Kenya Vision 2030, NRF will be expected to support the county Technology and Innovation delivery services which aim to deliver technology and innovations services to the grass roots.

3.2.6 Establishment of Linkages and Coordination of Research Funds.

The National Research Fund (NRF) is the first and major government body established to fund research and development (R&D) programmes and activities aimed at integrating ST&I in national economic development. There are other existing and envisaged R&D sectorial funding programmes supported by the government, donors and the private sector. As the apex national and research funding agency, the NRF is expected to establish and maintain effective linkages with other funding agencies, and to play a major role in coordinating research funding from different sources. The following are the envisaged merits and benefits of establishing linkages and coordination of research funding:

- i. Ensure synergy and avoid duplication in research and development effort, and enhance cost-effectiveness and efficiency in the allocation and management of research funds;



- ii. Enhance ease of accounting for and reporting on funds spent on R&D activities;
- iii. Improving the adequacy and dependability of funding of priority R&D programmes designed to have significant impact on the national development objectives;
- iv. Expanding opportunities for innovative research in both public and private sectors with an element of competition based on capacity;
- v. Drawing upon the comparative advantage of a wide range of institutions in both the public and private sectors;
- vi. Promoting stronger linkages between R&D institutions and tertiary training institutions to enhance the relevance and quality of training, particularly post-graduate trainings; and
- vii. Enhancing the financial sustainability of R&D programmes.

To achieve the above merits and benefits, it is recommended that:

- i. The ST&I Act of 2013 be amended to provide the NRF with coordination mandate of research funding;
- ii. The NRF develops capacity for establishing and maintaining effective linkages with policy makers and funding agencies;
- iii. The NRF develops capacity for enhancing synergy and cost-effectiveness by enhancing teamwork and collaboration through fostering greater participation of stakeholders in formulating and funding R&D proposals; and
- iv. NRF establishes and maintains linkages with CNHR with regard to health research.



CHAPTER FOUR

4. Resource Mobilization for the National Research Fund

4.1 Introduction

The Government of Kenya has over the years allocated funds for Research and Development (R&D) activities through its relevant ministries. This allocation has however been proportionately low and not coordinated making it difficult for the country to evaluate the performance of the R&D funds and their impact. Based on the African outlook, 2014, the Gross Domestic Expenditure on Research and Development (R&D) for Kenya in 2010 was 0.98%, with more than 40% of R&D being financed from abroad. The NRF will expect basic minimal funding of 2% of GDP annually, which if achieved, will increase the country's funding for R&D. However, due to competing demands from other sectors, this amount cannot be solely sourced from the National Treasury. For sustainability reasons, NRF should therefore put in place mechanisms to attract funding from other sources including the private sector and development partners (interested parties). This will motivate the interested parties to contribute to funding of research while ensuring adequate funds allocation to national research activities. This chapter, therefore, focuses on public funding, donor funding, private sector funding, commercialization of technology and intellectual property rights; strengthening revenue generation and management; sustainability; and establishment of an endowment fund; and resource mobilization strategy.

4.2 Purpose of Mobilizing Funds for NRF

As indicated in the introductory chapter of this report, the current main sources of research and development (R&D) funds are: development partners, government ministries/agencies, business/private sector, and private non-profit organizations. The ultimate purpose of mobilizing resources for the NRF is to consolidate research funds from diverse sources to:

- i. Meet the growing needs of the country;
- ii. Make it easy to report on the funds provided for R&D;
- iii. Assess impact;
- iv. Create a repository for research findings;
- v. Improve commercialization of innovations;
- vi. Reduce risk of overlap;
- vii. Enhance collaboration between different areas of research;



- viii. Bring synergy and efficiency in the management of funds;
- ix. Enhance operational effectiveness and financial sustainability; and
- x. Leverage other sources of funding and break barriers through innovative and catalytic funding so that other players can replicate or upscale the interventions.

4.3 Public Funding

The government is committed to allocating 2% of the country's GDP to the NRF for ST&I every year. Based on the rebased statistics, the 2013 real GDP stood at 3.6 trillion Kenyan Shillings (Kenya National Bureau of Statistics, 2014). 2% allocation of this translates to 72.8 billion Kenyan Shillings. Whereas, this amount is expected to be achieved gradually, the seed money for the NRF will be the current government funding for research including MOEST's KES 397 million managed by NACOSTI. The NRF should engage the National Treasury and the relevant parliamentary committees on a budgetary allocation of KES1.25 billion including the KES 397 currently under NACOSTI. The transfer of the funds currently managed by NACOSTI should be accompanied by a status report that provides all the relevant information including: cumulated funding to date, beneficiaries, continuing projects and impact assessment reports. Given that the NRF will be allocated 2% of GDP, the major issue to be addressed is how the NRF will protect this level of public research funding. To address this issue, it is proposed that the NRF takes initiatives in four key areas:

- i. The NRF's responsiveness;
- ii. The NRF's communication strategy;
- iii. NRF's accountability; and
- iv. NRF management of the budget process.

4.3.1 Responsiveness

The NRF can achieve responsiveness through contribution to the achievement of policy objectives, development of a research strategy, and formulation of research programs aligned to strategy.

a) Contribution to achievement of policy

To maintain and foster public support, the NRF must produce knowledge and technologies that respond to the policy objectives of the government. To this end, the objectives should be linked



to the country's strategic plans, clearly defined and publicized. The inclusion of research institutions and individual researchers so as to garner support and synchronize thinking is necessary.

b) Development of a research strategy

Successful anticipation of research demand and opportunities requires development of a research strategy, especially where R&D organizations face new technological challenges, rapid changes in their macroeconomic environment, or policy shifts. We propose a baseline survey and an analysis of stakeholder expectations as a starting point for enhancing the NRF's dialogue with policy makers, as well as making researchers client oriented.

c) Formulation of convincing programs

Governments want R&D to contribute to national development and will provide financial support. They believe in the quality and usefulness of the planned research. At a minimum, a convincing program should:

- i. Address important problems or opportunities;
- ii. Specify outputs, as functioning program objectives;
- iii. Target a defined group of users or beneficiaries;
- iv. Undergo peer review;
- v. Contain a detailed budget; and
- vi. Be available in the common style and format used by the parent ministry and the treasury.

4.3.2 Communication Strategy

The NRF can garner support for its work through a coordinated communication effort targeted to policy makers and technology users. Effective communication is essential for identifying threats, and opportunities, for developing well-defined research agenda, and for producing high-quality technologies appropriate to the government and technology users. We propose that the NRF achieves effective communication through development of a user friendly communication strategy, maintaining productive dialogue with policy makers and technology users, and forming coalitions with partners.



4.3.3 Accountability

The NRF can improve its credibility by demonstrating that research produces tangible benefits and that money is being spent effectively and efficiently. Research evaluation and auditing are two key tools for helping the NRF fulfil accountability requirements. We recommend that an audit of the existing funds be carried out to determine the absorption, output and impact achieved to date.

4.3.4 Management of the Budgetary Process

The NRF can improve funding prospects by paying close attention to the preparation and defence of its budget requests. The annual budget request is an ideal opportunity for a meaningful dialogue with government agencies and members of the legislature. The NRF will have more influence over the budgeting process if it credibly presents itself as a purposeful and result-oriented contributor to national goals. To do this, the budget should be presented in the context of major programs that are fully aligned to the NRF's mission and the national science and technology policy and linked to the national strategic thinking.

4.4 Donor Funding

Mobilization of funding by development partners can be an intensely challenging but attractive way of increasing funding for the NRF. While development partners may differ in their interests, the following are some of the common motives of development partners:

- i. Spend taxpayers' money wisely by identifying responsible fund recipients to avoid waste and corruption;
- ii. Achieve annual funding targets (i.e. move the money as quickly and efficiently as possible);
- iii. Ensure that, fund recipients are spending the money as quickly as originally intended and for agreed upon purposes;
- iv. Allocate money to activities that show results and help the largest number of people and/or the neediest;
- v. Solicit views of beneficiaries; and
- vi. See their funds leverage greater funds from other sources.

