



REPUBLIC OF KENYA



NATIONAL RESEARCH FUND



# The Research Horizon

Newsletter

Funding Research For  
Sustainable Development

[www.nrf.go.ke](http://www.nrf.go.ke)



## Foreward from the Chairman

It is with great pleasure and enthusiasm that I extend my warmest welcome to readers and stakeholders in launching inaugural edition of the 'NRF Insights Newsletter'. On behalf of the Board of Trustees of National Research Fund (NRF), we congratulate the Management and Staff for this initiative which demonstrates the impact of previously funded research. Of significant is the critical role played by Science Technology and Innovation towards achieving economic development in Kenya as recognized in Vision 2030 as well as the Sustainable Development Goals (SDGs).

This newsletter serves as a testament to the unwavering commitment of the National Government in supporting the Fund to advance research, innovation, and knowledge dissemination. As you read this publication, you will embark on a journey that unfolds the essence of NRF, its historical roots, and the dedicated individuals who steer our noble mission. I extend a heartfelt welcome to the newest members of our esteemed staff, whose fresh perspectives and energy invigorate our pursuit of excellence.

Central to this edition are the highlighted NRF-funded projects that epitomize our dedication to fostering groundbreaking research. These projects underscore our role in addressing pressing societal challenges, reflecting our commitment to contributing meaningfully to the betterment of our nation and beyond.

In our pursuit of innovation, collaboration emerges as a key theme. The spotlight on collaborative research activities with esteemed partners such as the Science

Granting Council Initiative, British Council, and the French Government demonstrates our commitment to forging partnerships that amplify the impact of research. Together, we leverage on collective expertise to tackle complex issues and drive positive change.

Furthermore, knowledge-sharing is very vital within the research community. This edition showcases our contributions to conferences, learning events, capacity-building workshops, and policy dialogues. These platforms not only facilitate dialogue but also serve as conduits for disseminating research findings, fostering an environment where knowledge thrives.

I commend the editorial team and all contributors for their dedication in enriching this newsletter, transforming it into a vibrant platform that celebrates and disseminates the exciting research happening within our institution.

As we delve into the pages of this newsletter, I invite our esteemed stakeholders from academia, the private sector, relevant agencies, and the broader public to actively engage with its content. Your insights and contributions are integral to our collective journey towards advancing research for a brighter and more sustainable future.

**Prof. Ratemo W. Michieka, EBS, FKNAS,  
CHAIRMAN, BOARD OF TRUSTEES**



## Message from the CEO

The growth and development of a nation lies in its investment in Research, Technology and Innovation. The National Research Fund (NRF) was established to bridge this gap and to ensure Kenya achieves an effective national innovation ecosystem that generates valuable knowledge for socio-economic development. We are delighted to launch the inaugural edition of NRF Newsletter, which serves as a beacon to illuminate the remarkable strides and breakthroughs achieved in the realm of funding research projects. The key features arise from outputs of previously funded programs such as multidisciplinary, infrastructural and multilateral research grants.

In this edition, we provide a comprehensive overview of the NRF's multifaceted efforts to advance research, innovation, and knowledge dissemination in alignment with our mandate as defined by the Science, Technology, and Innovation Act of 2013. Section 32 of the Science, Technology, and Innovation (ST&I) Act No. 28 of 2013 established a Fund with the primary objective of mobilizing, allocating, and managing financial resources to advance Research and Technology in Kenya.

Notably, the Act mandates the allocation of 2% of the country's Gross Domestic Product (GDP) annually to support research initiatives. In line with this commitment, the Government has made significant strides towards realizing this objective by investing in the country's Research and Development (R&D) agenda through the National Research Fund (NRF). This proactive approach aims to propel Kenya's research

and technological capabilities forward, ultimately contributing to the nation's economic and social progress.

Our unwavering commitment is to support the highest caliber of research that aligns with our national objectives and meets international standards. We are dedicated to advancing the Sustainable Development Goals (SDGs) and the African Union's Agenda 2063, Vision 2023 (MTPs) and the government of the day's agenda – Bottom-Up Economic Transformation Agenda pillars which forms national research priorities. These key focus areas encompass Agriculture and Food Security, MSMEs and Financing, Housing, Universal Health Access and ICT and Digital and Creative Economy.

In our pursuit of excellence, NRF has consistently ensured that all those seeking funding from the NRF pledge to uphold the highest standards of research conduct and reporting. Furthermore, we insist that researchers commit to effectively communicating their findings, ensuring their seamless integration and application.

We are deeply committed to fostering collaboration and engagement with our valued partners and stakeholders. While we have successfully organized various engagement platforms such as workshops, conferences, and online interactions, we recognize the need to expand our outreach and embrace new communication avenues.

**Prof. Dickson Andala**  
**CHIEF EXECUTIVE OFFICER**



## Editorial

Dear Readers,

We are glad to unveil the inaugural edition of our revamped **Research Horizon Newsletter**, an illuminating chronicle of the remarkable strides and breakthroughs achieved in the realm of research funding projects by the National Research Fund. In this edition, we present a comprehensive overview of the NRF's multifaceted efforts to advance research, innovation, and knowledge dissemination.

In this edition, we feature a selection of NRF-funded projects, offering a glimpse into the diverse and groundbreaking research endeavors we support. These projects exemplify our dedication to fostering research development and addressing pressing societal challenges.

Collaboration is at the heart of innovation. In this edition, we feature collaborative research activities, such as our engagement with the Science Granting Council Initiative, British Council, French Government etc, which demonstrate our commitment to forging partnerships that amplify the impact of research.

Knowledge-sharing is vital in the research community. We highlight our contributions to multisectoral conferences, the National Learning Conferences, capacity-building workshops, and policy dialogues, all of which serve as platforms for fostering dialogue and disseminating research findings.

We, the editorial team, extend our appreciation to all the contributors who generously shared their insights and

experiences, enriched this newsletter making it a platform that celebrates and disseminates the exciting research happening within our institution.

Together, we will continue to drive innovation, make substantial contributions, and shape a brighter future. The NRF's mandate to disseminate research findings and foster innovation is at the core of our mission, and we are excited to embark on this journey with you, our valued readers.

Enjoy the reading!

**Titus Kisangau, MPRSK**  
**EDITOR-IN-CHIEF**

## Inside This Issue

- 1 Preamble
- 2 Editorial
- 3 Inside this issue
- 4 Introduction
- 5 Numbers at a glance
- 6 NRF funded projects
- 7 Collaborative research activities
- 8 Conferences and workshops
- 9 Featured articles
- 10 Opportunities corner
- 11 Upcoming events
- 12 Pictorials

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# Introduction

# Who We Are

The National Research Fund (NRF) is a State Corporation established under the Science, Technology and Innovation Act No. 28 of 2013 and became operational in 2015. The Fund is mandated to mobilize, allocate and manage financial resources to facilitate an effective national innovation system that creates required knowledge and innovations in all fields of Science and Technology

for the growing economy.

NRF has aligned its research and innovation funding programmes to the national research priorities, the country's development goals spelt out in Kenya Vision 2030, Third Medium Term (2018-2022) and the Bottom-up Economic Transformation Agenda (BETA) priority areas.



### Vision

A world-class research funding agency for the competitive knowledge economy.



### Mission

To mobilize resources for research, capacity development, dissemination of findings and maintenance of inventory for the advancement of Science, Technology and Innovation for sustainable national development.

### Transparency and Accountability

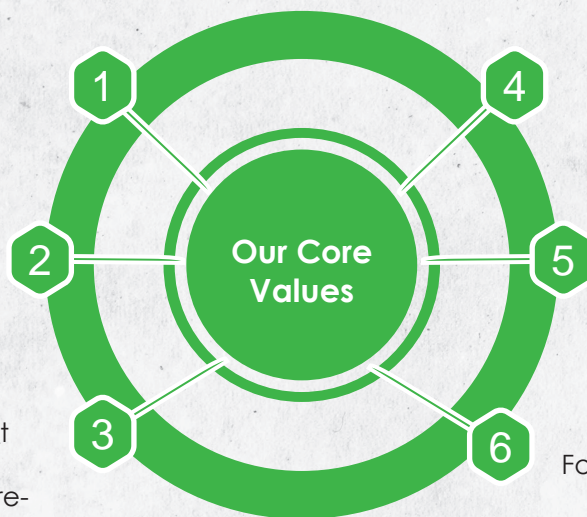
We aspire to manage resources effectively and efficiently

### Integrity

Observe operations' ethical values, principles, and norms

### Good Governance

Institute processes that produce results and make the best use of resources at our disposal



### Equity

Exercise fairness and impartiality

### Professionalism

Promote professionalism

### Sustainable Development

Foster development through research funding

## Our Key Functions

- **Mobilize** resources for the national innovation systems from the Government, the private sector, venture capital, development partners and other sources.
- Prudently **Manage** and invest the funds towards research development.
- 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 marginalised indigent communities.
- **Allocate** funds for research and promote multi-disciplinary collaboration among Universities and research institutions.
- Support the **development of research capacities** in the national priority areas of science, technology and innovation.
- **Evaluate** the needs, status and results of research financed through the Fund.
- Provide **financial support** for the **development of research facilities** by universities, research institutions and other bodies identified by the Commission.
- Provide **financial support** for **participation** in international scientific activities through maintaining membership to appropriate international science organizations.
- Provide financial support for **collaboration, cooperation and sharing of research information and knowledge**, including supporting conferences, workshops, seminars, meetings and other symposia.
- Promote the **provision of an information infrastructure linking** research institutions to facilitate cooperation and sharing of research information and knowledge.
- Initiate **liaison** with bodies involved in the protection of intellectual property rights.
- **Compile and maintain a national database of research and innovation** funded by the Fund as well as those funded by other agencies.
- Perform the **monitoring and evaluation** of the results and impact of the research activities financed out of the Fund.

## Science Thematic Areas

NRF facilitates research through key thematic areas based on Kenya's existing frameworks as listed in the ST&I Act 2013, Second Schedule Section 9(1), which include



Agricultural and Natural Resources Sciences



Infrastructure, Information and Communication



Biological and Health Sciences



Humanities and Social Science



Physical, Industrial and Energy Sciences



Earth and Space Sciences

## ST&I at the Epicentre of Africa's Social Economic Growth and Development

- The Constitution, Kenya, 2010.
- Sustainable Development Goals (SDGs).
- Kenya Vision 2030.
- The Science, Technology, and Innovation Act, 2013 (Rev. 2014).
- The Bottom-UP Economic Transformation Plan, 2022 – 2027
- Fourth Medium Term Plan (MTP IV) 2023-2027.
- National Education Sector Strategic Plan (NESSP).
- African Union (AU) Agenda 2063, etc.

## Funding Mechanisms

### Competitive Funding

NRF funds individuals or groups of individuals, institutions and firms through Grant Proposals Calls within the National Research Priorities in accordance with defined criteria and rules

### Matching Grants Funding

NRF collaborates with local and international development partners to fund joint research on areas of mutual interest

### Institutional Funding

These are grants provided to institutions for specialized and national strategic research facilities. The grant-making will be subject to a criterion

## Types of Grants

### Multidisciplinary Research Grants

This grant supports well-defined collaborative research projects that bring benefits through the development of high-quality research products.

### Bilateral/Multilateral Research Grants

NRF initiates strategic international partnerships with different countries and funding agencies to enhance technical cooperation in the ST&I sector.

### Strategic Grants

This grant addresses strategic and priority research interventions that are of national importance as the Board of Trustees may determine.

### Support to Scientific Events

This grant supports scientific seminars, forums, workshops & conferences.

### Innovation Grants

This grant supports innovations from individuals, recognized institutions and firms for national development as recommended by Kenya National Innovation Agency (KENIA).

### Incubation Program Grants

This grant is directed to the commercialization of economically viable research projects.

## History of NRF

Kenya has shown a strong commitment to promoting Science, Technology, and Innovation (ST&I) through various initiatives. During the first Medium-Term Plan (MTPI), one of the primary focus areas was to proactively address the intensification of innovation in priority sectors. To achieve this, in the 2008/2009 financial year, the government consolidated the research funds that were previously under the Commission of Higher Education (CHE) into a research endowment grants budget line. This budget line was administered by the National Council for Science and Technology (NACOSTI) on behalf of the Ministry of Education, Science, and Technology.

The initial allocation for this research endowment fund amounted to Ksh 250 million which increased over time to Ksh 497 million by the 2015/2016 fiscal year. The primary purpose of the research endowment fund was to support the advancement of scientific research, inventions, and innovations while building capacity in the ST&I sector for national development. The fund aimed to finance projects in priority areas aligned with the government's development agenda, as outlined in Vision 2030 and other policy documents.

The research endowment fund played a crucial role in promoting technological and social innovations by investing in novel technology development from proof-of-concept to pre-production prototype levels. It also provided funding for scientific and policy-oriented research to address societal challenges in line with government development targets. By 2016, the fund had supported a total of 1,816 research and innovation projects across over 100 institutions, both public and private, throughout

the country.

