National Commission for Science, Technology and Innovation (NACOSTI)

NACOSTI ScienceTech Plaza (TBC)

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EDITORIAL

"Science and Technology for Prosperity"

Welcome to the third volume of the STIR Bulletin which highlights the activities of the National Commission for Science, Technology and Innovation (NACOSTI) over the last few months. NACOSTI is mandated to regulate and assure quality in the research, science, and technology and innovation sector and advise the Government in matters related thereto. The Commission Regulates, Coordinates, Advises and promotes Science, Technology, Innovation and Research activities in the country.

This volume brings out the Commission's STI Mainstreaming activities, which seeks to make Science, Technology and Innovation part of everyday business for our partners. NACOSTI's activities to support STI Mainstreaming is brought out in the bulletin through highlights of the commission's engagements which include workshops, conferences and meetings.

The role of STI in the attainment of Kenya Vision 2030 cannot be over-emphasized. As we strive towards knowledge-based economy, research is needed to inform the policymaking process, facilitate better understanding and furthering of best practices for all those working in various research fields. One of the mandates of NACOSTI is to advice the government on research priorities for the country. To this end, the Commission developed the National Research Priorities in consultation with the relevant arms of Government, the Private Sector and other major stakeholders. This bulletin shares the efforts to have players in the research sector focus on the National Research Priorities in the design and execution of their research programmes.

I wish you happy reading as you interact with this issue of the NACOSTI STIR Bulletin.

Mr. Gideon Kirui
Bulletin Committee Chairman

REMARKS FROM THE DIRECTOR GENERAL/CEO

"Science and Technology for Prosperity"

I take this opportunity to welcome you to read the STIR Bulletin, Volume 3, a publication of the National Commission for Science, Technology and Innovation (NACOSTI). STIR Bulletin captures the latest news and featured articles from the Science, Technology and Innovation (STI) sector, and is therefore the voice of stakeholders in the STI Ecosystem as communicated by the STI Regulator, NACOSTI.

NACOSTI is established under the Science, Technology and Innovation Act, 2013 (Rev. 2014) with a unique mandate of regulating and assuring quality in the research, science, technology and innovation sector, and advising the Government in matters related thereto. In so doing, the Commission shall Regulate, Coordinate, Advise and Promote Science, Technology, Innovation and Research activities in the country.

Among other functions of NACOSTI include; developing priorities in scientific, technological and innovation activities in Kenya, Registering and Accrediting Research Institutions, Licensing of Research and assuring relevance and quality of research programmes in research institutions, coordinating and evaluating activities relating to scientific research and technology development, annually reviewing the progress in scientific systems, and promoting the adoption and application of scientific and technological knowledge in attaining national development. Further, the Science, Technology and Innovation (STI), Legal Notice No. 108 (Research Licensing) Regulations, 2014 obligates all persons intending to undertake scientific research in Kenya to obtain a license in accordance with the Act. In this regard, we have made this process easy and convenient for you all by making it available online.

I trust that you will enjoy interacting with the information presented herein. Feel free to contact us through our telephone numbers, email and all our social media platforms.

Prof. Walter O. Oyawa, PhD
National Commission for Science, Technology and Innovation (NACOSTI)

NACOSTI MANDATE, VISION, MISSION, CORE VALUES, & FUNCTIONS

Mandate

The objective of the Commission shall be to regulate and assure quality in the science, technology and innovation sector and advise the Government in matters related thereto.

Vision

Accelerate the Transformation of Kenya as a knowledge-based economy.

Mission

To facilitate quality in the research, science, technology and innovation sector through regulation, promotion and provision of advisory services.

Core Values

The Commission upholds Integrity, Customer Focus, Professionalism, Teamwork and Leadership in the discharge of its mandate.