Taking the above into consideration the mobilization of funding from development partners should focus on the following:



- i. Develop good working relations with as many representatives of development partners as possible;
- ii. Extend invitation to development partners to visit NRF projects so as to learn more about research programs and priorities;
- iii. Prepare promotional materials, such as brochures, fact sheets and videos and send them to development partners as well as uploading them to the NRF website;
- iv. Make regular responses to calls for proposals and prepare fundable proposals;
- v. Engage critical partners and consulting firms to assist in developing innovative research programs, as well as business and investment plans;
- vi. Consolidate and strengthen the existing partnerships with traditional development partners; and
- vii. Satisfy both the programmatic and bureaucratic requirements of different development partners, and strike a balance between the interests of the development partners and those of the country.

While making efforts to mobilize funding from development partners, it is important to recognize that it is not easy to mobilize resources. This is true for research systems in the developed countries as well. In this regard, it is therefore recommended that, the NRF develops capacity to prepare highly competitive and bankable proposals to enhance chances of securing increased funding from development partners.

4.5 Private Sector Funding

The private sector is an integral part of the economy, being the major contributor of GDP and a consumer of research findings. NRF should devise mechanisms for attracting funding from private sector. This will include tax incentives, recognition and awards, publicizing the contributors of funds e.g. including a section acknowledging the funders in its periodical reports. In addition there should be a forum for round table discussions where all contributors to NRF meet (especially the private sector) periodically with trustees for NRF to recognize and celebrate them. The various ways in which the NRF can attract funding from the private sector include:

Contract research: This is where the private sector through NRF, funds targeted research to address a specific issue in a sector/industry.



Contribution to research: This model requires that NRF approaches private sector to contribute part of their profit to the research kitty as part of their Corporate Social Responsibility (CSR). The incentives towards such contributions would include tax waivers, awards and recognitions. Levies to specific sectors: NRF can explore mechanisms to introduce sector specific levies e.g. manufacturing, agriculture among others. This can be achieved through a well thought out strategy stipulating the expected benefits to the contributors. This levy could be similar to that levied to the sugar, tea and coffee industry players among others.

4.6 Commercialization of Technology and Intellectual Property Rights

4.6.1 Commercialization of Technology

Commercialization of Technology involves any possible scheme that allows those who invest in research and technological innovation to capture some of the economic benefits generated by their innovations. Patent licensing, research grants and contracts, research and development joint ventures, and technical services for a fee, are examples of commercialization schemes. For researchers and research organizations, the focus is on their ability to appropriate economic benefits from the end-users of their technologies. This “user-pays” approach can raise funds for sustaining research and development services. Compared to other sources of funding, commercialization is less focused, in the sense that it is an on-going process which involves numerous diverse activities. As a result, it may be a less stable funding source. However, commercialization can improve the efficiency of developing and transferring technologies. Such efficiency gains can be significant and can also assist the long-term sustainability of R&D programs.

With regard to commercialization, public R&D organizations have the following limitations:

- i. Lack of organizational knowledge of basic commercialization principles;
- ii. The existing culture, incentives and delivery systems are all impediments to commercialization;
- iii. Staffed with scientists and technologists who have spent a good part of their professional careers developing science in the public domain for societal use and benefit;
- iv. Incentive systems are based on disciplinary achievement and peer recognition rather than use and application of scientific knowledge;
- v. Lack of specialized expertise on commercializing technology or developing demand for technical knowledge;



- vi. Moving away from the culture of non-proprietary technology requires a paradigm shift, and the shift can generate individual and organizational resistance; and
- vii. Private industry is reticent about dealing with public research organizations due to past experience with government bureaucracies leading to significant barriers to communication and commercialization.

The following are potential benefits of commercialization of technologies:

- i. Generation of funds from user fees that can be channelled back into R&D activities, assuming that costs of commercialization are consistently surpassed by associated revenue;
- ii. Commercialization tends to impose market discipline on research agenda of individual researchers and organizations as a whole;
- iii. Frequent contact with end-users, necessitated by commercialization, uncovers technical needs and gives rise to research priorities that are more in line with immediate needs of end-users; and
- iv. End-users have a better appreciation of relevant and potential benefits of the technologies leading to faster adoption and commercialization of technologies.

Technology has become the centrepiece in contemporary approaches to economic growth and development. Technology stakeholders are seeking institutional changes that will facilitate generation, transfer and commercialization of technologies. For those involved in generation of technology, commercialization will be increasingly looked upon as a means of capturing a greater portion of its value. For technology users, it will continue to represent a primary source of growth and improved living standards.

Public research organizations that consider commercialization of research and technology as a way to sustain their R&D operations will have to learn how to create value from activities that remove barriers to commercialization of research and technology. In this regard, and based on challenges and benefits of commercialization, it is recommended that the NRF:

- i. Develops expertise in commercialization of technologies and innovations; works closely with public R&D organizations and policy makers to make appropriate



- ii. Works closely with public R&D organizations and policy makers to make appropriate revisions of incentive systems and policies to remove barriers to commercialization of technologies; and
- iii. Facilitates training programs to educate the existing staff in public R&D organizations on the merits, principles and techniques of commercialization of research and technologies.

4.6.2 Intellectual Property Rights

Intellectual Property Rights (IPRs) are legal monopolies offered by national governments for a limited time to provide protection to those who incur research costs and expend effort in innovative activities. IPRs are offered to reward and encourage investment in technological innovations, and allow those investing in innovations the exclusion of free riders and, in turn, improve their chances of capturing some of the economic benefits. In this way, further investment in technological innovation is encouraged. The IPR system also encourages disclosure of invention, thus effectively assisting in incremental development of technology.

A patent is a grant of property right to the inventor allowing exclusion of others from using, making or selling a particular invention. This monopoly right is granted for 20 years from the filing date of a patent application. A patent is a national right, and its ownership in one country does not extend to another country. Currently, there is no uniform international patent system and as a result, differences in the legal requirements and interpretation of the law are encountered from one country to another. However, international treaties and conventions provide a common basis for national laws, as well as network by which patent application filings for multiple countries are facilitated.

Deciding among options for the protection and disclosure of innovations is a major challenge. Researchers and research organizations must carefully consider which type of protection is appropriate for each innovation, whose needs are being served, and how to weigh expected costs and benefits. Their decision must reconcile various factors: scientists' "perceived need" for intellectual property rights (IPR) protection, institutional goals, the interests of the end users of innovation, and the national policy objectives.



IPR protection depends on national and international legal and regulatory frameworks on IPR protection. There is need for the NRF to put in place mechanisms to ensure the production and use of innovations, especially opportunities for their commercial development and widespread application. Tailor-made for each innovation, the IPR protection should provide a basis for clear and equitable relations between collaborating partners. The mechanisms must have clear procedures and arrangements that the researchers and research organizations will enter into in regard to quality standards, copyrights, patents and industrial licenses, trademarks, brand names, and other industrial property rights as to their protection licensing and utilization nationally and globally.

Not every technological invention has commercial value. Yet, applying for and marketing IPR is resource-intensive and expensive. Appropriate evaluation regarding the patentability and commercial value of technological inventions is thus essential so that unnecessary costs are avoided early on. It should be realized that a patent application is a complicated legal document. While it is based on science, it is not a scientific document. However, IPR protection is an effective strategy for successful commercialization of research and technology. It is, therefore, recommended that the NRF:

- i. Puts in place IPR protection mechanisms that provide a basis for commercial development and widespread use and application of innovations, and establishment of partnerships or contractual arrangements between researchers, research organizations and the NRF; and
- ii. Develops and maintains technical and legal capacity for application (nationally and internationally) of IPR laws; international negotiation and commercial IPR agreements; and resolving intellectual property disputes.