In line with global trends and consistent with the African Union (AU) position, discussions had begun around 2005/2006 within the Ministry of Education, Science, and Technology to formulate an ST&I Policy and Strategy. The aim was to elevate Science and Technology as a foundational element for national transformation, as outlined in Kenya's development blueprint, Kenya Vision 2030. One specific strategic issue within the ST&I policy aimed at securing adequate and sustainable funding for various Science, Technology, and Innovation components, facilitating cost-effective policy implementation. These initiatives included:

- Developing mechanisms to mobilize financial resources from both the public and private sectors for ST&I.
- Creating and promoting a robust institutional framework for mobilizing and managing ST&I resources for strategic national priorities.
- Supporting the establishment of mechanisms for regular review of funding mechanisms in ST&I.

- Reviewing administrative and financial procedures for ST&I funding to enhance the realization of set targets.
- Developing the ST&I infrastructure and human resource

To achieve these goals, institutional reorganization and strategic alignment were necessary. While the development of science and technology is a prime responsibility of the government and user organizations in centers of economic activities, establishing a proper institutional framework was essential to harnessing and directing funds towards national ST&I goals. This need led to the enactment of the Science, Technology, and Innovation (ST&I) Act of 2013. Section 32 of the ST&I Act No. 28, 2013, established the National Research Fund (NRF) with a mandate to mobilize, allocate, and manage financial resources effectively to support a national innovation system, fostering knowledge and innovations in all fields of Science and Technology to fuel the growing economy.

Following the establishment of NRF under the ST&I Act 2013, the Ministry of Education through National Commission for Science, Technology and Innovation (NACOSTI) initiated the process of national stakeholders' consensus-building to operationalize

NRF. On 26th August 2014 a national workshop with the support from the Consortium for National Health Research (CNHR) was organized to discuss the operationalization of the NRF. The workshop recommended formation of a Planning Working Group (PWG) from among ST&I sector stakeholders to develop a conceptual framework paper to guide the operationalization of the Fund. The PWG was appointed in October 2014. Relying on the provisions of the ST&I Act 2013, and in reference to other government policy papers, strategies and benchmarking with similar bodies in the region, the PWG report provided the basis for operationalization of NRF.

The Cabinet Secretary for Education, Science, and Technology formally published Legal Notice No. 129 in the Special Issue of the Kenya Gazette Supplement No. 144 dated 19th November 2014, announcing the commencement of NRF as provided in the ST&I Act of 2013. Subsequently, the NRF Board of Trustees was gazetted on 24th July 2015 and inaugurated on 10th November 2015. In December 2015, NRF secretariat consisting of three officers was appointed to assist the Board operationalize the new funding Agency.

The NRF inaugural Board of Trustees was composed of: -

1. **Mr. Tirop Kosgey – Chairman**
2. **Dr. Vincent Gaiitho - Member, KEPSA representative**
3. **Dr. Habil Olaka - Member - Banking Sector**
4. **Mr. Jared Osoro – Member, Banking Sector**
5. **Dr. JPR Ochieng-Odero – Member, East Africa Funding Agency**
6. **Ms. Edna Atisa – Treasury representative**
7. **Dr. George Ombakho – PS, Education representative**
8. **Dr. Moses Rugut – DG, NACOSTI**
9. **Dr. Salome Guchu – KENIA, Ag. CEO**
10. **Dr. Jemimah Onsare -Ag. CEO/Secretary, NRF**

As Stipulated in Part VII of the ST&I Act, 2013, the NRF's funding sources will include money provided by the Treasury, amounting to 2% of the country's Gross Domestic Product annually, other funds designated by Parliament, and sums of money received as donations, endowments, fundraising through resource mobilization or grants.

In response to the core function to build research capacity in the country, in October 2016, NRF made its inaugural calls for proposals in the categories of Postgradu-

ate research (PhD & MSc/MA), Institutional Infrastructure Support and Multidisciplinary research. Over the years, NRF has invested over Ksh 4.8 billion in more than 900 institutional research infrastructures grants, multidisciplinary research projects and Postgraduates fellowships.

To complement the limited government allocation against the Stipulated 2% of GDP, NRF has initiated strategic bilateral collaborations for resource mobilization towards research funding. Towards this end, NRF has established a number of matching funding collaborations where over **Ksh 691 Million** has been realized. These partnerships include: -

- UK - Newton Ufatiti Fund
- Kenya/South Africa
- European Union - Leap-Agri programme
- Science Granting Council Initiative (SGCI)
- France – PAMOJA mobility grants
- Germany – DAAD Scholarships
- British Council
- ACTS

These efforts have created interests and high expectations leading to Researchers and other stakeholders to continuously raise calls for more funding towards research on ST&I in the country.





**National Research Fund (NRF) will be hosting the Science Granting Councils Initiative (SGCI) Annual Forum and the Global Research Council (GRC) Sub-Saharan Africa Regional Meeting**

Convening from **13th to 17th November 2023** in **Mombasa**

 National Research Fund Kenya



## Board of Trustees



**Ratemo W. Michieka,**  
**Professor Emeritus PhD. (Rutgers, USA), EBS, SS**  
**Chairman**

Professor Ratemo was the founding Chairman of the African Scientific Research and Innovation Council (ASRIC); Distinguished Professor of Rutgers University, USA, with specialty in Weed Science and Environment. Formerly served as Vice Chancellor of Jomo Kenyatta University of Agriculture and Technology (JKUAT) and Director of National Environment Management Authority (NEMA)



**Mr. Ngei Wa Mutinda,**  
**Alternate to the PS,**  
 State Dept. of Higher Education and Research (SDHER).  
 Mr. Mutinda is the Deputy Secretary SDHER



**Ms. Edna Atisa,**  
**Member - Alternate to the PS,**  
 National Treasury  
 Ms. Atisa is an economist at Treasury.



**Dr. Florah Karimi**  
**Member - Research Funding Sector Organizations**  
 She currently works with the African Population and Health Research Center (APHRC), coordinating research capacity strengthening projects.



**Ms. Gladys Warirah (FCA)**  
**Member - Banking Sector**  
 Ms. Warirah is a Chartered Accountant working at Standard Chartered Bank.



**Prof. Robert Gateru**  
**Member - KEPSA**  
 Prof. Gateru is a holder of PhD in Microelectronic Engineering & Semiconductor Device Physics. Currently, the Vice Chancellor, Riara University.



**Dr. Samuel Kiplangat Tiriongo**  
**Member - Banking Sector Representative**  
 Dr. Tiriongo is the Director of Research and Policy at the Kenya Bankers Association, responsible for designing and executing the research agenda for the banking industry.



**Dr. Tonny K. Omwansa**  
**Member - Chief Executive Officer, KENIA**  
 He holds a PhD in Information Systems in which he researched on the adoption of mobile financial services at the base of the pyramid in Kenya.



**Prof. Walter O. Oyawa**  
**Member - Director General, NACOSTI**  
 He is a Professor of Civil Engineering, a holder of a PhD in Civil Engineering, and a holder of Executive MBA.



**Prof. Dickson M. Andala**  
**Chief Executive Officer**

He is an Associate Professor of Materials / Inorganic Chemistry, Multimedia University of Kenya; PhD in Materials Chemistry from Binghamton University and Postdoctoral Fellowship Pennsylvania State University, USA.



Board members and staff during annual retreat in Kwale County



# Our Team



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CEO



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Deputy Director, Resource  
Mobilization and Partnerships



Dr. Kioko Mwanja  
Ag. Deputy Director, Fund  
Management



Dr. Eliud Musotsi  
Ag. Deputy Director, Research  
Grants



CPA Momanyi Theophanus  
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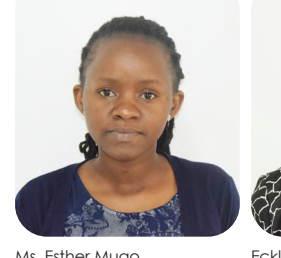
Ms. Jacline Muyalo  
Senior Resource Mobilization Officer



Ms. Linet Koskei  
Senior Research Grant Officer



Faith Osoro  
Senior Internal Auditor



Ms. Esther Mugo  
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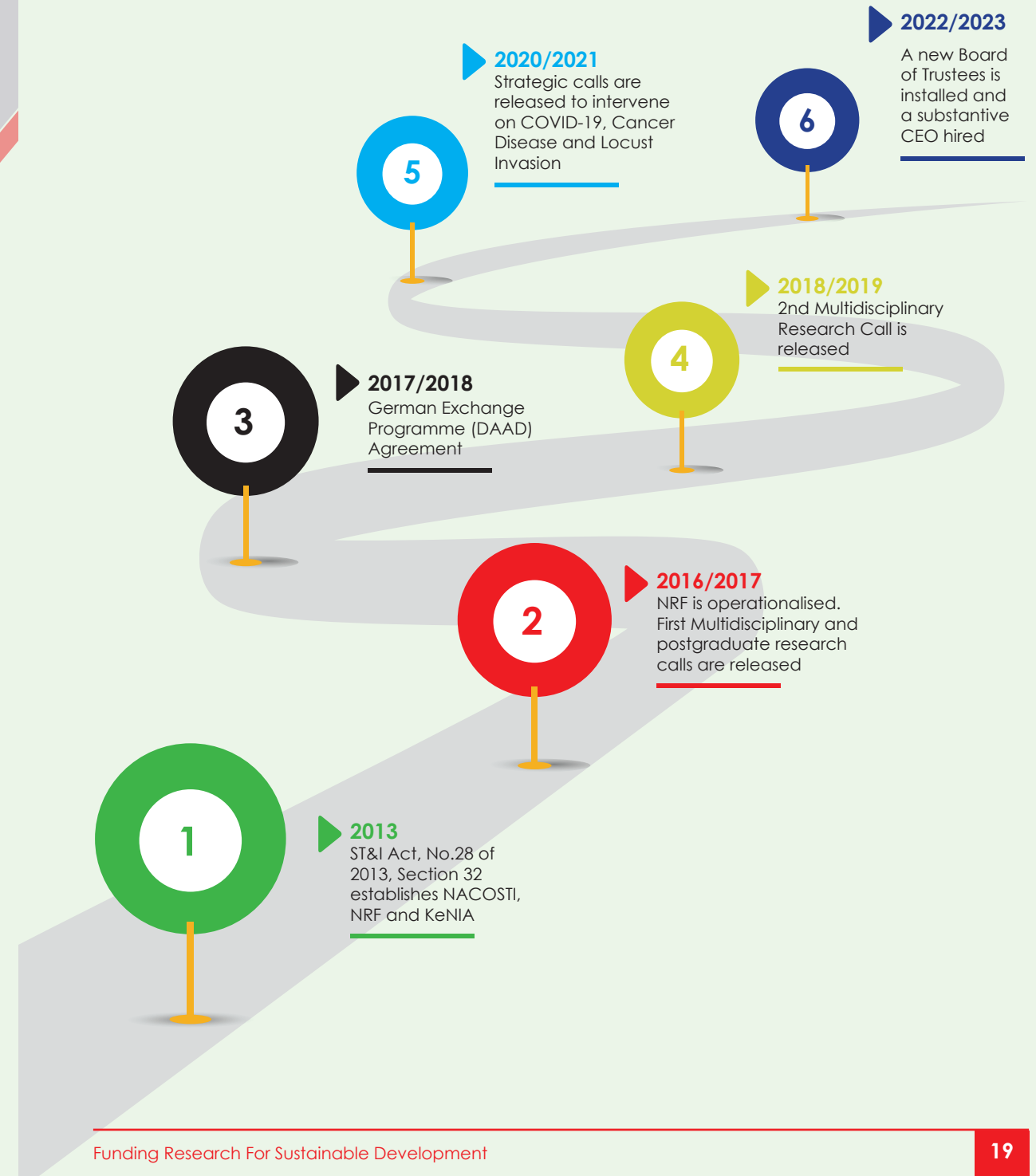
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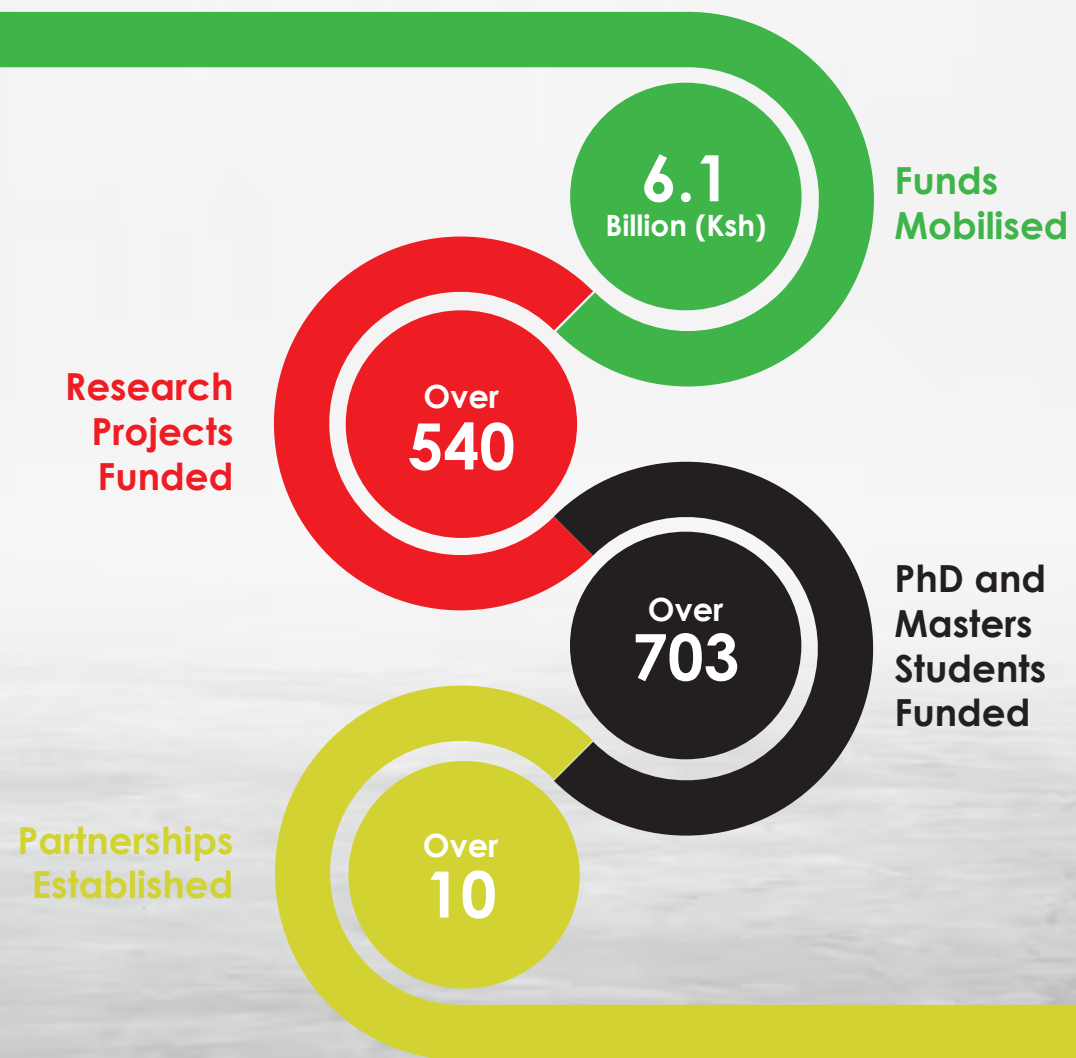
John Otieno  
Driver