Functions

a) Develop, in consultation with stakeholders, the priorities in scientific, technological and innovation activities in Kenya in relation to the economic and social policies of the Government, and the country's international commitments.
b) Lead inter-agency efforts to implement sound policies and budgets, working in collaboration with the county governments, and organizations involved in science and technology and innovation within Kenya and outside Kenya.
c) Advise the national and county governments on the science, technology and innovation policy, including general planning and assessment of the necessary financial resources.
d) Liaise with the National Innovation Agency and the National Research Fund to ensure funding and implementation of prioritized research programmes.
e) Ensure co-ordination and co-operation between the various agencies involved in science, technology and innovation.
f) Accredit research institutes and approve all Scientific research in Kenya.
g) Assure relevance and quality of science, technology and innovation programmers in research institutes.
h) Advise on science education and innovation at both basic and advanced levels.
i) In consultation with the National Research Fund Trustees, sponsor national scientific and academic conferences it considers appropriate.
j) Advise the Government on policies and any issue relating to scientific research systems.
k) Promote increased awareness, knowledge and information of research system.
l) Co-ordinate, monitor and evaluate, as appropriate, activities relating to scientific research and technology development.
m) Promote and encourage private sector involvement in scientific research and innovation and development.
n) Annually, review the progress in scientific research systems and submit a report of its findings and recommendations to the Cabinet Secretary.
o) Promote the adoption and application of scientific and technological knowledge and information necessary in
p) Develop and enforce codes, guidelines, and regulations in accordance with the policy determined under this Act for the governance, management and maintenance of standards and quality in research systems.
q) Undertake, or cause to be undertaken, regular inspections, monitoring and evaluation of research institutions to ensure compliance with set standards and guidelines.

PRESIDENT UHURU KENYETTA URGES KENYAN UNIVERSITIES TO INVEST MORE IN RESEARCH

President Uhuru Kenyatta urges Aga Khan University to further invest in research and training that will support our new focus on Competency based education that is poised to provide our learners with twenty first century skills.

Figure 1:President Uhuru Kenyatta addresses the Participants

President Kenyatta. who spoke on Friday 11th June 2021 in Nairobi when he awarded a charter to the Aga khan University-Kenya, also urged universities to concertante on producing graduates who can tackle global challenges and make the world a better place.

Figure 2: Other pictorial during the event

The president's guidance in line with his previous proclamation during 50th Anniversary celebration of ICIPE where he reiterated that investments in science and technology are critical for Africa to achieve the aspiration of becoming a prosperous and peaceful continent. Indeed, the continent will continue to rely on scientific organizations, not only to address present and future development challenges but also to provide the platform upon which, to take advantage of the emerging opportunities in the digital and the biological economic sectors.

Source: Extract from the Statehouse website

NACOSTI RENEWS ACCREDITATION OF JKUAT IERC

The National Commission for Science, Technology and Innovation (NACOSTI) has renewed the accreditation of the Jomo Kenyatta University of Agriculture and Technology (JKUAT) Institutional Ethics Review Committee (IERC) for the next three (3) years. The JKUAT (IERC) was first accredited in October, 2016.

Figure 3: JKUAT Juja Campus Main Entrance 1

The Chairman of the JKUAT IERC, Dr. Patrick Mburugu, said, after getting the accreditation renewal, the committee "will therefore continue with its independent mandate of reviewing and evaluating research proposals to ensure researchers comply with the guidelines on human subjects protection."

The mandate of the committee is to evaluate the scientific and ethical merits of research proposals. Research protocols that conform to required standards both scientifically and ethically are issued with an approval as required by NACOSTI.

Which proposals require ethical approval?

All research involving human participants should undergo ethical review and approval before commencement of the study. This includes any social science, biomedical, behavioral or epidemiological activity that involves data collection or analysis in which human beings are involved.

Internationally seeking ethical review and approval is a well-established part of the research process. The ethical review and approval is done by independent ethics committees regulated by NACOSTI in Kenya and JKUAT IERC is one of them.

What does the committee look for before approval?

The committee assigns reviewers based on their expertise to review the document and ensure it adheres to basic principles of ethics in research. Before approval, the researcher must ensure that the research:

1. **Maximizes benefits:** The researcher needs to show that the research benefits outweighs the risks posed to study participants. The project design should ensure quality and integrity that maximizes a chance for credible results. It should ensure a plan for dissemination of study findings. In addition the aims and objectives should be clear and methodology used should be appropriate to address them.

2. **Respects autonomy:** The researcher should demonstrate the respect for autonomy of individuals involved. The researchers should outline in the protocol how they will ensure study participants are not coerced to participate and there will be no penalty for refusing to participate. That the participants understand the study and are free to withdraw at any time with no repercussions. The proposal should also enumerate how personal data provided by participants will be rigorously protected for confidentiality and anonymization. This should be addressed through comprehensive consenting procedures.
3. **Minimizes harm:** The protocol should outline the expected potential risks/harm to participants involved and how they will be avoided or addressed.
4. **Integrity:** The researchers have an obligation to conduct research with integrity and transparency throughout the research project. Ethical committees are mandated to conduct site visits to ensure compliance.