4.7 Strengthening Revenue Generation and Management

The NRF will need to leverage ST&I outputs to generate resources for its sustenance. This will be realized through learning and internalizing appropriate methods and approaches while building on lessons and experiences of funding mechanisms from other countries. We recommend that the NRF explores new and innovative funding mechanisms that would result in achievement of greater cash flow, while increasing ST&I outcomes. We propose that the NRF employs key



strategies to improve revenue generation and management including the following:

- i. Incorporation of an institutional framework that focuses on developing more innovative approaches to tap funding through public-private partnerships at all levels;
- ii. Establishment and maintenance of a strong knowledge and information system with strong web backups to share information and enhance corporate image;
- iii. Participation in meetings of the global economic and development aid forums and other similar platforms or events where discussions on research and development take centre stage;
- iv. Establishment of a string of national research facilities and research infrastructure and generate incomes from renting out;
- v. Establishment and sustenance of network of innovation Centres of Excellence in the national ST&I priority areas with specific deliverables that will attract knowledge-based investments;
- vi. Establishment of business systems through agreements with multinational companies, small and medium-term enterprises as well as micro enterprises on joint commercialization, marketing and patenting of technologies and innovations;
- vii. Establishment of prudent management of funds and undertaking cost effectiveness analysis of funds approved or disbursed for implementation of projects and activities; and
- viii. Establishment of a planning and budget office to be the key advisor on fund raising and expenditure for the NRF.

To ensure effective revenue generation and management, it is recommended that the NRF builds and maintains the necessary capacity for strengthening revenue generation and prudent management of funds and other resources.

4.8 Sustainability

Sustainability is the ability of an organization to survive over the long term. Ellsworth (1998) defines sustainability of an organization as “the creation of recognized value for stakeholders, so that they continue to provide financing sufficient to allow for inter-generational creation of that value, while at the same time husbanding the existing capital stock so as not to jeopardize its



use by future generations”. It has ownership, governance, management components, and financial dimensions. With regard to the NRF, the focus should be on financial sustainability.

Financial sustainability requires a deep and strong political commitment to the idea that, public sector should retain a strategic role in R&D. It is often thought that establishment of funds will stimulate better, more relevant, demand-driven and cost-effective research that will lead to increased sustainability of funding. This is so because, once national governments, partners, the private sector and users of technology are convinced that their priorities are indeed better served through establishment of new funding mechanisms, they are likely to increase their support to the funding mechanisms. This will only happen, if the governments, through their ministries of finance, are committed to this cause.

Financial sustainability can be achieved through a number of ways such as increased government allocation to R&D, increased funding by donors and partners, check offs and levies, debt conversions, commercialization of technologies, establishment of endowments, gifts, and public-private partnerships.

4.9 Establishment of Endowments

Endowments offer an effective tool that donors can use to make research and development (R&D) institutions and programs more self-sustaining. Not only do endowments insulate institutions and programs from inconsistencies in government and donor funding levels, they also achieve true maturity in institutions and program management. If managed successfully, endowments upgrade institutional capacity to create and manage R&D programs that are more effective.

In establishing an endowment, a sizable sum of money is set aside as a financial investment and R&D expenses are paid with the net returns (i.e. after taking into account inflation). Fund endowment depends on the returns to capital and the value of R&D expenses to be covered. As a rule of thumb, the endowment’s value should be 20 times greater than annual R&D expenses.

An endowment requires the establishment of a body to manage the fund. This is often a foundation or trust and it has two main tasks, namely: to ensure funds are wisely invested, with the right combination of project returns and risks; and to define and implement a policy for spending the



net returns. Endowments have been established for funding of environmental activities in the Philippines and Madagascar and for orphan care in Tanzania (Weatherly 1995). Since endowments provide an annual return independent of public budgets and spending policy, they are often considered a more stable source of revenue. This can be a big advantage for R&D programs which often require long-term funding commitments not easily guaranteed in the public sector.

Once established, an endowment may add funds and ensure stable funding, but the efforts needed to collect the initial capital are often enormous. In fact, coming up with the necessary capital is the key issue surrounding the feasibility of endowments.

Using money from endowments effectively will require that stakeholders (particularly those with an interest in the use of endowment income) participate in the process of endowment creation and in the management of endowed institutions. Endowed institutions will have to become more accountable to government agencies responsible for public sector programs. Donors have a role to play not only in providing seed funds for endowments, but also in helping work through the process of institutional change necessary to prepare for increased independence and responsibility required to oversee and use endowments funds.

As is the case with many investment funds, the cost of administering an endowment, as a share of gross returns, falls with increasing fund size. Proper management of the investments depends heavily on having a high-quality financial team at the helm. To ensure long-term sustainability it is recommended that:

- i. NRF develops a realistic asset management plan to address a range of issues, including explicit strategies for managing the investment risks, ratios of liquidity needed to provide security for both staff and grantees, and explicit fund raising targets to maintain the endowment's value; and
- ii. NRF should tap into other funds such as the natural resources sovereign fund under establishment.



4.10 Resource Mobilization Strategy

Resource mobilization is key to ensuring sustained funding for ST&I. Resource mobilization should be an integral part of the governance and management structure of the NRF to ensure continued visibility of the NRF by profiling its achievements, impact and transformation of the national economic development through ST&I. In this regard, there is need to develop a resource mobilization strategy. The strategy should focus on the following:

Effective fundraising mechanisms and structures aimed at fostering fundraising and integrating resource mobilization options at different scales and timeframes: short-term (up to one year); medium-term (1 to 3years), and long-term (over 3 years);

A resource mobilization process that targets traditional partners, new and potential development partners;

iEstablishment of an institutional framework to enhance resource scouting, identification of sources of funds, and preparation of investment plans in line with the NRF priorities and needs. We recommend that such a framework should include establishment of a Resource Mobilization Unit (RMU) consisting of individuals with the necessary experience and hand-on-approach to resource mobilization;

Building and strengthening capacity to develop competitive and bankable proposals to enhance chances of increased funding from external sources;

A coordinated approach to maintain and improve current investor relations, including enhanced information management and sharing;

Effective and timely fund-raising research to identify and connect with funding agencies;

Branding the NRF work in ways that make the desirability of investment obvious to current and potential funding agencies and partners; and

Mainstreaming resource mobilization as an integral part of the NRF strategic planning while enhancing dialogue with policy makers and technology users.



CHAPTER FIVE

5. Funding and Grant Award Mechanisms

5.1 Introduction

The National Research Fund (NRF) will essentially manage a pool of money drawn from the sources discussed in the previous chapter, designed to support research based on strategic development objectives of Kenya. When the fund is operationalized it will develop a set of operating procedures, rules standards and guidelines to ensure that the Fund achieves its target. This chapter covers, funding mechanisms, types and scope of funding schemes, eligibility criteria, steps in the publication of the National Request for Applications (NRFA), merit review system, procedures for grants management, reporting requirements, and performance monitoring and evaluation, contractual obligations and force majeure, and publications and dissemination.

5.2 Fund Objectives and Priorities of Funding.

The following are the guiding principles for the establishment and operationalization of the NRF:

i. Setting of Fund Objectives that are established from the outset to determine the size, structure, duration, and type of grants to be made, whether for bringing new institutions into the research system, building institutional capacity, promoting partnerships, enhancing quality of research, developing linkages to clients, resolving a high priority problem, or increasing the total level of research funding.

ii. Setting of Priorities for funding that conform to national research strategies and objectives to avoid a highly dispersed portfolio. The broad priority areas have been identified by the national Sector Plan for Science, Technology and Innovation, 2013-2017 and subsequent plans based on the overall national development goals specified in the Kenya Vision 2030. As the setting of priorities is a dynamic process, it is recommended that:

- The NRF, in consultation with respective sector stakeholders should regularly review, revise and update strategic priority areas for funding to make them demand driven and responsive;
- Allocation of Resources to ensure transparency, credibility and integrity;
- The NRF should allocate resources based on national priority strategic needs for R&D;



- The fund should give consideration to marginalized indigenous communities, the youth, women and other special interest groups; and
- Special allocation of funds to cater for emergencies and emerging issues.

iii. Adoption and operationalization of competitive grant awarding schemes as the funding systems for research. The underlying premise is that, merit based competition provides strategic development-oriented solutions and delivers technologies and innovations to meet the ultimate goal of the fund. The benefits of such a national structured competition include: expanding opportunities for innovative R&D, improving scientific and technical quality, and excellence in proposals.

iv. While competition is the key guiding principle, there is need for other forms of strategic funding. This will include infrastructure upgrade provided as block grants to support expensive investment needs, for example, laboratories, offices, equipment and high-level human resource development.