# Numbers at a Glance



# National Research Fund Milestones



## NRF Funded Projects



Dr. Beatrice Inyangala, PS, Higher Education and Research testing the functionality of one of the equipment acquired through NRF at KISE

## NRF Commissions National equipment at the Assessment and Research Center (ARC), Kenya Institute of Special Education (KISE)

The Principal Secretary for Higher Education and Research, Dr Beatrice Inyangala, on Friday, 7th July 2023, commissioned equipment at the Assessment and Research Center (ARC), KISE. The PS was accompanied by the Chairman, NRF Board of Trustees, Prof. Ratemo Michieka, Chairman of KISE Council, Mr Habat Sheikh Abdi, OGW, Director KISE Dr. Norman Kiogora and Prof. Dickson Andala, CEO NRF.

NRF has significantly funded KISE towards equipping the groundbreaking National Psycho-Educational Assessment and Research Centre. NRF is mandated to

mobilize and manage financial resources to facilitate research for the advancement of science, technology, and innovation in Kenya. This initiative aligns with the NRF's core mandate of promoting innovation, advancing knowledge and driving social and economic development.

KISE was awarded an infrastructural grant of **Ksh 34,924,510** from the NRF on 25th June 2019, enabling the equipping of the National Psycho-Educational Assessment and Research Centre. Equipped with state-of-the-art facilities, the Centre sets a new standard for special needs education in East and Central Africa.

While commissioning the grant project, Dr. Inyangala, said that the Ministry of Education had adopted a mainstreaming approach, integrating learners with special needs into regular classrooms alongside their peers without disabilities, aligning with the Kenyan Constitution's vision of inclusive education.

The PS lauded NRF for supporting inclusive education through the equipping of the National Psycho-Educational Assessment and Research Centre,

**“This investment highlights the government’s commitment to advancing knowledge and driving social and economic development in Kenya.”** She said.

She added that by equipping educational institutions and promoting research, the NRF ensures that Kenya embraces inclusivity, provides equal opportunities to all learners, and creates a society that recognizes and values the contributions of individuals with disabilities.

Speaking at the commissioning event, Prof. Michieka, emphasized the importance of research funding in driving innovation,

advancing knowledge, and promoting social and economic development.

He said, **“As the National Research Fund, we recognize the significance of supporting initiatives that enhance society. The funding provided to the National Psycho-Educational Assessment and Research Centre represents a milestone in our efforts to improve inclusive education. It is our privilege to stand alongside KISE in this journey of ameliorating the society.”**

The National Psycho-Educational Assessment and Research Centre (ARC), equipped through the NRF's funding, serves as a beacon of research in assessment and early interventions. Its interactions with other institutions and universities will foster collaboration, benefiting academia and driving further educational advancements. NRF looks forward to the specific research work at the Centre and remains committed to supporting its future endeavours through potential additional funding opportunities.

ARC, which supports learners with special needs, has grown to be a state-of-the-art facility in the East and Central Africa Region.





## Empowering Kenyan Livestock Farming: Sahiwal Cattle Genetics Project Officially Handed Over to Trans-Mara Community, Narok County

Principal Investigator- Prof. Dr. Samuel Mbuku



Prof. Ratemo Michieka, NRF Board Chairman addressing media during commissioning of the Sahiwal Project in Narok County

In a significant stride towards advancing livestock-based sustainable development, the National Research Fund (NRF) and the Kenya Agricultural and Livestock Research Organization (KALRO) ceremoniously handed over the Sahiwal Cattle Genetics Project to the Lolgorian community in Narok County on August 25, 2023. The event marked a pivotal moment in Kenya's agricultural research and development landscape, as esteemed dignitaries, government officials, researchers, and local farmers gathered to witness the culmination of years of dedicated effort.

### Strengthening the Foundation: NRF's Commitment to Research Excellence

From its inception following the enactment of the Science, Technology, and Innovation (ST&I) Act of 2013, the National Research

Fund has been a driving force behind transformative research across all sectors of the economy. Recognizing agriculture's significant role in Kenya's development agenda, NRF has strategically supported projects that enhance food security and elevate the livelihoods of farming communities. The intersection of food crops and livestock sectors as vital components of sustenance underscores the importance of a balanced approach to agricultural advancement.

### Meeting Growing Demands: The Sahiwal Cattle Genetics Project

Livestock rearing has been a cornerstone of Kenyan communities for generations. However, the demands of a rapidly evolving society have outpaced traditional practices. This disparity has highlighted the urgent need for modernizing livestock farming. By 2030, Kenya is

projected to experience an increase in middle-class consumers and urban dwellers, necessitating an investment in livestock that harnesses modern technologies.

### Research and Collaboration for Sustainable Progress

The Sahiwal breed of livestock, renowned for its resilience and adaptability to arid environments, has taken center stage in the effort to address these challenges. The history of Sahiwal cattle in Eastern Africa dates to the 1930s when breeding bulls from India and Pakistan were introduced to enhance milk production and growth. To bridge the gap between demand and supply of livestock products, NRF funded the "Smallholder Farmers Access to Improved Cattle Genetics in Kenya" project, which has now been handed over to the Lolgorian community, Trans-Mara Sub-county, in Narok.

### Achieving Remarkable Milestones

During the 6-year project implementation period, impressive strides were made. The first phase alone witnessed the birth and distribution of 332 superior Sahiwal artificial insemination (AI) calves among members of the community-based breeding scheme in Trans-Mara. The growing demand for AI technology signifies the potential for substantial expansion of superior Sahiwal genetics, including high-quality semen, heifers, and bulls. Moreover, 4,234 Sahiwal cows and bulls were pedigreed and registered, leading to a threefold increase in their market value.

### Uniting for Livestock-based Sustainability

In his speech, Professor Ratemo W. Michieka, Chairperson of the NRF Board of Trustees, emphasized the urgent need to collaborate and upscale the Sahiwal cattle program. He highlighted the dwindling state of rangeland and grassland ecosystems and stressed their potential as valuable assets if managed sustainably. The impacts of climate change further underscore the necessity for intensified research and development to bolster livestock production against emerging challenges.

### Harnessing Advantages for a Brighter Future

Amidst the challenges faced by livestock farming, optimism prevails. Kenya possesses abundant land, a diligent workforce, entrepreneurial skills, and a wealth of traditional knowledge, all supported by advancements in science and technology. If these resources are harnessed effectively, the nation can achieve self-sufficiency in food production while contributing to Domestic and export markets.

### Paving the Way Forward

The handover of the Sahiwal Cattle Genetics Project stands as a testament to Kenya's commitment to agricultural research and development. The collaboration between NRF and KALRO, driven by the shared vision of food security, offers a glimpse into the potential for positive transformation. As stakeholders join forces to address challenges and leverage on opportunities, the future of Kenyan livestock farming shines bright with promise.

4,234 Sahiwal cows and bulls were pedigreed and registered



## Maseno University: Pioneering Research In Cancer Care

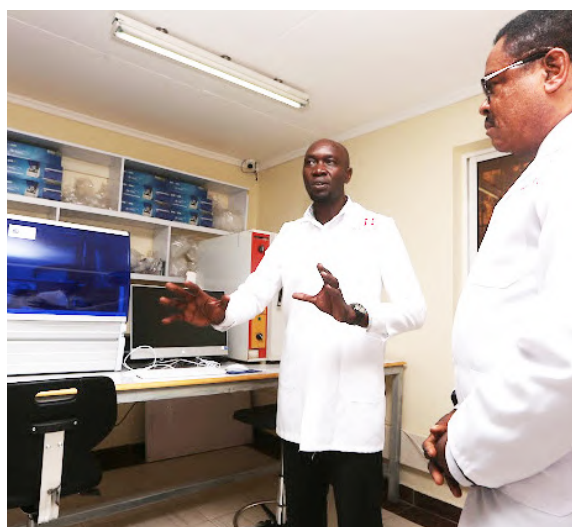
### Unlocking the Link Between Tropical Infectious Diseases and Cancer

In a groundbreaking initiative, Maseno University has established the Western Kenya Cancer Care and Research Centre (WKCCRC) with a generous grant of Ksh 70,200,173 from the National Research Fund (NRF) Kenya. Located at the Jaramogi Oginga Odinga Teaching and Referral Hospital in Kisumu, Kenya, this state-of-the-art facility is set to redefine cancer research, diagnosis, and support in the East Africa region.

### Unveiling the Objectives

At the heart of WKCCRC's mission lies threefold objectives:

**1. Cutting-edge Cancer Research:** Led by the visionary Dr. Benson Nyambega, the WKCCRC is committed to conducting pioneering research into human cancers. This research is not just an academic exercise but tailored to address the pressing needs of the region. By investigating the role of tropical infectious diseases, including viruses, bacteria and parasites, as potential risk factors for prevalent cancers in East Africa, the WKCCRC aims to provide invaluable insights that can shape both prevention and treatment strategies.



**2. Specialized Diagnosis and Support:** WKCCRC recognizes the critical need for specialized cancer diagnosis and support services in the region. To this end, it offers cutting-edge diagnostic facilities and a compassionate support system for cancer patients. This commitment to early detection and tailored care can significantly improve patient outcomes.

**3. Mentorship for Emerging Researchers:** An integral part of WKCCRC's vision is to mentor and nurture a new generation of researchers. By doing so, it aims to create a sustainable ecosystem for cancer research in Kenya and beyond. This investment in human capital will drive innovation and ensure the continuity of essential research efforts.

### Collaboration for a Greater Cause

The WKCCRC project is not an isolated endeavor. It collaborates closely with the Jaramogi Oginga Odinga Teaching and Referral Hospital, where the Oncology Unit plays a crucial role in cancer care. Moreover, the upcoming Kisumu Comprehensive Cancer Care (K3C) facility will further enhance the region's capacity

to combat cancer effectively.

### A Vision for the Future

From its inception, the WKCCRC was designed to complement routine clinical screening services while filling the gap in specialized diagnostics. However, its aspirations go beyond that. It seeks to be a beacon of hope, a center of excellence, and a driving force in the battle against cancer.

In the coming years, WKCCRC aims to shed light on the intricate link between tropical infectious diseases and cancer, ultimately improving the lives of countless individuals in the East Africa region and setting an example for cancer research and care worldwide.