All applicants are expected to adhere to these basic principles before applying for ethical approval. Adherence to the basic principles and the provided check lists before submission ensures that your application is processed without delay.

JKUAT IERC assures applicants that applications will be reviewed fairly and without delays.

Source: http://www.jkuat.ac.ke/

NACOSTI AND PARTNERS ORGANIZE MULTI-SECTORAL STI CONFERENCE

National Commission for Science, Technology and Innovation (NACOSTI) has convened a multi-sectoral conference in collaboration with key partners within the Science, Technology and Innovation (STI) ecosystem. Following consultations with key stakeholders' the Commission is planning for a three (3) day 1st Multi-sectoral Conference themed "STI Governance, and Mainstreaming/Infusion in National Development Agenda in a disrupted world" as from 4th to 6th August 2021 in Naivasha. The conference will be held both virtually and physically. The conference will be preceded by a pre-conference event targeting high levels on STI, Universities, research institutions and TVET Institutions.

The Multi-sectoral conference aims at convening leading industrialists, captains/champions of the industry, STI institutions and MDAs, private sector, innovators, professionals, leaders, scholars, intellectuals, scientists, and researchers to exchange and share their experiences, STI achievements and developments, R&D results, and networks on all aspects of Science, Technology and Innovation (STI). It also provides a premier multidisciplinary, interdisciplinary, and intradisciplinary platform for professionals, practitioners, inventors, innovators, entrepreneurs, scholars, researchers and educators to present and discuss the most recent innovations, scientific and technological advancements, and STI trends and trajectories, in a world disrupted by the pandemic.

Figure 4: Conference Flyer

The conference facilitates a unique a forum for stakeholders to engage on the status of the science, technology and innovation in the country, and its infusion in the Country's Development Agenda for inclusive and sustainable growth. The Conference will strengthen collaborations and partnership among institutions in the STI ecosystem. Even more so, the Conference will enable key decision makers to chart new pathways of inclusive sustainable development, grounded on updated knowledge systems that can accelerate the creation, diffusion and adoption of science, technology and innovation.

Potential participants will include, but not limited to Chairman of Inter-Public Universities Council Consultative Forum (IPUCCF), Chairpersons & CEO's of NRF, KENIA, CUE, KNQA, TVETA, Vice Chancellors, Principals of University Colleges, Heads of Research Institutions, and STI Desk officers from stakeholder institutions.
National Commission for Science, Technology and Innovation (NACOSTI) is established by the Science, Technology and Innovation Act, No. 28 of 2013 (STI Act) as a State Corporation. NACOSTI regulates and assures quality in Science, Technology and Innovation sector and advises the Government in matters related thereto. To contribute to the realization of NACOSTI's mandate of quality assurance and adherence to the STI Act and Regulations, the Commission has developed (and continues to develop) several policy documents, and guidelines in consultation with stakeholders.

EU-AFRICA PERMED LAUNCHING EVENT: BUILDING LINKS BETWEEN EUROPE AND AFRICA IN PERSONALISED MEDICINE

A kick-off meeting of the EUAfrica PerMed project (https://www.euafrica-permed.eu/), which is funded under Horizon 2020, the European framework programme for Research & Innovation took place on 4th March 2021.

The EU-Africa PerMed project has the final objective of integrating African countries into ICPerMed (https://www.icpermed.eu/) activities as a means to contributing to a successful implementation of Personalized Medicine (PM) in the global context, fostering joint PM projects and programmes between Europe and Africa, as well as strengthening bilateral science, technology and innovation relations in the area of health.

The International Consortium of Personalised Medicine, ICPerMed, initiated in 2016, provides a platform to support research in personalised medicine. It is formed by more than 40 funding bodies from EU member states and beyond, including public and private not-for-profit health research funding and policy organisations.
The project, conceived and designed in the middle of the coronavirus outbreak, responds also to the necessity of global approaches when facing global threats.

EU-Africa PerMed is distributed in 6 Work Packages and it looks at identifying and engaging relevant health-related organisations and to foster the integration of funding structures and policy organisations in ICPerMed. It will as well focus on seeking synergies and align with activities of ongoing EU-Africa research programmes and other bi-regional policy actions.

Figure 5: Screen shot of the virtual kick-off meeting of EU-Africa PerMed project (4th March 2021).