5.3 Funding Mechanisms

Three funding mechanisms are proposed under NRF, namely: competitive grants, matching grants and institutional support grants.

a) Competitive Funding Mechanism: This is a funding mechanism in which institutions, individuals, or groups of individuals prepare proposals within the priority areas of the NRF according to pre-defined criteria and rules and the best proposals are selected for funding through a peer review system. The following are key characteristics of competitive grants:

- Competitive grants lead to mobilization of the best scientists from the public and private R&D institutions, including universities, to work on specific high-priority projects;
- Competitive grant schemes are an important tool for promoting high-quality research and innovation through selection of projects based on rigorous technical review of scientific merit, sound work plans, and expected results. They function best where the key criterion for funding is scientific excellence, such as basic and strategic research;



- iii. Competitive grant schemes make research more demand-driven by involving clients in setting priorities and financing, execution and evaluation of research;
- vi. Through setting priorities and budgets for specific areas of R&D, the body that runs the competitive grant scheme can pursue its policies while remaining accountable;
- v. Competitive grant schemes require establishment of considerable scientific and financial skills for screening and selecting projects and management of grants;
- vi. Competitive grant schemes require researchers to conform to the priorities of the funding agency. The question is whether the funding agency remains sufficiently flexible and open to new ideas. The choice of priority areas may lag behind scientific development considerably. A peer review procedure can help the funding remain flexible, provided that the pool of reviewers is large and varied in its domain of expertise; and
- vii. The biggest threat to competitive grants' schemes is interference by research stakeholders' intent on circumventing principles of objectivity and neutrality. As funds begin to be allocated outside the established process, the scheme may become marginalized. Another threat is easy access to other funding sources.

b) Matching Grants: In a matching grants scheme, the contribution by the funding agency is tied to the level of funding obtained by researchers from other sources. There is often a ceiling on the contribution, to avoid over burdening the sponsor of the matching grant. The following are key characteristics of matching grants:

- i. Matching grants are an excellent way for the funding agency to begin opening up additional funding sources. By adjusting its share, the funding agency can influence the behaviour of potential contributors;
- ii. Matching grants provide a way to shift the funding of certain types of research (particularly applied and adaptive research) from the public to the private sector. They are provided on the understanding that the benefits of research will accrue mainly to the users of technologies and innovations;
- iii. Operating a matching grant scheme is relatively easy for the funding agency, since the grants are directly tied to the evidence of other funding;
- iv. Accountability is ensured through identification of priority areas in which a matching grants' scheme might work well; normally research areas that provide direct benefits;



- v. v) Matching grants lead to increased flexibility and responsiveness of research as research becomes more demand-driven and often more applied; and
- vi. vi) From the treasury's point of view, the initial appeal of a matching grant scheme is high, as it may lead to additional funding and possibly reduced treasury contribution. However, a contentious issue that typically arises over time is the size of leverage factor, with the treasury hoping to reduce its share and other funding agencies (particularly donors) wanting the treasury to contribute more.

Competitive and matching grants have the following disadvantages: researchers spend time chasing money, reducing efforts devoted to research; researchers may put more emphasis on desk research than field research; short-term problems crowd out long-term problems; possible disorganization of the research organization and researchers put more efforts on tactics and less on strategy.

c) Institutional-Support Grants: These grants are provided by the funding agency to enable the institutions to improve and/or maintain research or production facilities. The provision of such grants is based on identified priority needs of the institutions working on priority areas supported by the funding agency. Institutional funding has a number of advantages which include: providing continuity to research projects; reducing transaction costs to the researcher; giving researchers more room for creativity; and providing knowledge orientation. It may also include subsidising the cost of purchasing equipment, reagents and services acquisition among others.

Institutional funding has the following disadvantages: limited flexibility of research programs; limited accountability; and relevancy of research depends more on the research manager, and administrative overhead may grow unnoticed.

Liberalization and structural adjustment in the public sector have triggered not only cuts in research funding but a shift from institutional funding towards grant funding schemes. In view of this, it is recommended that:

- i. The NRF establishes a good balance between grant funding schemes and institutional funding; and



- ii. To ensure transparency, integrity, credibility and enhanced responsiveness and flexibility, the NRF Board of Trustees establishes a Competitive and Matching Grants Schemes (CMGSs) as major funding mechanisms for research and development programs.

5.4 Types, Scope of Funding Schemes and Eligibility Criteria

5.4.1 Types and Scope of Funding Mechanisms

It is proposed that NRF initially operates seven types of grants. These are:

- i. **Grant Development Grants:** These are intended to enable an interested individual or group of individuals to prepare a proposal for subsequent consideration by the NRF. This grant will be provided for a maximum of six months;
- ii. **Project Initiation or Proof of Concept Grants:** These are funding that may involve surveys of investigative studies to enable the researchers or team of researchers to develop a detailed proposal to be presented at a seminar to which outside parties can be invited to attend. Typically this type of grant will be for a maximum of one year;
- iii. **Project Support Grants:** These are intended to support the implementation of the approved proposal. The successful proposal may, in the first instance, be awarded a 3-year grant, but can be renewed for a further 3 years, depending on the progress made in the implementation of the project. Only in exceptional circumstances, will a project grant be renewed for more than 6 years in sequence;
- iv. **Capacity Development Grants:** These are awards intended to develop appropriate human resource and research capacity in areas of ST&I appropriate for technological innovations of sectors prioritized by NACOSTI and NRF. Such grant may include the post-graduation internship or on-the-job training of young professionals, the upgrading of the skills of the informal sector technologists and entrepreneurs, and the protection and management of technological innovations or their licensing. These awards will be granted for a period of 3 years, but may be extended once for a period of not more than 2 years;
- v. **Fellowships Awards:** These will be granted on a highly competitive basis to gifted science and technology (S&T) specialists, innovative research and development (R&D) engineers, highly productive entrepreneurs, capital market specialists, business and industrial leaders, marketers and S&T policy analysts in the priority areas of the NRF.



These awards will be short-term (less than one year) or long-term (1-3 years), and are not renewable.

- vi Special Awards: NRF may consider awarding large grants for a period of up to five years for proposals that address special national development challenges; and
- vii Discovery and innovations: to be granted to individuals in the informal sector.

All these grants, of whatever nature, are specifically geared to encourage institutional collaboration and partnerships. This will make it possible for multi-disciplinary and multi-sectorial talents and skills to converge on the single central goal of demand-driven, problem-solving, production-oriented, science-led transformation of the national economy and key social services. In this context, each grant must singularly contribute to and be directly related to one, or a combination of two or three of the priority areas of the NRF. This strategic approach is intended to expedite the acquisition of knowledge; the translation of R&D results into the production and marketing of competitive, high quality products and services; and the mobilization of the national brain power into an integrated and interactive process. In this regard, establishment of centres of research excellence will be of added value. The grants will provide opportunity to incentivise Kenyans in diaspora to make contribution to its economic development.

5.4.2 Eligibility and Screening Criteria

The eligibility and screening criteria: these provide the basis for review of proposals and ensure quality proposals. Criteria generally cover: scientific quality, clarity of work plan, timeliness of completion, relevance to priorities, experience of proposer, adequacy of institutional support, adequacy of institutional support, adequacy of budget, and compliance with co-financing arrangements. Review sheets with scoring and ranking systems provide a transparent basis for selection decisions.

The following are the proposed high-level eligibility criteria for the grants:

- i. The applicants must be working in priority areas identified by NACOSTI/NRF;
- ii. The applicants must be in possession of at least a master's degree or its equivalent in a relevant area or innovators recognized by Kenya National Innovation Agency;
- iii. The applicants should be conversant with the national economic development policies and strategies;



- iv. iv. The applicants must have demonstrated competence and experience in areas related to priority areas of NACOSTI/NRF;
- v. v. The principal investigator must be resident in Kenya. Non-nationals can apply for NRF funding provided they are resident in Kenya; and
- vi. vi. The partnering and collaborative institutional or corporate entities must formally indicate that they are committed to release identified staff involved in the project and must have the facilities to implement the project.