Project value  
**Ksh 70.2  
Million**





# Breaking Ground for Food Security and Prosperity: KALRO's Plantain Project

Principal investigator - Dr. Charity Gathambiri

In a stride toward enhancing food and nutrition security, Kenya Agricultural Livestock and Research Organization (KALRO) has embarked on an ambitious three-year project, funded by the National Research Fund (NRF) Kenya, aimed at boosting the production of cooking bananas and plantains. Spearheaded by Dr. Charity Gathambiri, this initiative funded to the tune of Ksh 13.4 million underscores the crucial role that research and innovation play in achieving government priorities for a prosperous Kenya.

## A Unique Approach to Tackling Food Security Challenges

In Kenya and East Africa, bananas come in various forms - dessert, plantain, and cooking bananas. Among these, plantain bananas stand out for their versatility and profitability. They are in high demand in the market, and the supply often falls short. Recognizing this gap, KALRO has taken the lead in developing the plantain banana genes, which have proven to be rich in starch, proteins, and antioxidants. Through meticulous research, they have identified the perfect variety that promises to revolutionize plantain farming for increased production and profitability.

## Addressing the Planting Material Challenge

One of the primary hurdles faced by farmers has been the scarcity of quality planting materials for plantain bananas. To overcome this obstacle, KALRO researchers have developed a tissue culture protocol. They collected 50 cooking bananas and plantain germplasm from various banana-growing regions across the country and planted them at KALRO Horticultural Research Institute Kandara. Through meticulous evaluation trials, they selected varieties based on factors like suckering ability, stem size, plant height, days to maturity, bunch weight, and more.

## Partnerships Fueling Progress

Collaboration is at the heart of this project's success. KALRO has joined forces with other partners, including Jomo Kenyatta University of Agriculture and Technology (JKUAT), the Ministry of Agriculture, and other stakeholders. Together, they are delivering cutting-edge technologies and innovation to propel plantain and banana farming to new heights.

## Significant Outcomes

This project has yielded remarkable results that have far-reaching implications for Kenyan agriculture and food security:

**Publication in Peer-Reviewed Journals:** KALRO's research has been recognized in esteemed peer-reviewed journals, showcasing the scientific rigor and relevance of their work.

**Scientific Advancements:** The team presented eight scientific papers at conferences, further contributing to the global discourse on banana and plantain cultivation.

**Farmer Empowerment:** Approximately 150 farmers received training in plantain production techniques and utilization, equipping them with the knowledge to boost their yields and income.

**Demonstration Plots:** Over 200 farmers actively participated in setting up banana and plantain demonstration plots, learning firsthand about best practices for successful cultivation.

**Youth Engagement:** Youth were not left

behind, as they were trained in banana micro-propagation, fostering a new generation of agricultural leaders.

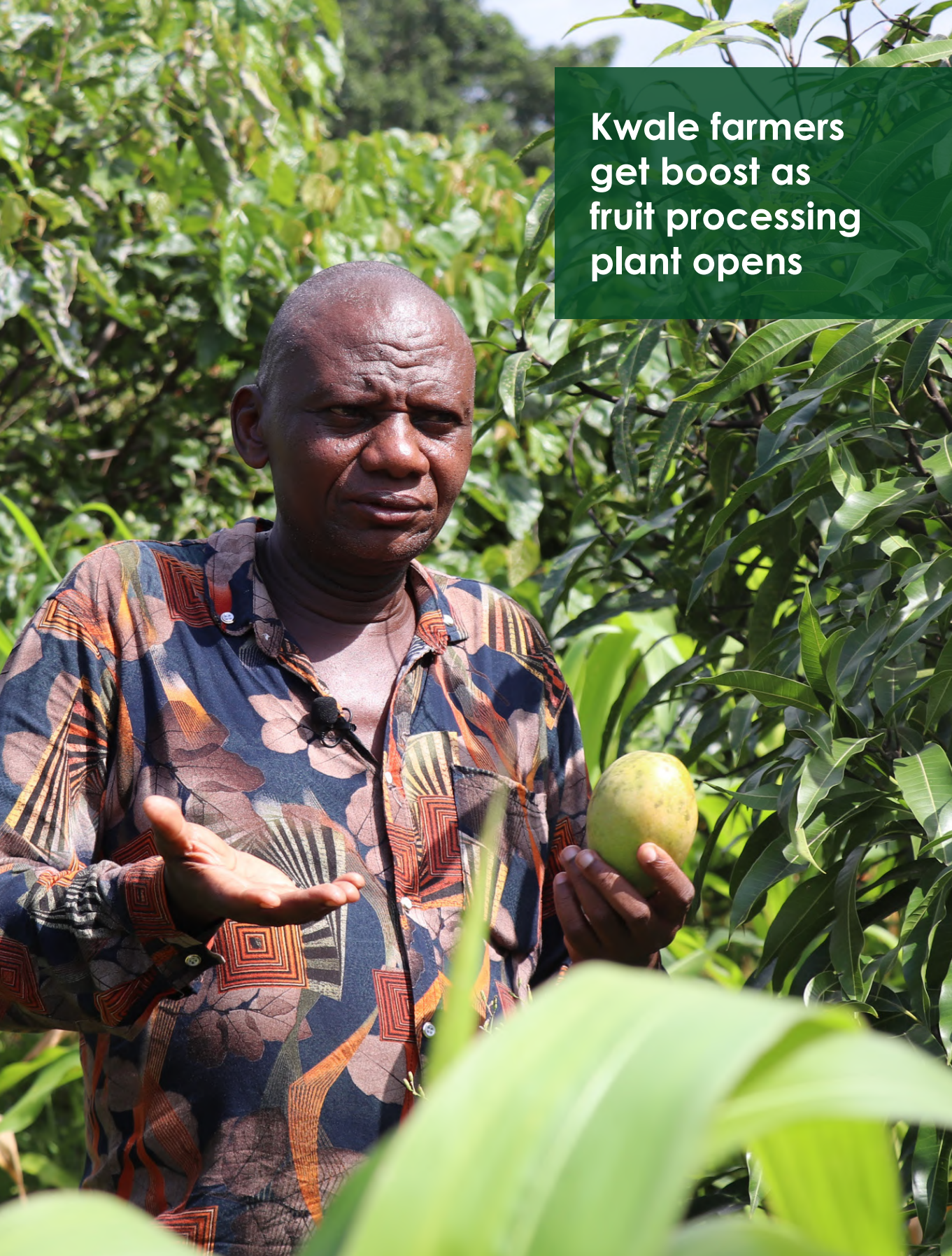
## A Vital Lesson in Research Funding

The NRF Kenya's investment in this project demonstrates the pivotal role that research funding plays in addressing pressing issues like food security and nutrition. By supporting innovative projects like KALRO's Plantain Project, the government showcases its commitment to its citizens' well-being and prosperity.

As KALRO continues to disseminate banana and plantain technologies and provide planting materials to farmers and stakeholders in each target county, we can anticipate increased food production, improved nutrition, and enhanced incomes for our hard working farmers. This initiative serves as a beacon of hope, guiding Kenya toward a future of food security and economic growth.



Project value  
**Ksh 13.4 Million**



## Kwale farmers get boost as fruit processing plant opens



National Research Fund (NRF) and Kenya Agricultural and Livestock Research Organization (KALRO) have launched a fruit cottage industry in Kwale County to assist fruit farmers get value addition on their farm produce.

The facility in Dzombo Ward, Lungalunga Constituency put up at a cost of **Sh.3 million**, can process four tonnes of either mangoes, passions or oranges to make various products including juices, jam, caksh and wines.

Speaking during the launch of the fruit cottage industry, Eliud Kireger, KALRO Director-General said the two organisations came together and did a joint project for farmers in Dzombo because they used

to encounter huge losses during harvest period as most fruits, especially mangoes would go to waste.

***“The facility will empower and assist farmers to add value to their farm products as even the products that were called reject by their former customers would be processed at the facility.”*** he said.

Prof Dickson Andala, NRF CEO stated that the facility will assist small farmers and those that are at the bottom of the economy, especially in villages.

***“This kind of project will assist these people in villages rise economically that is why we jointly came together to empower them,”*** he said.



## NRF Supports Kibabii University to Establish an ICT Research Hub



Kibabii University has unveiled a state-of-the-art ICT Research Hub valued at Ksh 64.6 million, with the National Research Fund (NRF) playing a pivotal role in making this transformative project a reality. This endeavor underscores the profound impact of NRF funding in advancing cutting-edge research and infrastructure development across Kenya.

The ICT Research Hub, a testament to the university's commitment to innovation and excellence, promises to be a game-changer in the field of research and education. NRF's infrastructure research grant has breathed life into this ambitious project, fortifying Kibabii University's position as a leader in technology-driven academic pursuits.

At the heart of the hub lies a comprehensive array of facilities, each designed to empower students, researchers and professionals alike. The hub's crown jewels include a cutting-edge data center, a dynamic mobile computing laboratory, a versatile video conferencing center, and an innovative e-learning laboratory. Additionally, it boasts of a professional certification center and a state-of-the-art digital forensics laboratory.

One of the most exciting outcomes of

this endeavor is the launch of a pioneering postgraduate program in Digital Forensics at Kibabii University. This program not only addresses the growing demand for skilled Digital Forensics experts but also positions the university as a hub for cutting-edge research in this critical field.

The ICT Research Hub has proven to be a lifeline during challenging times, notably the Covid-19 pandemic, by facilitating uninterrupted academic activities. Beyond its educational mission, this hub offers its resources to the wider community. The data center and digital forensics equipment will be available for hire, providing valuable support to businesses, organizations, and individuals seeking to leverage on these advanced technologies.

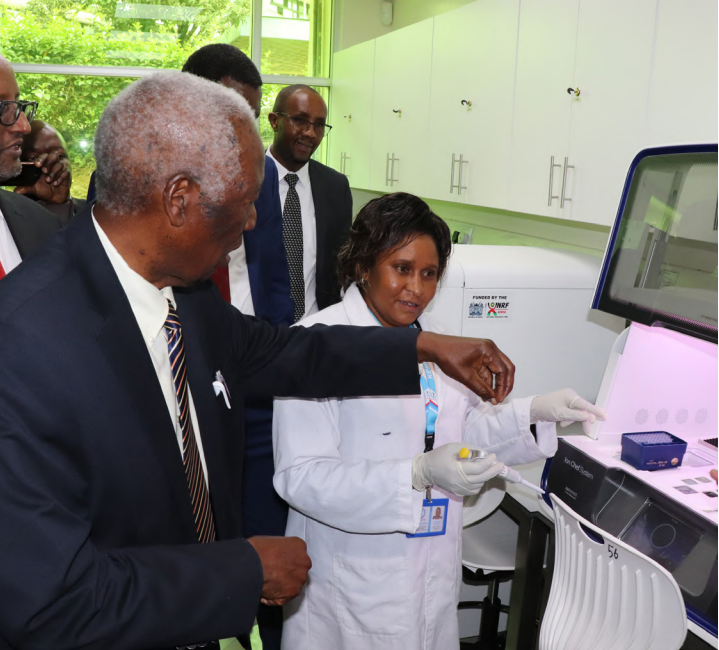
Project value  
**Ksh 64.6  
Million**

NRF's funding of projects like the ICT Research Hub holds the promise of benefiting countless postgraduate and undergraduate students, as well as Kenyan professionals engaged in research and technology. It equips them with the tools and knowledge necessary to drive economic growth and confront the escalating threat of cybercrime.

In conclusion, Kibabii University's ICT Research Hub stands as a shining example

of the transformative power of NRF funding in Kenya. This investment not only advances academic excellence but also empowers individuals and organizations to harness the full potential of cutting-edge technology. The ripple effect of such initiatives extends far beyond the university's walls, contributing to the growth and security of Kenya's digital landscape. NRF's continued support is essential in ensuring that Kenya remains at the forefront of innovation and research in the years to come.





## NRF Commissions Ksh 77.2 million Stem Cell Research Centre Project at KEMRI

### Advancing Healthcare with the Centre of Excellence in Stem Cell Research in Kenya

In a groundbreaking move towards scientific advancement and healthcare improvement, the Kenya Medical Research Institute (KEMRI) celebrated the official commissioning of the Centre of Excellence in Stem Cell Research on July 27, 2023. Supported by the National Research Fund (NRF), this project marks a significant milestone for Kenya's scientific community and demonstrates the government's commitment to investing in science, technology, and innovation.



### The Significance of Research, Science, Technology, and Innovation:

Professor Ratemo W. Michieka, Chairman of NRF, and Professor Dickson Andala, CEO of NRF, highlighted the global consensus on the crucial role of research, science, technology, and innovation in driving long-term development. Kenya's



alignment with international commitments, such as the UN Agenda 2030 on Sustainable Development and the AU Agenda 2063, reflects its dedication to prioritizing science and innovation for national progress.

**The Importance of Stem Cell Research:** Stem cell research is at the forefront of medical innovation and promises revolutionary disease treatment and regenerative medicine advancements. KEMRI's National Reference Laboratory for Stem Cell Research, established

through the NRF's generous funding of Ksh 77.2 million, serves as a hub for stem cell research in Kenya. This state-of-the-art facility equips scientists with the necessary tools and technology to explore cutting-edge research in drug and vaccine development, disease diagnosis, and treatment.