During the next 4 years, EU-Africa PerMed project will be developed by 13 organisations from both Europe (6 partners) and Africa (7 partners). The lead role **of National Commission for Science Technology and Innovation (NACOSTI)** is to organize two stakeholders' workshops in Nairobi, Kenya the 1st one being virtual in November, 2021 and the 2nd one in early 2022. The workshops envisage to engage relevant stakeholders to identify main challenges, needs, expectations and opportunities of Personalized Medicine in Africa, and the potential advantages of a closer collaboration with Europe,

integrating local knowledge and practice. It will serve as a first opportunity to disseminate the project to African stakeholders, hence making them aware of the ICPerMed consortium and the ERA PerMed instrument. It will provide an indication of how activities planned for the project in years 2-4 could be best implemented considering the identified needs and expectations of stakeholders. From this workshop, a policy brief describing the main challenges for PM in Africa and options for a stronger EU-Africa collaboration in PM will be prepared by February 2022. NACOSTI will also be involved in the implementation of most of the project activities in a supportive role. This project has been licensed in Kenya, in line with the provisions of the STI Act.

The kick-off meeting allowed the participants to virtually share and plan the first steps to be taken for launching the action. The meeting was as well attended by the Project Officer from the European Commission and the members of the External Advisory Board, composed by 5 renowned experts that highlighted the opportunity this project brings to join forces, build on existing efforts at African level, and foster a dialogue between initiatives. They also underlined the importance of share common approaches to PM and demonstrate the added value PM may bring to health issues in the continent.

NACOSTI BOSS APPOINTED TO CHAIR REGIONAL SCIENCE AND TECHNOLOGY BODY

Figure 6: Prof. Walter Oyawa, Director General - NACOSTI

Prof. Walter Oyawa, Director General – National Commission for Science, Technology, and Innovation (NACOSTI), has been appointed as the Chair of the East African Science and Technology Commission (EASTECO) Governing Board, an institution of the East African Community (EAC). In a letter dated 13th April 2021, the Executive Secretary of EASTECO – Mr. Fortunate Muyambi, confirmed that this was a decision of the 6th Extraordinary meeting of EASTECO Governing Board held on 13th March 2021.

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The East African Science and Technology Commission (EASTECO) is a semi-autonomous institution of the EAC that was established by the fifth Extra Ordinary Summit of the EAC Heads of State on June 18, 2007. This was in accordance with the relevant provisions of the Treaty on the Establishment of the East African Community as set out in Chapter 16, Article 103 (a), where the Partner States undertook to promote co-operation in the development of science and technology within the EAC Partner States. The overall objective of EASTECO is to promote and coordinate the development, management and application of science and technology to support EAC regional integration and socio-economic development. The commission is the main regional agency through which the Partner States develop and implement common science, technology and innovation (STI) policies, programmes and projects in priority areas that include human resources development, collaborative research, technology development and innovation.

The EASTECO 2020 – 20230 Bioeconomy strategy will offer an opportunity for countries in Eastern Africa to achieve many of the Sustainable Development Goals, making use of the region's abundant natural resources, including underutilized agricultural waste materials, to produce value added products with applications in many sectors including food, health, energy and industrial goods, thereby creating jobs, generating wealth, and connecting smallholder farmers to new biobased value chains.
The EAC Regional Pharmaceutical Plan of Action 2017-2027, identifies herbal and traditional medicines as a market niche for the EAC. The strategy for indigenous knowledge and technology systems involves: Support the role of indigenous knowledge and technology systems in development. Promote the documentation, preservation and protection of indigenous knowledge and technology systems. Guide academia to research on and advocate for indigenous knowledge and technology systems. Guide the design and implementation of projects and programmes on indigenous knowledge and technologies.

This Regional Bioeconomy Strategy provides a compelling framework for putting in place agreed goals and interventions which countries in Eastern Africa can use to achieve the continental aspiration of integrating its Agenda 2063 and the UN 2030 Agenda for Sustainable Development into intersectoral national development plans, and the regional aspiration contained in EAC Vision 2050, in which Member States aspire to become middle-income countries. This strategy builds upon existing national and regional science, technology, and innovation (STI) policies and related instruments aimed at creating an enabling environment for increased STI investments to support sustainable development and socio-economic transformation. Moreover, the strategy is aligned with expressed commitments to

environmental sustainability, climate change adaptation and mitigation, reversing or changing unsustainable practices.