5.5 Steps in the Publication of the National Request for Applications (RFA)

Calls for proposals:

The call for proposals provides comprehensive information on NRF objectives and priorities and clear, detailed guidance for submitting proposals. Eligibility requirements should be as flexible as possible to enhance participation of non-traditional research suppliers. A national Request for Fund Applications (RFA) should be advertised widely in both print and electronic media. Technical review of all eligible proposals to evaluate proposals according to the criteria established. High standards of review from the beginning of a program, contribute to quality projects in the long-term. Technical advisory panel members should have clear terms of reference and be selected based on their scientific expertise.

5.5.1 General Principles for Publication of RFAs

The following are proposed to be the generic key steps in publishing an open RFA:

- a) Consultations are held within NRF and with relevant stakeholders on the strategic need for a RFA;
- b) RFA is published the national print and electronic media;
- c) RFA commence with a request for Registration of Intent and submission of a Concept Note;
- d) Each submission is provided with a unique code of reference;
- e) Adequate time is provided for the open RFA (at least eight weeks);
- f) Detailed guidelines are provided the would be applicants;
- g) A Frequently Asked Questions (FAQ) site is maintained on the NRF's website;
- h) Concepts Notes are screened for eligibility by NRF Secretariat;
- i) Eligible Concept Notes are submitted to an independent expert panel of reviewers who



- objectively review and provide recommendations of those to be shortlisted;
- j) Those shortlisted are invited to prepare and submit full proposals based on a provided template giving specifications for the:
 - o Technical Component of the Proposal
 - o The Financial Component of the Proposal
 - k) All submissions will be filed and treated as confidential documents by NRF.

5.5.2 Screening for Eligibility

Screening for eligibility is the first step in evaluation of any submission to NRF. It is proposed that, this be undertaken by the NRF Secretariat based on the criteria published. A full report with adequate justifications would be provided to the Board of Trustees at the end of the screening period.

Some of the considerations of screening at this phase should be whether:

- i. The submission addresses one of the NRF priority areas;
- ii. The applicant has the minimum academic qualification;
- iii. The indicated budget is within the NRF funding limits;
- iv. Adequate supervision and mentorship capacity is available; and
- v. The host institution or organization of the applicant has submitted a profile and is judged to have the capacity and experience to implement the proposed work.

5.5.3 Review of Concept Notes and the Full Proposal

Award of grants based on recommendations of an independent expert panel of peer reviewers is an important cornerstone in any grant awarding institution. This is a principle that NRF needs to be committed to. It is important that issues of Conflict of Interest and Confidentiality are firmly and decisively dealt with. Public confidence in NRF will ultimately rest on how these merit review systems are designed and work. For an effective merit review process, it is proposed that:

- i. All submissions be evaluated by an external panel and recommendations provided to Board of Trustees;



- ii. Each submission that passes the pre-screening is submitted to three external peer reviewers who evaluate and rate the application using an assessment tool and based on a reviewers' handbook;
- iii. Each reviewer submits to the NRF Secretariat an evaluation of the application stating whether the proposal should be:
 - Accepted for preparation of the full proposal without modification (in case of Concept Notes) or award for funding (in case of full proposals);
 - Accepted for preparation of the full proposal (Concept Notes) or award for funding (full proposal) provided the recommended changes (with reasons) are accepted by the applicant;
 - Rejected, with adequate indication of the reasons for the rejection. These would be used as feedback to the applicants;
 - Applicants who submit similar proposals may be asked to collaborate and resubmit a joint application.
- iv. Each external peer reviewer prepares two reports:
 - An assessment report giving details on how the application was reviewed. This report will be sent to the applicant as feedback.
 - A confidential report (where necessary) that will not be sent to the applicant.

5.6 Merit Review System

A merit review system comprises competitive selection and training of reviewers, roles of peer reviewers, and guidelines for reviewers. It is recommended that an external panel of peer reviewers be competitively assembled based on the disciplinary expertise required. The reviewers must be internationally recognized in their own fields' of research and must demonstrate to have adequate project management experience.

5.6.1 Competitive Selection and Training of Reviewers

The NRF will maintain a pool of reviewers selected by the NRF Board of Trustees using the following criteria:

- i. Minimum qualification of a Masters degree in a field relevant to the NRF priority area;
- ii. Strong technical expertise and long experience in one or more of the priority areas supported by the NRF;



- iii. Familiar with national development policies, strategies, goals and objectives; and
- iv. Ready and willing to work within the rules and guidelines of the NRF.

The selected reviewers will undergo training in principles of objective proposal review and assessment. The trainings will be organized as need arises to bring on board new reviewers and address emerging issues and challenges.

5.6.2 Role of Peer Reviewers

The reviewers will review and rate proposals according to the guidelines for reviewers, and make recommendations, which will form the basis for the selection of proposals by the NRF Board of Trustees. Peer reviewers will also provide written feedback for submission by the NRF Secretariat to principal investigators for each proposal, to provide feedback on the recommendations made. An honorarium will be paid to each reviewer for each proposal reviewed.

5.6.3 Guidelines for Reviewers

To assist in the process of reviewing proposals, the reviewers will use the guidelines briefly discussed below.

5.6.3.1 Reviewers' Reports

Reviewers' critique (excluding any confidential remarks, reviewer's name and address) will be routinely forwarded to principal investigators to provide feedback on proposals that are recommended and not recommended. No material should be included which might allow the applicant to identify the reviewer. Each reviewer will prepare two reports: the first report will be a substantive critique of the proposal and will be sent to the principal investigator, while the second report will be a confidential report that will be submitted for attention of the NRF.

5.6.3.2 Confidentiality

The NRF Secretariat receives research proposals in confidence and is responsible for protecting the confidentiality of their contents. For this reason, a reviewer is requested to respect this confidence and refrain from copying, quoting, or otherwise using material from the proposal. If a reviewer believes that a colleague can make a substantive contribution to the review, he/she should consult the NRF Secretariat before disclosing the contents of the proposal.



When a reviewer completes the review, or if he/she finds himself unable to review, he/she should return the proposal to the NRF Secretariat.

5.6.3.3 Conflict of Interest

If a reviewer discovers that he/she has a conflict of interest in providing an assessment, he/she should note this conflict as part of the confidential remarks. If there is a major conflict of interest, the proposal (annotated to this effect) should be returned un-assessed.

5.6.3.4 Reviewer-Applicant Contract

It is not expected that a reviewer will contact an applicant directly to discuss a research proposal. If significant contact is inevitable or occurs, it should be noted as part of the confidential report.

5.6.3.5 Review and Rating of Proposals

The reviewers will review and score proposals according to an assessment form provided beforehand by NRF and based on the guidelines of the handbook for reviewers. Some of the assessment areas that NRF may wish to adopt include:

- i. **Title:** Comment on whether the title is descriptive and whether it reflects the problem and objectives of the proposal;
- ii. **Summary:** Comment on how the summary paraphrases the problem, objectives, methodology and outputs;
- iii. **Review of Literature and Related Work/Literature Review:** Comment on how the proposal relates to other work (both past and current) in similar areas and the gap being addressed by the proposal;
- iv. **Contextualizing the problem and rationale for the proposed research:** The review should show whether the problem being addressed is clearly stated in the perspective of the larger field in which it is embedded and how the problem relates to the NRF priorities and contributes to their development;
- v. **Objectives of the research work:** Comment on whether there are clearly stated objectives flowing from the problem statement;
- vi. **Expected Outcomes and Target Group (s):** Comment on the expected outcomes and performance monitoring indicators and how outcomes will be disseminated to the target groups;



- viii. **Budget and Timeframe:** Comment on the likelihood of achieving the objectives of the proposal within the budget and timeframe indicated; and
- ix. ix. **Synergies and Cost-Effectiveness:** Comment on the likelihood of achieving synergies and cost-effectiveness through teamwork and networking.

5.6.3.6 Reviewer's Recommendations

For each proposal, the reviewer should make only one of the following recommendations:

- i. i. Recommended for funding;
- ii. ii. Recommended for funding after minor corrections/revisions have been made;
- iii. iii. Recommended for revision and resubmission; and
- iv. iv. Not recommended.