**Addressing Non-Communicable Diseases (NCDs):** Non-communicable diseases (NCDs) pose a significant health challenge for Kenya and the world. Cardiovascular diseases, cancer, and diabetes account for many hospital admissions and deaths annually. The Centre of Excellence in Stem Cell Research is poised to play a critical role in combating NCDs by providing a deeper understanding of disease mechanisms and innovative approaches to prevention and treatment through regenerative medicine.

**Capacity Building and Collaborations:** Establishing the Stem Cell Research Unit at KEMRI advances the institution's research programs and serves as a regional training centre for stem cell technology. Collaborations with local, regional, and international partners will foster knowledge exchange and attract funding, enhancing the country's research capabilities and contributing to economic growth.

**Kenya's Biotech Industry:** As KEMRI is designated to anchor Kenya's emerging biotech industry, stem cell research complements the Institute's efforts in developing new technologies for treating and preventing diseases. The focus on local manufacturing of medical products aligns with the government's priority agenda, and KEMRI's role in biomanufacturing training further reinforces its commitment to driving healthcare advancements in the region.

Commissioning the Centre of Excellence in Stem Cell Research at KEMRI marks a momentous step towards scientific progress and healthcare development in Kenya. The NRF's support and the dedication of KEMRI's leadership and researchers exemplify the nation's determination to excel in research, innovation, and outreach. Stem cell research offers promising solutions to address pressing health challenges, including NCDs, and positions KEMRI as a centre of excellence in this critical field. With increased collaboration, continued funding, and unwavering commitment, Kenya is poised to advance healthcare and contribute to the global research community.

*By Titus Kisangau,  
Corporate Communications*





## Commissioning of the National Magnetic Resonance Centre, University of Nairobi

The Kenya National Magnetic Resonance Centre (KNMRC) at the University of Nairobi is one of the nineteen infrastructural projects that were funded by the National Research Fund (NRF) in the financial year 2018/2019. The funds and equipment received for the establishment of the KNMRC Centre were **Ksh 42,796,236.00**.

The vision of the KNMRC is to provide analytical services and training to researchers, undergraduate and postgraduate students from public and private universities and research institutions in Kenya, the region and the continent. The equipment procured in the project includes the 60 MHz NMR spectrometer, a Liquid Nitrogen Generator, Turbo molecular pump, a fridge, desktop computers and ICT equipment, printers, LCDs, UPS's, air conditioners for the NMR room, NMR solvents and other consumables. The liquid nitrogen generator can produce 60 litres of liquid nitrogen (99% purity and liquid tank capacity of 210 litres) per day to be used for the 400 MHz NMR, and other laboratory applications. A 30KVA prime rated, three phase sound attenuated Power Generator was also installed to ensure constant power supply.

### Human Capacity Development

In terms of capacity building, two hands-on training workshops were successfully

held in May and October 2022. A total of 28 participants from various universities and research institutions attended. The two trainings were held with financial support from the Royal Society of Chemistry through the Pan African Chemistry Network (PACN). The participants were trained through lectures and hands-on practice on the Bench-Top NMR machine capable of analyzing three nuclei (1 H, 19F, and 13C) and also through acquiring of Two-Dimensional NMR spectra including COSY, HMBC, and HSQC among other advanced Pulse Sequences.

The KNMRC committee has put in place a comprehensive sustainability plan, to ensure continuous provision of analytical services, trainings to local and regional stakeholders. With projected industrialization within Kenya's Vision 2030, UN's Global 17 Sustainable Development Goals (**SDGs # 3 Good Health and Well-being # 9 Industry, Innovation and Infrastructure**) the availability of national NMR centre is of paramount importance. It is anticipated that the established centre will have a high impact in achieving Vision 2030 national goals in health (drug discovery to exploit our rich biodiversity), creation of employment, enhancing the profile of our universities, attracting foreign students, and attracting more research funding.

Prof. Kariuki, Chairman, Department of Chemistry, stated that the department is delighted to have hosted such a revolutionizing technology. NMR is the most versatile, powerful, fast, continually evolving, and non-destructive analytical tool available for scientists to analyze a wide variety of samples. The NMR facility will make innovation dream come true by:

- Strengthening the teaching capacity in the Kenyan universities.
- Enhancing research capacity both locally and internationally.
- Training local and regional staff in the use of NMR.
- Enhancing capacity for consultancy and community engagements.
- Providing test results for specimens in real time.

This project has also attracted and brought on board various partnerships and collaborations. The NMR is one of a kind in the Region and Africa, and has made it possible for the department of Chemistry at the University of Nairobi to partner with the PACN, in advancing research and development. Oldenburg University in Sweden, has also donated another NMR machine of 400 Megawatts which is awaiting installation at the University. The facility is also in the process of supporting students from other countries, for example, more than 10 students from Nigeria and Cameroon had made applications for training.

Prof. Michieka, Chairman Board of



Trustees of NRF was the Guest of Honor. He acknowledged the need to protect indigenous knowledge by developing indigenous knowledge systems. He highlighted an example in drug development where Kenyan forests are rich in resources that can be used to manufacture medicinal drugs. In such an instance and with the use of NMR machines in the analysis of molecules, these resources could be protected from deprivation. He also encouraged the university to own up to innovations that will facilitate the development of its environment.

Prof. Kiama, Vice-Chancellor of the University of Nairobi highlighted the key areas of funding research to address employment and climate change issues. He called upon the stakeholders to push for the 2% of GDP budget allocation towards research and development as enshrined in the ST&I ACT 2013. He further emphasized that it is only through adequate funding that the best research results could be visualized and advanced to commercialization.

Prof. Dickson Andala, CEO of NRF noted that the installation of the NMR machine was a milestone in advancing research in the field of chemistry. He recalled the days when the University of Nairobi had a dummy NMR machine that made it impossible for one to view molecules and publish results. He reaffirmed the support of NRF towards financing a helium generator to work alongside the nitrogen one that was already in operation.



# The National Phytotherapeutics, Research, Upscaling And Quality Assurance Research Centre



Kenyatta University has established a National Phytotherapeutics, Research, Upscaling and Quality Assurance Research Centre (NPRC), through National Research Fund (NRF) funding of Ksh 69,257,624 million. The project which started in 2019 and commissioned in 2022 was led by Prof. Nicholas Gikonyo, as the principal investigator. The project has developed a suitable habitat for further research and commercialization of research products and processes emanating from Kenyatta University and other institutions.

## Impacts and Outputs

NPRC has greatly benefitted various parties including local and international research students, research institutions, traditional medicine practitioners, entrepreneurs, farmers and students seeking attachment/ internships. NPRC has developed products including essential oils, hydrosols, fixed oils and nutraceutical formulations at the upscaling section.

## What exactly does NPRC do?

The unique thing about NPRC is that both basic research on herbal materials and up-scaling of the research outputs into commercially viable products can be accomplished under one roof. To actualize this, the NPRC consists of the following

major sections:

### Wet and Dry Laboratories

This is where herbal materials are prepared prior to chemical analyses. The equipment in this section includes a Lyophilizer, a Refrigerated Centrifuge, Rotary Evaporators, Ultra-Sonicator, Deep Freezer, as well as an Accelerated Aging Oven for investigating the shelf-life of herbal products.

### 1. Quality Assurance section

Instruments here include a Liquid Chromatography, Tandem Mass Spectrometer and Gas Chromatograph Mass Spectrometer for analysis of both primary and secondary metabolites in herbal materials. Other instruments include a High-Performance Thin Layer Chromatography Densitometer, a portable X-Ray Fluorescence spectrometer, a Ultraviolet – Visible Spectrophotometer and a Fourier Transform Infra-Red Spectrophotometer.

### 2. Microbiology section

Microbial analysis of herbal materials is highly critical. The Microbiology laboratory has a modern Binocular Microscope for the characterization of herbal materials as well as the identification of microorganisms in herbal materials, a Biosafety Cabinet, a



Laminar Flow Cabinet, Automatic Autoclaves, an Incubator and a Colony Counter. This lab also hosts Thromboelastographic and Platelet counters used for blood research.

### 3. Up-scaling section

This is literally the most exciting section at NPRC. It comprises the Processing Unit where raw herbal materials from the farms and the wild undergo processing into finished phyto-therapeutically products. The up-scaling equipment at this section are semi-commercial and include an Essential Oil Distiller for extracting oils from herbs, an Oil Expeller for extracting fixed oils from seeds and nuts, and a Rotor Mill for grinding dry herbal materials into powder of different mesh.

The Packaging Unit is where processed herbal materials are packaged. Equipment includes an automated tea bag Packaging Machine, a Sealer Shrink Combi Machine, and a Vertical Continuous Band Sealer.

NPRC has reached out to relevant stakeholders through participation in exhibitions, scientific conferences, open days and trade fairs, including the Nairobi International Trade Fair (September 2022), SPAS Conference on Basic & Applied Sciences (November 2022), KEMRI Scientific conferences (February 2022 & 2023), Kenya Bureau of Standards conference (September, 2022), International Day of Women and Girls in Science (February 2023), an international conference at Manisa Celal Bayar University in Turkey (April 2023) and the 2nd Multi-Sectoral Conference on ST&I at Safari Park Hotel (23rd – 26th May 2023). Through these dissemination engagements, the project is attracting varied partnerships towards upscaling.

## Murang'a University's Cutting-Edge Analytical Research Laboratory Spearheads Innovation



In a significant stride towards academic excellence and research innovation, Murang'a University of Technology (MUT) successfully secured a competitive research infrastructure grant of Ksh 46,250,000, leading to the establishment of the state-of-the-art Analytical and Imaging Laboratory in 2017. This facility has since become a powerhouse for multifaceted research endeavors, revolutionizing how we address challenges in various sectors.

### Unveiling the Objectives

The Analytical and Imaging Laboratory is not just a physical space with advanced equipment; it's a hub of transformative potential. Its objectives encompass:



- **Empowering Future Scientists:** One of its primary roles is to train both undergraduate and postgraduate students, providing them with hands-on experience and fostering a culture of scientific inquiry.
- **Guardians of Water Quality:** The laboratory undertakes water quality analysis, ensuring the safety and sustainability of this vital resource.
- **Elevating Food Standards:** Food analysis carried out here helps maintain food quality and safety standards, critical for public health.
- **Pharmaceutical Prowess:** Pharmaceutical products are meticulously analyzed, contributing to the development of safer and more effective medicines.
- **Environmental Vigilance:** The laboratory monitors environmental factors, including levels of carbon dioxide and other gases, aiding in understanding and mitigating climate change impacts.
- **Unearthing Earth's Secrets:** Soil and mineral analysis provides valuable insights for agriculture and resource exploration.

- **Building Better Futures:** The analysis of building materials contributes to construction quality and safety.

### Turning Vision into Reality

Since its inception, the Analytical and Imaging Laboratory has achieved several milestones:

- **State-of-the-Art Equipment:** The laboratory boasts the latest equipment, ensuring it is well-equipped to meet its diverse research objectives.
- **Enhanced Capabilities:** MUT has further bolstered the laboratory with essential additions like a water purification system, a furnace, analytical balances, a pulverizer, and a sonicator to ensure seamless operations.
- **Expert Staff:** Highly skilled technical personnel have been recruited and trained to manage the laboratory, guaranteeing the highest quality of research.
- **Collaborative Endeavors:** Collaborative institutions have been invited to promote the laboratory, maximizing its utilization and expanding its reach.
- **Student Involvement:** Postgraduate students are already harnessing the laboratory's capabilities for their research, and undergraduate students