The East African Community (EAC) treaty emphasizes cooperation and channeling of investments especially in education and research to prepare citizens to operate effectively in a globalized economy (EAC, 2013). Key issues include harmonization of curricula and education systems. This includes developing harmonized programs for the primary, secondary and tertiary education cycles including TVET. It is anticipated that the adoption of a common framework will promote equal access to STEM education opportunities, harmonized quality assurance and accreditation systems across the region with greater opportunities for labour mobility within the region.

NACOSTI PARTNERS WITH DAYSTAR UNIVERSITY TO CREATE AWARENESS ON RESEARCH PROCESS AND LICENCING

NACOSTI in collaboration with Daystar University recently held a workshop for postgraduate students to provide mentorship on matters graduate research. The 3rd Interuniversity Graduate Students' Mentorship Programme (IGSM) on research and publication was held virtually on 8th April 2021 from 1.00 – 5.00 pm. Director General, National Commission for Science, Technology and Innovation - Prof. Walter Oyawa addressed over one hundred and eighty (180) participants on the topic "***Research Ethics: The Regulators Perspective***". He informed the participants that the commission was established by the Science, Technology and Innovation Act, 2013 (Revised 2014) as a State Corporation. The mandate of NACOSTI is to regulate and assure quality in the science, technology and innovation sector and advise the Government in matters related thereto. To achieve its mandate, the STI Act stipulates seventeen functions of NACOSTI, which may be categorized into: Regulating, Advising, Coordinating, and Promoting matters STI and the STI sector. As part of regulation and quality assurance, NACOSTI licences research in Kenya that is beneficial to the country and does not:

- adversely affect the culture of any community in Kenya
- adversely affect the environment
- adversely affect nature
- result in the exploitation of intellectual property rights of communities to their traditional knowledge
- adversely affect the lives of Kenyans; and
- compromise state security.

Prof. Laban P. Ayiro
Vice-chancellor, Daystar University

Mr. Boniface Wekesa
Ag. Director, Research, Accreditation and Quality Assurance, NACOSTI

The participants were informed that NACOSTI examines all research proposals for suitability for licensing based on the above criteria. It is thus mandatory that all persons to obtain a research license for undertaking any scientific research in the country as per the STI Act. Prof. Oyawa informed the participants that before the applicants submit their proposals to NACOSTI for licensing, they should be first submitted to the Institutional Scientific and Ethics Review Committees (ISERC). This is to ensure that the proposals are scientifically and ethically compliant. In the case of graduate students research the proposal must be approved by their respective Institutional Board of Postgraduate Studies.

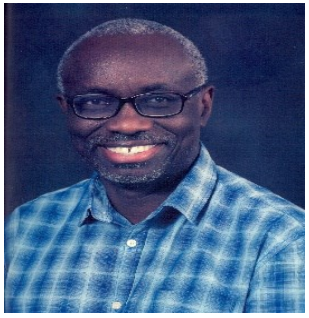
Figure 7: Awareness Banner

According to section 15 of the STI Act, *any person who accesses, handles, transacts, transfers, or moves any specified technology or any material necessary for scientific research within, into or from Kenya without a licence issued under the STI Act or undertakes research without a license contravenes the STI Act and hance commits an offence. This person shall be liable on conviction to a fine not exceeding five million shillings or to imprisonment for a term not exceeding four years, or both. Further, the court convicting such a person may in addition to any penalty imposed thereunder, order the confiscation of the mat erials in respect of which the offence is committed, and may bar the person so convicted from undertaking any further research in the country or transferring or moving any substance or material in or out of the country*.

The Director General further informed the participants that NACOSTI was a focal point of several international organizations where Kenya is a signatory to the International Treaties, Conventions and Protocols. The scope of these international obligation ranges from protection of human subjects to control of production and application of nuclear and biological weapons. The National Focal Points for which the Commission is a focal points are: The Biological Weapons Convention (BWC), The African Regional Cooperative Agreement for Research, Development and Training related to Nuclear Science and Technology (AFRA), International Centre for Genetic Engineering and Biotechnology (ICGEB), Comprehensive Nuclear Test Ban Treaty Organization (CTBO), and East African Science and Technology Commission (EASTECO). In addition, NACOSTI is expected to ensure that any other emerging technology is applied for the benefit of the country.