Each reviewer should be expected to provide:

- i. A detailed critique of the proposal, a copy of which will be sent to the applicant for the purpose of providing feed-back on the recommendation made; and
- ii. A confidential report (if necessary) on the recommendation made (this report will not be sent to the applicant).

5.6.3.7 Reviewer's Response

Reviewers should accept to commit to timely evaluation and provision of the required responses. If for any reason a reviewer cannot review a proposal, or may not mail the evaluation report to reach NRF Secretariat within the required time, he/she should immediately return the proposal to the NRF Secretariat.

5.6.3.8 Formal award of grants

Generally made by the governing board based on recommendations from technical review panels, possibly with consideration of additional criteria, such as regional equity, strategic partnership development, and funding mobilization.



5.6.3.9 Correspondence

All correspondence should be addressed to the Director and Chief Executive Officer (CEO) of NRF. Reviewers should be required to use the quickest means of submitting their assessment preferably by a secured online method.

5.7 Procedures for Grants Management

5.7.1 Administration and Management of Funds

The following are proposed as broad principles for the management of funds:

- i. The management of funds will follow administrative procedures established by NRF, based on government procurement and financial regulations;
- ii. The administration and management of grant funds will follow procedures of the host/participating institution based on approved work plans and budgets. Where there is conflict with NRF regulations, the NRF regulations take precedence;
- iii. For self-employed investigators, the grant funds will be managed by the NRF Secretariat which will be the institution of reference;
- iv. The NRF Secretariat will receive all financial documents from institutions and individually check them for accuracy and authorize payment. The Secretariat will ensure timely preparation and accuracy of accounts of reports;
- v. The beneficiary institution responsible for administration and management of the grants may be eligible for a negotiated overhead not exceeding 10% of the grant.

5.7.2 Timely Disbursement of and Accounting for Funds

Timely disbursement of funds is a prime responsibility of NRF. The timely accounting in use of these funds should be the responsibility of the grantee. Other principles that need to be adhered to include:

- i. The host/participating institution (or the principal investigator in the case of self-employed investigators) will submit a request for an advance to cover expenses for the first six months according to the project work plan and budget using NRF Form for request for initial advance;
- ii. The institution (or individual investigator) will submit a statement of actual expenditure for the five months of the funds allocated and a request for additional advance to



cover expenses for next six months according to the project work plan and budget using NRF Form for expenditure report and request for additional advance. This process will be repeated every six months for the life of the project. Statements of expenditure do not need to be accompanied by supporting documents, but the participating institution or the NRF Secretariat must retain the original supporting documents for the NRF and donor supervision/audit teams. The NRF and donors reserve the right to call for and examine documentary evidence of various payments made;

- iii. After the initial advance, no further advance will be made unless satisfactory progress and scheduled reports are received. Failure to provide a satisfactory account of expenditure may result in the immediate suspension or termination of NRF funding and in the refund to the NRF of any funds which, in the opinion of NRF, have not been satisfactorily accounted for;
- iv. NRF and donor audit teams reserve the right at any time to inspect the books and accounts relating to any NRF funded project. The NRF is subject to external auditors acceptable to NRF and donors. The audit reports shall be published and copies made available to donors and organizations supporting the NRF; and
- v. On completion of the project, any unspent balance from the NRF grant must be refunded to the NRF, unless otherwise agreed with NRF and donors supporting the NRF. The institution and/or the principal investigator must also refund funds relating to unsupported and/or ineligible expenditure.

5.8 Reporting Requirement, and Performance Monitoring and Evaluation

5.8.1 Reporting Requirement

In order to ensure accountability, NRF should insist that the following are adhered to:

- i. A quarterly progress report will be submitted by each principal investigator which records progress in relation to performance objectives, the schedule of activities, constraints and plans for the next quarter. If the report is not received within two months after the quarter ends, the participating institution (or principal investigator in the case of self-employed investigators) will be directed to cease expenditure of funds until the report is received. No further disbursement of grant funds would be approved until the situation is satisfactorily remedied;



- ii. ii. For projects taking more than one year, an annual report will be required. The report, will be a detailed description of progress in the year; it will summarize significant results from the previous 12 months' work;
- iii. iii. A Completion Report is also required. This report should stress results and likely impact. The final payment to the institution or individual scientist (if applicable) will not be issued until the report is received; and
- iv. iv. All reports will be examined for completeness, attachment of required documentation and relation to the projected expenditure plan. The participating institution and/or principal investigator may be asked to provide explanations and make additions and corrections. If reports are not forthcoming, or unsatisfactory, no further disbursement will be made.

All reports should be prepared according to NRF guidelines on performance report preparation.

5.8.2 Performance Monitoring and Evaluation

Monitoring and evaluation is based on detailed targets and milestones provided in project proposals, and on semi-annual and annual reports from grant recipient. Program evaluations must be planned when the program is launched, and should focus on project outputs, outcomes, and impacts. The monitoring and evaluation system must cover individual grant projects, portfolio management by the NRF secretariat, and institutional, economic, and social impacts of the NRF.

In order to ensure accountability and responsiveness, the NRF Secretariat will be responsible for undertaking performance monitoring and evaluation of the approved projects. The actions that will be taken by the Secretariat to monitor administrative and programmatic concerns are proposed below as suggestions for corrective action:

- i. i. A reminder notice will be sent to each principal investigator and participating institution before the end of the quarter of year advising of reports due. If the reports are not received within two months of scheduled date, notices to cease funding will be given promptly to the participating institutions;



- ii. All the quarterly and annual reports will be examined by the NRF Secretariat and will be used as a basis for monitoring and evaluation together with the proposal document;
- iii. The NRF Secretariat will arrange monitoring visits in conjunction with selected peer reviewers and members of the Research and Technical sub-committed to review:
 - o Progress in the implementation of projects;
 - o Changes that can be made for those projects that appear to be in trouble; and
 - o Whether the reports reflect reality and to gain information to pass on to others as to how to conduct a successful project.
- iv. If a project appears to be incapable of meeting its objectives and/or being implemented unsatisfactorily, it may be terminated by the NRF Secretariat through mutual consent or when conflict exists; and
- v. The NRF Secretariat will periodically conduct workshops and seminars to train researchers from a wide range of institutions on how to prepare research proposals, maintain records, and efficiently manage research projects.

5.9 Contractual Obligations and Force Majeure

The relationship between the NRF and the grantee should be formally captured in a binding contract. This should make provisions for:

5.9.1 Contractual Obligations

- a) When a proposal is approved and signed by the principal investigator, the host/participating institution and the NRF, a formal agreement is made between the three parties;
- b) Each approved and signed proposal will be given a contract number that will be quoted on all accounting documents to facilitate appropriate posting of expenditures according to the sources of funds. For each contract, a file will be opened to keep the necessary records including a copy of the project, reports on the implementation of the project and copies of accounting documents;
- c) The NRF undertakes to ensure the confidentiality of proposals and unpublished results, timely and regular disbursement of funds, payment of overheads and sums due and outstanding in the event of the contract being terminated for any reasons;
- d) The host/participating institution undertakes to:



- o Administer the contract in an efficient manner and provide personnel, transport, equipment, financial resources, other facilities and services necessary for the project as indicated in the proposal;
 - o Assist in monitoring the implementation of the project;
 - o Refund funds relating to unsupported and/or ineligible expenditure; and
 - o Refund unspent balance on completion of the project unless otherwise agreed with the NRF Secretariat.
- e) The principal investigator undertakes to:
- o To start implementation of the project within six months of the award of the grant;
 - o Submit quarterly progress reports, annual reports (if applicable) and a project completion report;
 - o Agree on the termination of the contract upon proven unsatisfactory performance;
 - o Refund funds relating to unsupported and/or ineligible expenditure;
 - o Refund unspent balance on completion of the project, unless otherwise agreed with the NRF Secretariat;
 - o Keep the NRF Secretariat informed on any possible applications of research results and acknowledge the NRF in eventual publications;
- f) The NRF reserves the right to terminate the contract if implementation of the project is not commenced within six months of the award of the research grant;
- g) The NRF does not claim rights to any publications, inventions or patents arising out of a project, but must be kept informed of any possible applications of research results and eventual publications;
- h) Upon completion of the project, the equipment purchased from grant funds will normally become the property of the host/participating institution, unless otherwise stated in the addendum to the agreement;
- i) If in the opinion of the NRF, it appears desirable that a contract should be terminated for any reasons, the NRF may at any time inform the host/participating institution or the principal investigator (PI) of its decision by a written instruction to that effect. The institution or PI will submit an account in writing which will state the amount claimed, taking into account all fees and costs properly incurred or committed by the institution of PI in



relation to the contract which cannot be recovered, and taking into account outstanding advances;

- j) j) If payments are within the financial limit and not subjected to dispute, the NRF will pay all sums due and outstanding under the terms of the contract up to and including the date of termination; and
- k) k) All the special conditions given in the addendum to the agreement will be part of the agreement and will be legally binding.