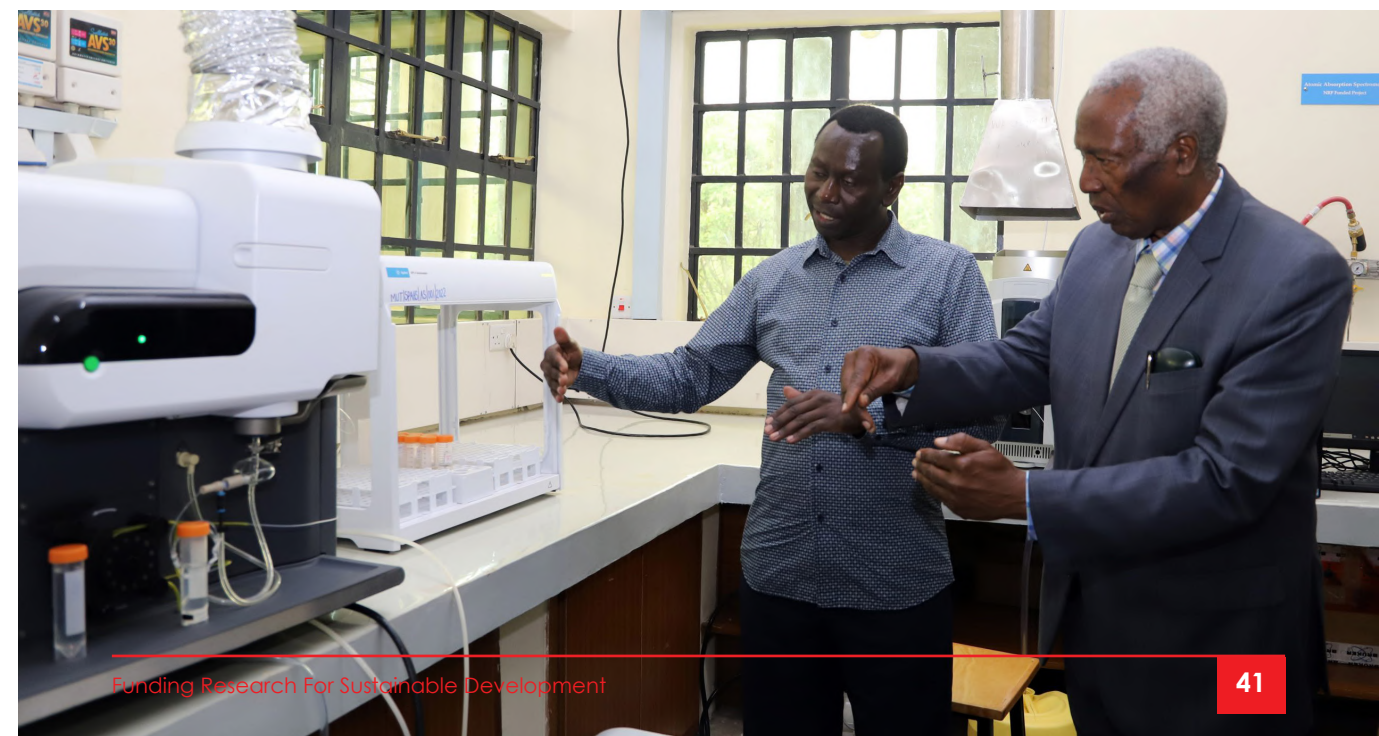
are gaining valuable experience.

### A Beacon of Innovation

During the commissioning of the Analytical and Imaging Laboratory, the Chairperson of the Board of Trustees, Prof. Ratemo Michieka, emphasized its significance, stating, *the laboratory is a modern facility that can be used in identifying and solving problems such as detecting various poisons and pollutants in water and soils to enable appropriate action.*

Moreover, with its cutting-edge equipment, this facility empowers researchers to tackle diverse challenges in agriculture, pharmaceuticals, and construction by ensuring product quality. Beyond the academic sphere, the laboratory also serves the community by analyzing soil and water quality, contributing to the well-being of all.

The Analytical and Imaging Laboratory at Murang'a University of Technology stands as a testament to the institution's commitment to research excellence, innovation, and community impact. It is not merely a laboratory; it is a beacon of hope, knowledge, and progress made possible through research funding.



# Collaborative Research Activities



## The PAMOJA Hubert Curein Partnership Research grant (National Research Fund-Kenya and France collaboration)

Through the PAMOJA Hubert Curein Partnership Research grant (National Research Fund-Kenya and France collaboration), Prof. Joseph Ngeriwa of the Department of Biochemistry, Microbiology and Biotechnology jointly with his French Collaborator Dr. Mariette Ducatez of Directrice de Recherche, France are working towards making a transgenic construct that confer viral disease resistance traits to birds.

Transgenics provides methods to rapidly introduce 'new' or modified genes and DNA sequences into livestock without crossbreeding or hybridizing and is considered a more precise technique.

The research is working towards achieve the following for Kenyan fraternity;

- **Adding a genetic resource material** (improved chicken germplasm) to the National Animal Genetic Resource Centre and Databank (NAGRC&DB) that would be used for breeding purposes;
- **Maximized farmer productivity:** It is also expected to help farmers maximize both eggs and meat production with significant reduction in losses associated with viral disease outbreaks. This will be done by letting them access improved indigenous chicken breeding stocks after research results have been ascertained and approved by relevant governmental authorities like National Biosafety Authority (NBA);
- **A protocol for developing transgenic chicken:** develop a clear protocol for production of transgenic chicken that can be used in other avian species and to inform policy on poultry farming practices in Kenya;
- **Structured written policy papers and publications** in high impact peer-reviewed journals

## Hepwek- The Cancer Project, Moi Teaching & Referral Hospital (MTRH)

Principal Investigator - Dr. Fatuma Some

In the ongoing pursuit of improved healthcare outcomes and the relentless battle against chronic liver diseases, the Hepwek Project stands as a beacon of hope and progress. This transformative initiative, led by Principal Investigator Dr. Fatuma Some at Moi Teaching & Referral Hospital (MTRH), is set to reshape the landscape of liver disease diagnosis and management in Western Kenya. What's more, it is receiving critical support from the National Research Fund (NRF), amplifying its potential impact on the nation's health.

**Addressing a Looming Health Challenge**  
Hepatocellular carcinoma (HCC) is a formidable adversary, ranking as the third leading cause of cancer-related deaths

worldwide. In Kenya, it stands as the 11th most common cancer and the ninth leading cause of cancer deaths. The stark reality is that over 60% of HCC cases in Kenya are linked to hepatitis B virus (HBV) infection, with other risk factors, such as hepatitis C (HCV), hepatitis delta virus (HDV), HIV infection, and aflatoxin B (AFB1) exposure, playing significant roles in the disease's prevalence.

The Hepwek Project is not merely an ambitious endeavor; it's a lifeline for communities in Western Kenya. At its core, this project aims to bolster the region's healthcare infrastructure, enhance early diagnosis of chronic liver diseases and HCC, and ultimately contribute to the well-being and health of the population. In alignment with global health objectives, such as the WHO agenda to eliminate chronic hepatitis by 2030, the Kenya National Cancer Control Policy (2019), and the Non-Communicable Diseases Prevention and Control Strategy (2013, 2021), Hepwek is a pivotal initiative.

Crucially, the Hepwek Project has garnered international support, with funding from the French Ministry of Foreign Affairs and collaboration with esteemed institutions such as Moi University, the National Cancer Institute of Peru (INEN), IRD, and InST&Itut Pasteur. These partnerships are integral to the project's success and its mission to improve hepatocellular carcinoma monitoring and patient management in Baringo, Uasin Gishu, and Elgeyo Marakwet

counties.

Already, the Hepwek Project has achieved significant milestones. Health professionals have undergone training to enhance their clinical skills for early diagnosis, and cutting-edge liver surgery technology has been transferred from Peru to Kenya through South-South collaboration. Moreover, the project has facilitated the procurement of essential medical equipment, such as ultrasound machines, and has empowered MTRH to perform liver surgeries.

### NRF's Crucial Role in Advancing National Health Development

The National Research Fund (NRF) plays a pivotal role in driving projects like Hepwek. By providing support and funding to initiatives that address pressing healthcare challenges, NRF contributes directly to the development and well-being of the nation. Projects like Hepwek are emblematic of the transformative potential that research and innovation hold in shaping a healthier, more prosperous Kenya.

As we look ahead, the Hepwek Project is poised to leave an indelible mark on the healthcare landscape of Western Kenya. It's a testament to the power of collaboration, innovation, and dedicated research. With continued support from organizations like NRF, Kenya can inch closer to achieving its healthcare goals and, ultimately, improve the lives of its people. Together, we can build a healthier future for all.

## NRF and British Council partners to develop national research repository

The National Research Repository is expected to steer the country towards unparalleled scientific and technological advancements.

The National Research Fund is in the process of developing a National Research Repository as part of its efforts to advance science, technology and innovation in the country.

Speaking during a stakeholder's consultative workshop, Prof. Dickson Andala, NRF CEO, said that NRF in conjunction with the British council has completed a comprehensive stakeholder mapping exercise. So far, over 30 Kenyan universities and research institutions endowed with rich repositories on land, water and energy thematic areas have been identified to participate.

**"24 out of the 30 targeted institutions have nominated focal persons of which 15 focal persons have been drawn from private and public universities and 9 from research institutions. Data collection tools are ready, and training for data collectors will commence in October 2023,"** said Andala.



**Dr. Beatrice Inyangala, PS. SDHER, addresses stakeholders during the National Research Repository consultative workshop**



**Monica Blagescu, Head of Education, British Council, Prof. Ratemo Michieka, NRF board Chairman and Dr. Beatrice Inyangala, PS. SDHER, during the National Research Repository consultative workshop**

He further noted that NRF has partnered with the Kenya Education Network (KENET) to install and customize D-space software and provide the necessary cloud infrastructure with commissioning of the National Research Repository scheduled for February 2024.

According to Andala, research outputs from projects funded by the NRF within the last ten years, focusing on three critical thematic areas of land, water, and energy will be relied on to kick start the project. In the subsequent phases, NRF will collaborate with various stakeholders to enrich the repository with diversified research on the three areas.

An advisory committee of experts in various domains has been appointed to ensure alignment with international best practices with an open access policy drafted to guide the operationalization of the repository, adhering to international legal frameworks and standards.



# Grant Awards

The National Research Fund in realising its core mandate and through partnerships with International Development Research Centre (IDRC), Africa Centre for Technology Studies (ACTS) and the French Embassy in Kenya rolled out calls for proposals and awarded the following grants successfully.

## National strategic calls for Research to Commercialisation(R2C), Leather Value Chain and Mental Wellness

| No. | Grant Call          | Principal Investigator  | Host Institution                                    | Co-PI/ Collaborative Private Sector Industry | Project Title   | Project Period | Amount (Ksh) |
|-----|---------------------|-------------------------|---|--|---|----------------|--------------|
| 1   | R2C                 | Dr. Vitalis Ogemah      | Masinde Muliro University of Science and Technology | Mr. Jeremiah Namunyu                         | Commercialization of Cassava Value Chain for Improved Food and Nutritional Security and Animal Feed Component                   | 36 Months      | 10,000,000   |
| 2   |                     | Prof. Romano Mwirichia  | University of Embu                                  |  | Bi-based Agro-inputs for Sustainability and One Health (BASOH)  | 36 Months      | 9,939,717    |
| 3   | Leather Value Chain | Dr. Paul Tanui          | Dedan Kimathi University of Technology              | Yallo Leather Ltd                            | Capacity Building for the Job Creation and Growth of the Leather Goods and Leather Footwear Manufacturing Enterprises in Kenya. | 36 Months      | 2,998,824    |
| 4   | Mental Wellness     | Dr. Faith Mueni Musyoka | University of Embu                                  | TINADA Youth Organization                    | A digital intervention for the prevention and early detection of depression and suicide among the youth in Kenya                | 36 Months      | 4,845,294    |

## Upscaling for Health, Food, Nutrition Security

| No. | Grant Call         | Principal Investigator      | Host Institution                                       | Co-PI/ Collaborative Private Sector Industry  | Project Title   | Project Period | Amount (Ksh) |
|-----|--------------------|-----------------------------|--|---|---|----------------|--------------|
| 1   | Health             | Prof. Maurice Vincent Omolo | Masinde Muliro University of Science and Technology    | Dr. Michael Okal AtoZ Group of companies, Vector Health International, Africa Technical Research Centre, Arusha, Tanzania   | Commercialisation of a Topical Treatment for Tungiasis (CoToTT)   | 18 Months      | 15,000,000   |
| 2   |                    | Prof. George Kamucha        | University of Nairobi                                  | County Government of Siaya  | Improving neonatal care through affordable phototherapy and CPAP solutions in Kenya                         | 18 Months      | 15,000,000   |
| 3   | Food and Nutrition | Prof. Mary Abukutsa-Onyango | Jomo Kenyatta University of Agriculture and Technology | Prof. Anselimo Makokha; Dr. Eucabeth Majiwa; Mr. Patrick Amunavi- JKUAT; Ms. Joyce Liti Njuenga- LDRI; Mr. James Shikwati; Ms. Esperance Chesoli- IREN Grwothpad Ltd; Mr. Muchiri Nyaga- LDRI, Ms. Judith Mumba- LDRI; Dr. Ann Aswani Musotsi-Masinde Muliro University of Science and Technology | Upscaling African Indigenous Vegetables Climate Smart Technologies for Food and Nutrition Security in Kenya | 18 Months      | 15,000,000   |

## NRF and Partners Hold the 2<sup>nd</sup> Multisectoral Conference on Science, Technology & Innovation



The National Research Fund (NRF), in partnership with the National Commission on Science, Technology and Innovation (NACOSTI) and Konza Technopolis Development Authority (KoTDA), convened the 2nd Hybrid Multisectoral Conference on Science, Technology and Innovation (ST&I) themed; "Harnessing Science, Technology and Innovation (ST&I) for Food Security and Public Good in a Transformational Digitized Economy".

The conference, held from 24th to 25th May 2023 at the Safari Park Hotel, Nairobi, aimed to facilitate a multifaceted forum of national and international discourse to deliberate, network, partner, share experiences and resolve how best to deploy ST&I for the prosperity of humanity. The Conference accentuated a technology-driven, innovation-led, inclusive, sustainable development agenda.