5.9.2 Force Majeure

If performance of the contract by the either party is delayed, hindered or prevented, or otherwise frustrated by reason of force majeure (civil commotion, fire, flood, action by any government or any event beyond the reasonable control of the party affected) then the party in writing specifying the action of the force majeure and of the anticipated delay in the performance of the contract. The implications of this are that:

- a) a) From the date of that notification, the NRF may as its discretion either: i) The contract terminate the contract immediately, or suspend the performance of the contract for a period not exceeding six months;
- b) b) In the event of the contract being terminated by reason of force majeure, the participating institution/individual will submit an account in writing which states the amount claimed taking into account all fees and costs properly incurred or committed by the participating institution or individual in relation to the contract which cannot be recovered, and taking into account outstanding advances; and
- c) c) If payments are within the financial limit and not subject to dispute, the NRF will pay all sums due outstanding under the terms of the contract up to and including the date of termination.

5.10 Publications and Dissemination

5.10.1 Publications

NRF should encourage researchers to publish their result in peer-reviewed international journals of repute/high impact. This may include incentive mechanisms. Such publications provide important support for researchers seeking new funding from the NRF and other agencies.



The publications should be submitted as part of the Annual Report and/or Completion Report. The NRF does not claim rights to any publications, inventions or patents arising out of a project, but must be acknowledged and kept informed of any possible applications of research results and eventual publications.

5.10.2 Dissemination

The research results should be widely disseminated to reach the relevant stakeholders, particularly policy makers, funding agencies, and end-users of technologies and innovations. The dissemination mechanisms include but are not limited to, the following: technical reports, news releases, journal articles, fact sheets, videos, workshops, conferences, seminars, consultative meetings, and technical advisory groups.

To ensure effective dissemination of research results, it is recommended that the NRF develops and maintains an information system to facilitate sharing of research knowledge and information.

Globally, the principles, guidelines, rules, operational procedures and regulations are published in an operational manual which is regularly reviewed and made available to the stakeholders. It is therefore recommended that the NRF prepares an operational manual for the fund.



CHAPTER SIX

6. Anticipated Challenges in NRF Implementation

6.1 Introduction

A discussion on the effective establishment of the NRF cannot be complete without some discussion on challenges that the Fund is likely to face during the implementation of the operational phase. Some of these challenges arise due to the historical context of Kenya's development. The fact that the country has a new constitutional order that increasingly devolves the centrality of development to Counties, the increased consciousness and education level of the citizenry and requirement of their participation in all matters of national importance; as well as the increase in GDP are all factors that need to be considered. Kenya has also a well-established and institutionalized research delivery mechanism that is driven by specialized research institutions as well as private and public universities. These institutions have expressed an overwhelming national need for the establishment of this Fund as was observed during the stakeholders' forum as well as in forums where discussions relating to establishing of a national research funding mechanism have been held. Despite expressing this national need, it is also clear that there are also varied and general misconceptions on the role of the NRF in Kenya. Failure to properly anticipate and address these issues can have costly consequences on the operationalization of the Fund. It is important that the likely capacity gaps that NRF may face are identified right from the beginning, and that they should be systematically addressed drawing on the widespread practical experience of strengthening similarly placed institutions, based on accepted good-practice approaches.

Performance of research funding organizations has been receiving an increasing global discourse. The Organization for Economic Co-operation and Development (OECD) and the Global Science Forum have been very active at this and in 2011 published a detailed report on opportunities, challenges and good practices for international research. In 2009, the Portuguese Foundation for Science and Technology (PFST) in conjunction with the US National Science Foundation (NSF) hosted an international Workshop on the challenges of managing research accountability, which is accessible at: www.nsf.gov/oig/Lisbonsummary.pdf. These discussions are very revealing in terms of the variety and complexities of challenges that the NRF needs to be well aware of. The PWG has identified key among these that the NRF will need to pay close attention to, in order to meet its mandate and deliver on its national obligations.



Strategic response to these issues needs to be factored in the development of the first five-year strategic and implementation plan of the NRF. Some of the issues that need addressing include:

- i. Contextualizing the NRF vision, mission and strategic objectives within a modern ST&I driven paradigm of development;
- ii. Awareness building of on the purpose, scope and strategic orientation of the Fund;
- iii. Implementing an integrated approach to policy setting;
- iv. Balancing competing interests of institutional goals, government priorities, and regulatory frameworks;
- v. Ensuring national accountability of the NRF;
- vi. Effectively managing applicant demands;
- vii. Coordination of other sector-specific research funds;
- viii. Coordination of donor contributions; and
- ix. Ensuring NRF impact at local levels.

6.1.1 Contextualizing the NRF Vision, Mission and Strategic Objectives within an ST&I Driven Paradigm of Development

Kenya has made a strategic decision on the path it wants to follow in terms of implementing a developmental paradigm based on Science, Technology and Innovation (ST&I). The establishment of the NRF is occurring in a period when global moves towards utilizing knowledge, and associated innovations, as a basis for economic growth, development, wealth creation and global competitiveness have resulted in the emergence of the so-called “knowledge economy”. Vital to this new economy, is the ability to produce new knowledge and to reproduce, apply and contextualize existing knowledge. The Southern African Research and Innovation Management Association (SARIMA <http://www.sarima.co.za>) advises that with the shift from “factor driven” model to an emphasis on knowledge, skills, innovation and enterprise as the cornerstones of the new economy, organizations and institutions – particularly those involved in research and technology development – are becoming increasingly dependent on their ability to develop, measure and manage their research and innovation activities and expertise. Increasing competitiveness and greater geo-political significance has transformed research and innovation from something that individuals engage with, into a serious business for researchers/innovators and their institutions. What used to be viewed as a linear process, led by either demand or supply, has evolved into a complex synergistic interaction linking potential users with new developments and discoveries.



What this means is that when operational, NRF must deal with the full range and complexities of processes involved in research and development (R&D), business development and human capital development, within a National System of Innovation (NSI) that will involve interacting private and public entities, education institutions, government agencies and donor organizations. NRF needs to deliberately set out to ensure that it has the required capacities to operate effectively and efficiently within this changed and challenging environment and meet both broad and specific objectives for the social, cultural and economic development of the Kenyan society. Some of the challenges which will be faced in this context include prioritizing disciplinary research areas; balancing different types of research and innovation outputs; providing spaces for different modes of conducting research and innovation; expanding the scope of funding sources; and collating all of these within a coherent, efficient and responsive management system.

From an international standpoint, NRF cannot afford to operate in isolation. The Fund must be able to understand and deal with the forces of competitiveness and globalization that are continually accelerating the scope, pace and importance of cross-border research activities. NRF must invest in internationalizing the national research effort, driven by the need to establish a global reputation, to access global knowledge and expertise, and to exploit new sources of finance for its sustainability.

6.1.2 Awareness Building of on the Purpose, Scope and Strategic Orientation of the Fund

During the operationalization phase, NRF will need to allocate time and resources to create awareness by educating the Kenyan public on the purpose, scope and orientation of the Fund. Since misconceptions seem to occur at various levels, it is important that a multi-dimensional strategy is developed and adopted. The PWG has already sensed that the research sectors and institutional stakeholders have different understanding on what the NRF will or will not fund. There is also need to clearly articulate a clear understanding on the sourcing and allocating public resources for disbursement by the NRF. The PWG could clearly foresee that there were glaring gaps in crucial information that is required and which is not provided in any of the documents they reviewed. For instance, is there a role for private investment in NRF? Will the private sector actors be able to compete for and be allocated NRF funding?