The conference comprised several components to address different aspects of ST&I. These included:

**Inter-Ministerial High-Level Dialogue:** This session focused on the infusion of ST&I into national production and security systems. The objective was to discuss how ST&I

can be integrated into various sectors to drive development and address national challenges.

**Scientific and Technological Discourse:** This session explored the role of ST&I in leadership, advocacy, and diplomacy within the context of a transformational digital economy. It aimed to highlight the importance of ST&I in shaping policies, decision-making, and international collaborations.

**ST&I Exhibitions:** The conference featured exhibitions that showcased practical solutions to current global challenges. These exhibitions provided a platform for organizations and individuals to present their innovative projects and technologies addressing issues related to ST&I and;

**Science and Technology Education Week:** This component focused on fostering interest and awareness of ST&I among the next generation workforce. It aimed to inspire and engage students in science and technology-related fields through educational activities and programs.

NRF has invested heavily in research capacity building, multidisciplinary

# Conferences and workshops



Panelists and exhibitors during the 2<sup>nd</sup> Multisectoral conference, Nairobi

research, Bilateral and Multi-lateral research programmes, and research infrastructure to enhance the sustainable development agenda. To showcase the various achievements and research outputs, NRF held parallel research dissemination workshops and exhibitions under the auspices of this conference. The parallel session provided a platform for the Principal Investigators funded by NRF to present on thematic issues focusing on research outputs, outcomes and products.

This unique dissemination opportunity

demonstrates how research and innovation can be translated into practical applications that benefit industries and society, inform decision-making, improve practices and promote public understanding of scientific issues leading to economic growth.

Overall, the conference created a platform for collaboration and knowledge exchange to drive Kenya's development agenda through science, technology, and innovation.

## Call To Harness Science, Technology & Innovation (St&I) for Food Security and National Development Dominated the 2nd Multisectoral Conference

The Cabinet Secretary, Education, represented by Mr. Fredrick Ndambuki, officiated the four-day conference co-organised by National Commission for Science, Technology & Innovation (NACOSTI), National Research Fund (NRF) and Konza Technopolis Development Authority (KoTDA).

He noted that the event was timely and vital in bolstering the development of the sector.

***"The government of Kenya is taking bold steps to bolster the science, technology and innovation sector as a key sector for the Bottom-up Economic Transformation Agenda (BETA),"*** he said.

***"We must continue to demonstrate the power of research, science, technology and innovation as a solution to challenges faced nationally and globally, taking cognizance that science, technology, and innovation are at the core of National and global security, public safety, and inclusive sustainable development. Let us all unite in this noble undertaking for humanity."*** said the CS Machogu.

Recently, CS Education appointed the National Research, Technology and Innovation Committee (NARTIC) to build synergies in the ST&I sector and create fruitful partnerships both locally and globally.

Speaking at the Conference, Prof. Dickson Andala, CEO of National Research Fund noted that NRF has made tremendous progress towards sustainable development as evidenced by the research outputs that are now addressing Kenya's pressing challenges.



**Investing in ST&I and research allows the government to better understand the most pressing challenges faced by Kenya and the continent including poverty, hunger, and disease – and develop new technologies and solutions that can help us achieve food security, improve healthcare, and increase access to education.**

He called on all stakeholders to take a multisectoral approach, build strong partnerships, and commit to social and environmental sustainability if we must achieve sustainable development.

On his part, Prof. Walter Oyawa – Director General, NACOSTI, lauded the stakeholders for various initiatives in improving the sector and noted that partnerships are the future strategy for the sector. He said; ***"The ST&I sector has an impact on National Security, Public Safety and Inclusive Sustainable Development – this is an area we are committed to promote through our multi-sectorial approach as one of the leaders in Science, Technology & Innovation."***

John Okwiri, CEO of KoTDA, noted that Konza Technopolis is committed to advance the development of the

ST&I sector by putting in place requisite infrastructure, programs and linkages with Government, academia, industry, and development players. He highlighted catalytic projects such as: Kenya Advanced Institute of Science and Technology, the National Data Center, Digital Media city, Konza Conferencing Facility. He also highlighted the Jitume program, that is aimed at accelerating the country's efforts towards a Global Technology talent hub. This was said through a speech delivered by Josephine Ndambuki, Chief Manager, Business Development & Innovation.

The Conference provided a platform for sharing best practices and networking internationally in areas of ST&I-based Public Safety, Climate Change mitigation, and Environmental preservation, among others.

## 2<sup>nd</sup> Regional Research Conference - NLC

### Advancing Climate-Smart Land Governance: Key Takeaways from the 2<sup>nd</sup> Regional Research Conference



The 2<sup>nd</sup> Regional Research Conference on Land and Natural Resources, held in Nairobi from May 24<sup>th</sup> to 25<sup>th</sup>, 2023, was a significant step in addressing the crucial intersection of land governance and climate change in the region. Organized by the National Land Commission (NLC), the National Research Fund (NRF), the Ministry of Environment, Climate Change and Forestry – State Department for Environment and Climate Change, and the University of Nairobi's Institute of Climate Change and Adaptation, the conference brought together various stakeholders, including researchers, policymakers, practitioners, private sector representatives, civil society organizations, and youth.

The conference, hosted at the Kenya School of Government, Nairobi, revolved around the theme "Responding to Climate change through Land Governance in

the region." During the conference, Dr. Belio Kipsang, Basic Education Principal Secretary, speaking on behalf of the CS for Education, Ezekiel Machogu, emphasized the adverse effects of climate change on the education sector. He called upon researchers to generate new knowledge on climate change and share it with learners, emphasizing the importance of collective efforts to combat climate change. Dr. Kipsang also highlighted the government's commitment to plant 15 billion trees by 2032, urging all stakeholders to participate in this noble initiative.

**The conference aimed to achieve six key objectives:**

**Knowledge Sharing:** Participants exchanged knowledge related to Land Governance and Climate Change, covering aspects such as Adaptation, Mitigation, Financing, Capacity building,

and Technology. This knowledge-sharing is essential for informed decision-making in the face of climate challenges.

**Assessment of Efforts:** The conference evaluated the efforts made by various actors to incorporate climate change considerations into land governance and sustainable land management, recognizing the progress made to facilitate further improvements.

**Carbon Trading Assessment:** It provided a platform to assess the progress of carbon trading in the region, highlighting its role in climate change adaptation and mitigation.

**Identifying Challenges and Opportunities:** Stakeholders identified opportunities and challenges related to mainstreaming climate change in land governance in the region, allowing for targeted interventions.



Participants during the 2<sup>nd</sup> Regional Research Conference, KSG, Kabete.

**Knowledge Exchange:** The conference served as a platform for the exchange of knowledge, ideas, and experiences among stakeholders regarding climate change adaptation, mitigation, capacity building, and technology in land governance, fostering innovation and collaboration.

**Policy Recommendations:** A key

outcome was the generation of policy recommendations aimed at supporting the mainstreaming of climate action in the region. These recommendations can guide future actions and policies in the fight against climate change.

Speaking during the conference, Prof. Dickson Andala, NRF CEO, said that **"Global research and development(R&D)**



Dr. Belio Kipsang, PS, Basic Education addressing media during the 2<sup>nd</sup> Regional Research Conference at KSG, Kabete

**have emerged as critical factors in the drive to mitigate the climate change crisis by offering critical empirical evidence for science, innovation data-driven policy formulation that give rise to more widespread adoption of climate resilient solutions."**

**"It is our desire that through this conference, we shall find a way through which the programme prioritizes issues of land governance as an ingredient towards successful climate change mitigation and adaptation,"** he emphasized.

He further highlighted NRF's contributions to Climate Change Mitigation, including support for multidisciplinary research, facilitating collaboration, translating research into action, and raising awareness among policymakers, governments, and the public.

Some of the topical areas funded by NRF include innovative health solutions to combat the growth of malaria-prone zones in a time of climate change, smart agriculture solutions, research addressing flash flooding concerns, and alternative and innovative energy solutions to combat pollution and its impact on global warming and climate change.

The Chairman National Lands Commission (NLC) Mr. Gerishom Otachi said the Commission will use the recommendations from the conference to relook and review processes and procedures in land allocation, monitor and oversight land use planning and for valuation and compulsory land acquisition, among others.

**Key Conference Declarations and Takeaways:**

**Climate Change Threat:** Climate change emerged as a serious threat to the region's socio-economic prospects, potentially increasing poverty and exacerbating land-related conflicts. Improved land governance is urgently needed to optimize natural resource use.

**Collaboration for SDGs:** Effective collaboration and coordination among governments, international organizations, civil society, and the private sector are imperative for achieving the United Nations Sustainable Development Goals (SDGs) through climate change adaptation.

**Public Land Management:** Efficient public land management can mitigate climate change's adverse impacts and promote adaptation. This includes enhancing land use plans, natural resource atlas, land titling, monitoring, enforcement, and community participation.

**Policy Integration:** African governments were urged to incorporate climate change

agendas into their policies and facilitating tools to enable effective climate action.

**Urban Planning:** Sustainable urban planning to mitigate climate impacts and improve air quality was emphasized, recognizing urban land use as a determinant of climate change, particularly through air pollution.

**Pastoralism:** The importance of pastoralism in arid and semi-arid rangelands was acknowledged. Policies were recommended to protect the land rights of pastoralist communities and provide capacity building for adaptive livelihoods.

**Forest Management:** Comprehensive Forest management, including governance, policy alignment, land tenure security, and respecting the rights and knowledge of local communities and indigenous peoples, is vital for addressing climate change.

**Early Forest Fire Detection:** Technology, such as Wireless Sensor Networks and the Flam Map Model, was proposed for early detection and rapid response to forest fires.

**Community Land Valuation:** Conventional

land valuation methods were found inadequate for capturing the unique characteristics of community land, hindering community leveraging of land resources for climate change adaptation.

**Carbon Trading:** Carbon markets were recognized as a crucial tool for mitigating climate change. However, it was emphasized that these schemes must not infringe upon the rights of indigenous peoples who have sustainably managed their land and environment.

In conclusion, the 2nd Regional Research Conference on Land and Natural Resources served as a crucial platform for knowledge exchange and the generation of policy recommendations. It highlighted the pressing need for climate-smart land governance in the face of climate change challenges. The NRF and NLC expressed their commitment to continue this important dialogue and expand the reach of the annual conference, inviting all partners and stakeholders to join in the effort to create a more resilient and sustainable future for the region through effective land governance and climate action.



*Dr. Belio Kipsang, PS. Basic Education with organizers of the 2<sup>nd</sup> Regional Research Conference*

# Featured Articles

## Reflection on the way forward for the National Research Fund

By: JPR Ochieng'-Odero, PhD, HSC, MKNAS

Through the Science, Technology and Innovation (ST&I) Act No. 28, Section 32, of 2013, Kenya made a bold strategic and legislative decision on the path it wants to follow in terms of implementing a science, technology and innovation (ST&I) developmental paradigm. The Act established the National Research Fund (NRF). It was envisioned, that when fully operational, the NRF would deal with the full range and complexities of processes involved in resourcing research and development (R&D), business development and human capital development, within a National System of Innovation (NSI) that involves interacting with private and public entities, higher education institutions, other Government agencies and donor organisations. The Fund was set to grow on an annual basis until it reaches a target of 2% of the GDP.

At the very outset, the Fund adopted a competitive grant awarding scheme on the underlying premise that merit-based competition would generate innovative development-oriented solutions and thereby deliver both products and social services to the nation.

However, while competition was seen as a key guiding principle, there was need to provide for other forms of strategic funding such as infrastructure upgrade, and acquisition of expensive laboratory equipment, among others.

The Fund had yet another responsibility; to address the participation of marginalised communities such as youth, women, people living with disabilities and other

special interest groups. NRF's strategic response to COVID-19, increasing incidences of cancer, as well as desert locust and armyworm invasion have been applauded as timely national interventions.

Since the operationalisation of NRF, there are some issues that have emerged that need urgent attention and key lessons learnt. This forum serves as a good place as any other to reflect on these lessons.

- Our research and innovation ecosystem remains fragile and needs to be organically strengthened and invigorated through targeted programme funding. How can this be best achieved and what are the low hanging fruits?
- Meaningful collaboration between industry and the research sector (research and higher education institutes) is low. How do we stimulate and promote joint ventures between research practitioners, industry and/or the public sector?
- Commercialisation of research has not grown significantly. Can we provide stimulant funding intended to promote ST&I-based entrepreneurship? This category may include infrastructural support for entities such as technology transfer units, entrepreneurship courses, incubators and venture capital for university-based start-ups?
- The concept of "valorisation" needs to be inculcated in our R&D enterprise. Institutions funded from the NRF must make a major impact on society by giving back and investing in priority programmes of social value to the community.
- The Fund's resources have not significantly increased over time. Allocations from the exchequer have declined and major resources have not been mobilised to increase the inflow.
- Ensuring long-term sustainability of the NRF. How do we ensure long-term sustainability through increased buy-in and co-investment by county governments as well as the direct target beneficiaries such as CBOs?