What aspects of the research institutions will benefit from NRF funding? Will recurrent expenditure (e.g. costs of staff) of these institutions be funded through the NRF? PWG is convinced that these issues need to be addressed up-front so as to avoid unnecessary misunderstandings.

6.1.3 Implementing an Integrated Approach to Institutional Policy Setting

OECD notes that ST&I programmes are more likely to succeed if they can be naturally and usefully integrated into existing national priorities, such as innovation and growth strategies and programmes that have already been adopted by governments. Knowledge of such overarching policies is crucial element of the programme design for NRF, especially if the national actors themselves also included ST&I as part of a broad national development strategy. Where these policies are lacking, NRF has to be proactive to ensure that an enabling policy environment is created. Planning for science-led development agenda that is characterized by an extensive involvement of the national governmental authorities is sometimes referred to as being “top-down”, as opposed to being a “bottom-up” approach in which the initiatives, discussions, decisions and actions take place chiefly among the researchers themselves (aided, perhaps, by the administrators of the research institutions that are most directly involved in the research). A mixture of the two approaches that selects the optimal ratio for NRF, is worth considering. Governmental agencies are well placed to identify the challenges they are facing, and researchers need to consider the contribution that their research can make to meet national needs.

6.1.4 Balancing Competing Interests of Institutional Goals, Government Priorities, and Regulatory Frameworks

Government tends to lead in setting priorities and expectations for their research organizations that relate to delivering high quality research, that is internationally recognized, and which, increasingly, addresses local economic and social issues. Research performance is subject to influences (positive and negative) from institutional goals, government priorities and regulatory frameworks. Defining good research performance and using it in both broad and individual research planning can help to provide some alignment with national goals. Including knowledge exchange as part of research performance is increasingly important, but brings with it a number of challenges, especially because of the commercial nature of much of it. Achieving performance will be important for the Fund, but needs to be done while managing conflicts of different players, constraints and variations, observing the law, and applying good practice, integrity and good governance.



6.1.5 Ensuring National Accountability of the NRF

It is common practice in most countries where a national research funding facility has been established that all funded research is regularly reported to the public, the supposed beneficiaries as tax payers. For instance, the Japan Society for the Promotion of Science (JSPS) established a research facility known as 'KAKENHI'. This is the largest grant programme of JSPS and comprises about 40% of all governmental research grants covering basic and applied research for all fields of science. The facility utilizes a competitive system to make research award decisions. Researchers are required to disclose their research results to taxpayers. Research results are posted to a JSPS website database. In order to meet the requirements of public scrutiny, most funding entities establish internal and external audit systems. Quoting from the Research Council of Norway, these systems ensure that "an independent, objective assurance and consulting activity designed to add value and improve an organization's operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes". The NRF will need to develop robust systems for ensuring that it is held regularly accountable by the public.

6.1.6 Effectively Managing Researcher Demand

Increase in researcher demand will be a factor that the Fund will need to contend with right from the beginning. Establishment of a research-financing Fund of the size and scope of the NRF for the first time in Kenya is likely to be met with an increase in demand by researchers. Increase in demand and volume of applications can have a negative effect on the efficiency of the process and over burden the merit review process. Different similarly placed institutions have used various methods for managing researcher demand. The Engineering & Physical Sciences Research Council (EPSRC) of the United Kingdom has ceased to accept re-submissions, apart from a small number of invited proposals, has introduced a constraint on repeatedly unsuccessful applicants. In addition EPSRC plans to enhance the transparency of its decision-making process and provide additional advice and guidance to institutions and academics on this issue. The outcomes expected out of this process are:

- i. Better quality research through fewer, more considered proposals;
- ii. Increased efficiency of the current peer review process reducing submission of uncompetitive applications;



- ii. iii. A reduced burden of effort spent on assessing poor quality applications by the peer review community;
- iv. iv. More time and effort available to peer reviewers to spend on the consideration of high quality proposals; and
- v. v. Increase in communicating new opportunities rather than only providing feedback of success rates.

The NRF need to be very aware that its existence could generate interest that far surpasses the capacity it has to effectively respond.

6.1.7 Coordination of other sector-Specific Research Funds

Upon operationalization, NRF will find already existing and anticipated research funds for specific sectors established under different laws. In addition indications from other sectors not only point to the fact that they want to have full control of their research funds, but also that they expect to get direct allocation of their research funding component from NRF. Since the ST&I Act that establishes NRF supersedes other laws in regard to Science, Technology and Innovation, NRF should establish a coordinating mechanism to harmonize the operation of other existing research funds. This can also be achieved by amending the Act to give NRF a mandate to coordinate research funding in the country so as to achieve the benefits indicated in section 3.2.6 of chapter three.

6.1.8 Coordination of Donor Contributions

NRF is expected to receive various donor contributions to support research in various sectors or to address specific issues. This will require appropriate structures to coordinate donor contributions which will mostly be channeled through treasury. These structures must include monitoring and reporting systems that will be able to meet the varied donor demands.

6.1.9 Ensuring that NRF impacts on Local Levels

The development challenges at the devolved government levels vary from one county to another and therefore, NRF must be seen to support research that addresses county specific challenges. This will require that NRF, NACOST and KENIA work with County governments in prioritizing their research and development to address their local challenges. This will ensure that NRF is seen to work with and impact at these levels.



In conclusion, it is important to stress that operationalizing the NRF is likely to meet some foreseen and unforeseen challenges that the Fund must have inbuilt capacity to address. From a governance and management level, it is important to ensure that the administrative procedures are not weak, laws and regulations are not in any way defective, and policy environment is adequate. Strengthening accountability mechanisms and enhancing transparency about policies and policy outcomes can tackle the governance challenges associated with trust funds. Ultimately, results and impact will depend on moving research along the innovation value chain, from basic to applied research, then to development and commercialization if applicable, and finally uptake and application. Implementation and results will require the best efforts of many stakeholders, ultimately working together towards the national ST&I vision, and towards the fulfillment of the larger national vision for human, social, economic and environmental development, as articulated in the country's economic development blue print, the Kenya Vision 2030. The specific aims, actors (key stakeholders), early actions, accountability, Key Performance Indicators (KPIs) and challenges for each objective, will be the means to verify the success of operationalization and implementation of the Fund.



References

1. African Union (AU). 2014. Science, Technology and Innovation Strategy for Africa-2024 (SIISA 2024-).
2. African Union (AU) and New Economic Partnership for Africa's Development NEPAD. 2005. Africa's Science and Technology Consolidated Plan of Action.
3. Elisworth, L. 1998. The Road to Sustainability. Office of Sustainable Development Bureau of Africa, United States Agency for International Development (USAID). Technical Paper No.85
4. Government of Kenya (GoK). 2013. Science, Technology and Innovation Act.
5. GoK. 2013. Report of the Taskforce on Parastatals Reforms.
6. GoK. 2013. Kenya Vision 2030 Second Medium Plan (2013-2017).
7. GoK. 2012. Public Finance Act, CAO 412.
8. GoK. 2010. The Constitution of Kenya.
9. Kenya Vision 2030.
10. Kenya Agricultural Research Institute (KARI). 1997. Agricultural Research Fund (ARF) Manual.
11. NEPAD. 2014. African Innovation Outlook.
12. NEPAD. 2010. African Innovation Outlook.
13. Weatherly, P. 1995. Handbook on Endowments: Using Alternative Funding Mechanisms to Support Agricultural and Natural Resources Management Programs in Africa. Washington D.C: United States Agency for International Development.
14. Zablun Owiti and James Matata. August. 2014. Report on the 1st Stakeholders Consensus Building Workshop on the Design and Conceptual Framework for Operationalization of the National Research Fund Organized by the National Commission for Science, Technology and Innovation (NACOSTI) and the Consortium for National Health Research (CNHR).