Dr. JPR Ochieng'-Odero is currently a Senior Research Fellow (Research and Innovation) at Strathmore University. He was a Team Leader of the East Africa Research Fund - EARF (www.earesearchfund.org) supported by FCDO's East Africa Research and Innovation Hub (EARH). He was Deputy Director of the Consortium of National Health Research - CNHR (www.cnhkenya.org), former Senior Research

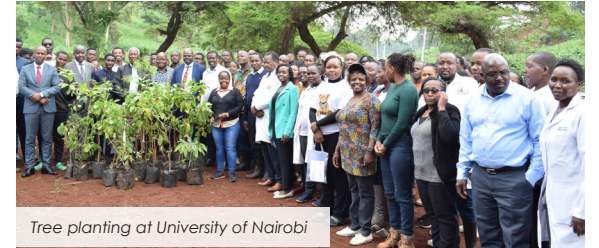
Scientist and Head of the Capacity Building and Institutional Development of the International Centre of Insect Physiology and Ecology - ICIPE (www.icipe.org). He was a Commissioner with the Commission for University Education - CUE (www.cue.or.ke) and founding member (2015-2021) of the Board of Trustees of the National Research Fund.

## NRF Champions Increased Tree Cover

### NRF Partners with the University of Nairobi to Plant 2000 Trees

Prof. Ratemo Michieka, NRF board Chairman led other board members and staff in planting trees at the Upper Kabete Campus, University of Nairobi. The activity was geared towards realizing the Government's initiative of planting 15 billion trees by 2032 to reduce greenhouse emissions and stop and reverse deforestation in the country.

NRF has adopted a tree planting initiative and committed to being part of the National Tree Growing & Restoration Campaign to plant 15 billion trees, translating to 30 percent of tree cover by 2030 in line with the Presidential directive.



Tree planting at University of Nairobi

### NRF Partners with Colobus Conservation, Kwale County

NRF Board and Staff members joined hands with Colobus Conservation to plant 2,000 trees at Mwaroni Primary, Kwale County. This initiative is geared towards reducing greenhouse emissions and stopping and reversing deforestation in the country. NRF continues to foster sustainable partnerships on government initiatives to address climate change.



Tree planting at Mwaroni Primary, Kwale County





## Carbon Trading in Kenya

By: Titus Kisangau, Corporate Communications, NRF

In the wake of human-induced global climate fluctuations, which pose a significant threat to livelihoods, with a particular impact on vulnerable agrarian and pastoralist communities, international endeavors such as the Kyoto Protocol and carbon trading have been set in motion. Nevertheless, critics contend that the Kyoto Protocol, designed to address environmental justice and reduce greenhouse gas emissions, falls short of its objectives, particularly in developing nations such as Kenya.

### An Examination of Carbon Trading in Kenya: A Critical Appraisal

Initiating an in-depth exploration, a study was undertaken to delve into a comprehensive country case study centered around carbon trading in Kenya. This comprehensive investigation encompassed the policy and legal framework, various carbon trading projects, implementation challenges, and criticisms encountered by Kenya's initiatives. The primary objective was to shed light on the strengths and weaknesses of carbon trading, particularly its impact on local communities.

### Carbon Trading in Kenya: An Overview

According to the study, Kenya, as a developing country under the Kyoto Protocol, stands to derive financial benefits from the sale of carbon credits through mechanisms like International Emission Trading and the Clean Development Mechanism (CDM). The legal foundation encompasses international treaties, national legislation, and statutes such as the Climate Change Act.

In Kenya, carbon trading is perceived as a flexible and lucrative approach to combat climate change. It provides an avenue for

developing nations, including Kenya, to secure funds for sustainable development, primarily due to their lower greenhouse gas emissions. Advocates assert that the establishment of a market for assigning a value to pollution acts as an incentive for reducing emissions and fostering the development of environmentally friendly technologies.

Despite its advantages, carbon trading faces criticism. Opponents argue that it perpetuates power imbalances between developed and developing nations by commodifying a shared resource - the air - resulting in unjust property rights. Concerns also arise regarding the potential for increased emissions and disproportionate advantages for high-polluting industries. The intricacies, transaction costs, and corruption risks associated with carbon trading introduce additional challenges.

In conclusion, this study illuminates the complexities and obstacles inherent in carbon trading in Kenya. While it holds promise in terms of offering financial incentives and driving reductions in emissions, the weaknesses, which include issues related to justice, power imbalances, and possible environmental impacts, should not be disregarded.

To address the identified weaknesses, the study recommends advocating for policy exemptions, establishing initial capital funding, raising awareness, providing financial incentives for emission reduction projects, and integrating climate finance training into university curricula.

**Source:** *Carbon Trading In Kenya: A Critical Review* by Kioko Nzuki Mwanja, A recipient of the WIPO/ARIPO MIP fellowship.



# Opportunities Corner

# Opportunities

- 1 USAID: Agency of International Development. Science, Technology, Innovation and Partnerships (STIP). Application deadline: March 4, 2024. <https://usaid.gov/innovation-technology-research/research/STIP-APS>
- 2 NOFO: Innovative Health Practices to Improve Health Outcomes. Application deadline: February 20, 2028. <https://npin.cdc.gov/funding/innovation-health-practices>
- 3 American Association of University Women. AAUW International Fellowships. <https://www.aauw.org/resources/programs/fellowships-grants/current-opportunities/international/>
- 4 Hong Kong PhD Fellowship Scheme, (HKPPFS). Fully funded positions in PhD and Doctoral program. <https://cerg1.ugc.edu.hk/hkpps/index.html>
- 5 Hubert H. Humphrey fellowship program to enhance leadership among international professionals who collaborate to address local and global challenges and foster change for the collective good. <https://www.humphreyfellowship.org/>
- 6 Hubert H. Humphrey Fellowship Program 2024/2025 for mid-career Professionals (Fully Funded to the United States). <https://humphreyfellowship.org/program-overview/>
- 7 Alfred Wegener Institute Helmholtz Centre, Germany. 24 PhD fully funded positions in Marine, Biology, Marine Chemistry, Botany, Biotechnology, Cell Biology and Ecophysiology. Application deadline: Varies with the Program. <https://helmholtz.de/en/career/job-vacancies/?search%5Bfilter%5D%5BfieldOfWork%5D=fieldOfWork%3APHD+Thesis>
- 8 Institute of Molecular Plant Biology at ETH Zurich in Switzerland. PhD funded position in Plant Biochemistry. Application deadline: Open. <https://jobs.ethz.ch/site/index#:~:text=100%25%2C%20Zurich%2C%20fixed-term&text=Applications%20are%20invited%20for%20a.of%20Biology>
- 9 Yale University Scholarships 2024. Fully Funded position in Undergraduate, MSc and PhD. Application deadline: Open. <https://finaid.yale.edu/costs-affordability/types-aid/scholarships-and-grants#YS>
- 10 University of Saskatchewan, Canada. PhD Fellows in Plant- Soil Interactions. Application deadline: Open. <https://research-groups.usask.ca/bennett-lab/index.php>



# Upcoming Events

## National Research Fund (NRF) will be hosting the Science Granting Councils Initiative (SGCI) Annual Forum and the Global Research Council (GRC) Sub-Saharan Africa Regional Meeting

Convening from **13th to 17th November 2023** in **Mombasa**

National Research Fund Kenya

### Science Granting Councils Initiative 2023 Annual Forum and Global Research Council Meeting

#### Fostering Collaboration and Innovation in Sub-Saharan Africa

The upcoming Science Granting Councils Initiative (SGCI) 2023 Annual Forum and Global Research Council (GRC) Sub-Saharan Africa Regional Meeting, set to take place from **November 13th to 17th in Mombasa, Kenya**, promises to be a significant gathering of science, technology, and innovation (ST&I) stakeholders. Hosted by the National Research Fund, Kenya (NRF), this event provides a unique platform for high-level discussions and collaboration on critical ST&I themes.

The SGCI plays a pivotal role in strengthening Science Granting Councils (SGCs) in sub-Saharan Africa, enabling them to support research and evidence-based policies that contribute to economic and social development. This initiative, funded by a coalition of international partners, focuses on managing research, designing, and monitoring research programs, fostering knowledge exchange with the private sector, and creating partnerships within the scientific community.

The 2023 Annual Forum will feature a Masterclass on research funding flows, offering insights into the complex landscape of funding from various sources. It aims to provide concrete recommendations for SGCs to better manage research agendas and cultivate partnerships.

A core component of the event is the **Monitoring, Evaluation, and Learning (MEL)** sessions. These sessions foster continuous learning

and knowledge sharing among stakeholders, ensuring that the initiative remains evidence-based in its decision-making.

The **Academic Symposium**, co-hosted with the Africa Open Science Platform (AOSP), offers an opportunity to highlight projects funded by NRF Kenya and SGCI. It also focuses on open science and science communication, promoting networks among SGCI partners and beyond.

The **GRC Sub-Saharan Africa Regional Meeting**, an integral part of this event, facilitates collaboration among global funding agencies. It complements SGCI's focus on strategic communication, knowledge uptake, and networking. By sharing experiences in the global network of science funders, the GRC raises the profile and visibility of science funders in Sub-Saharan Africa.

This event will bring together representatives from SGCs, SGCI Collaborating Technical Agencies, SGCI funders, and other invited guests. It offers a rich opportunity to drive ST&I innovation, collaboration, and policy discussions in the region.

The SGCI 2023 Annual Forum and GRC Sub-Saharan Africa Regional Meeting is a crucial step toward strengthening the ST&I landscape in sub-Saharan Africa and fostering international cooperation. Participants can look forward to engaging discussions, knowledge sharing, and the chance to shape the future of research and innovation in the region.

27 Nov - 01 Dec, 2023 | College Of Insurance, Nairobi

## Kenya Innovation Week 2023

Theme: Innovating to Unlock Our Common Wealth

**Kenya Innovation Week 2023 - Commonwealth Edition: Celebrating diversity, unity and progress**

# Coming Soon

## Upcoming Events



9th December  
2023

**Launch of NRF  
Strategic Plan**



12th-17th  
August 2024

**Research  
Week**



# Pictorials



Dr. Beatrice Inyangala, PS Higher Education and Research commissioning NRF funded equipment at the assessment and research, KISE



Dr. Bello Kipsang, PS, Basic Education, tours NRF exhibition booth during 2nd Regional Research Conference at KSG



Hon. Musalia Mudavadi, Prime Cabinet Secretary, with Prof. Kiama, Prof. Ratemo Michieka and Prof. Andala during ground breaking event for Kantaria Agricultural and Innovation Center, (KATIC) at UoN.



NRF team during the Science Granting Initiative Council's (SGCI) learning consolidation workshop in Accra, Ghana



NRF team participating in the Science Granting Initiative Council's (SGCI) learning consolidation workshop in Accra, Ghana



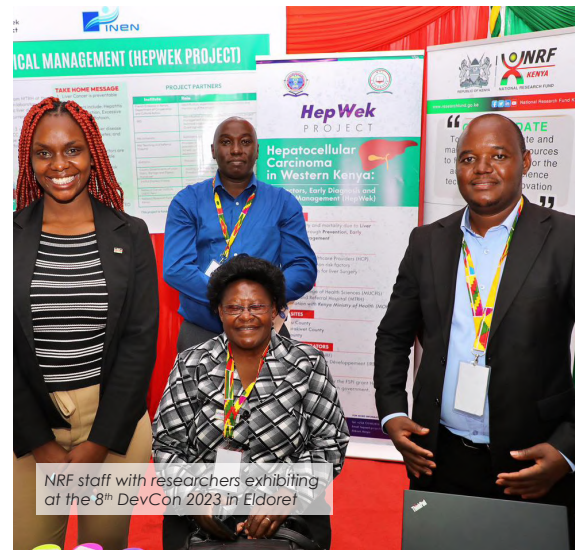
NRF board and staff during a tree planting exercise in partnership with Colobus Conservation in Kwale County



NRF and ACTS programme teams during a meeting to explore new research initiative for Science Granting Councils in Nairobi



NRF participating in 8<sup>th</sup> Devolution conference 2023 in Eldoret



NRF staff with researchers exhibiting at the 8<sup>th</sup> DevCoh 2023 in Eldoret



Hon. Ababu Namwamba, CS, Sports and Youth Affairs at NRF exhibition booth during NATCOMs 10th Anniversary at KICC



CEO, Prof Andala Officiates the Kenya National Nuclear Magnetic Resonance Centre's (KNMRC) 3rd regional hands-on NMR training UoN



Board of Trustees during a project tour at KEMFRI Shimoni Center to access progress of Marine Hatchery project



NRF staff with the Board Chairman, Prof. Michieka during the launch of his autobiography, *Walking the Promise*

## Our Partners



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National Research Fund Kenya