The one-day workshop which was jointly organized by Daystar University, NACOSTI and International Communication Association (ICA) was attended by over 180 Masters and PhD students as well as faculty members drawn from both local and international universities The other key speakers included: Prof. Laban P. Ayiro, Vice Chancellor, Daystar University; Prof. T.J. Thomson, Queensland University of Technology, Australia; Prof. Mary Bock University of Texas-Austin, USA; Prof. Kirstie McAllum, University of Montreal; Prof. Simone Driessen, Erasmus University Rotterdam, The Netherlands; and Prof Shiv Ganesh, University of Texas-Austin, USA.

STRENGTHENING RESEARCH ETHICS IN KENYA (STReK)



Prof. Walter Jaoko
Director of Kenya Aids Vaccine Initiative (Kavi) Institute of Clinical Research, teaches medical microbiology at the University of Nairobi

Mr. Boniface Wekesa
Ag. Director, Research, Accreditation and Quality Assurance, NACOSTI

STRek is an EDCTP funded project aimed at strengthening research ethics in Kenya. It consists of a partnership between University of Nairobi, National Commission for Science, Technology and Innovation (NACOSTI) and Kenyatta National Hospital, the largest teaching and referral hospital in Kenya.

NACOSTI through its National Bioethics Committee (NBC) is the body tasked to provide national ethics oversight for all researches involving humans in Kenya, a feat achieved through delegation to its accredited research ethics committees (RECs). In the recent years the NBC has accredited several new RECs whose members require the necessary training to efficiently carryout their duties of reviewing research proposals adequately for the protection of research participants. A key role of NBC is to ensure that RECs have the capacity to uphold ethical conduct of research within their respective jurisdictions. STReK aims to strengthen functionality, performance and recognition of NBC which can be sustained through time. STReK overall objective is to support NBC to achieve 2 major milestones namely to: establish systems to enable it to provide the necessary research ethics oversight; and train and provide mentorship for REC members to efficiently review research proposals for better protection of research participants in Kenya. By the end of the proposed activities, STReK anticipates that NBC will have strengthened its operational systems and improved its functionality. This will be achieved through the development of the long-term strategic plan which will outline the current status and goals of NBC and draw a roadmap on how to achieve the goals within a measurable timeframe. This will help in planning, resource mobilization and allocation. The developed strategic

plan is also expected to provide the strategic direction by which RECs should align their activities to. STReK is also assisting NBC to review its standard operating procedures (SOPs) and Guidelines to improve efficiency. It is envisaged that the developed Strategic Plan and revised SOP and Guidelines will provide an enabling environment for NBC to optimally engage its stakeholders. STReK will also upgrade NBC ICT infrastructure for efficient reporting, consultations and supervision of RECs and create a web database of REC members, for networking and consultation among them. It is hoped that the upgraded ICT infrastructure will improve NBC's information strategy in relating with its stakeholders to transparently disseminate policies and share updates in research ethics. This will in addition make it easier for NBC to keep abreast with the activities of all accredited RECs and promptly identify any that may need support. Furthermore, it will facilitate timely reports, including status of studies in Kenya, thus improving on the efficiency of its oversight role. A robust ICT infrastructure will in addition facilitate generation and access to databases of crucial information like clinical trial registries, training records of reviewers, standard curricula and available expert reviewers across the RECs. NBC functionality will further be supported by setting up the training system for NBC and REC members, including obtaining access to an internationally accredited research ethics training platforms.

Figure 8: STReK Team

To improve the capacity of NBC and REC members in ethical review and oversight in health research, STReK is using a research ethics training package developed by NBC to train at least 120 members by the end of the grant period building the capacity of RECs to facilitate best conduct of clinical trials in compliance with fundamental international ethical principles and relevant national legislations. STReK will also establish a structured mentorship programme for REC members consisting of practicums at mentorship sites. It is foreseeable that the development of interaction between the established RECs and newly created ones will lead to a more integrated and coordinated clinical trial environment in Kenya. The anticipated efficient review of protocols by the built capacity, the quality and reliability of data emanating from clinical trials carried out in Kenya will immensely improve. .

With improved oversight and proposal review systems more researchers will be encouraged and initiated into research culture with some researchers hopefully initiating local clinical trials especially targeted for locally important conditions. It is anticipated that with time (within 3 years) at least 15 RECs in Kenya should be able to approve and oversee multinational trials while maintaining international ethical standards. It is assumed that the RECs involved will be supported by their institution to perform as per their developed SOPs. With improved coordination and oversight of activities, facilitated through REC networking, a reduction in turnaround times in reviews of clinical trials in Kenya. Through REC peer mentorship, It is envisaged that at least one more REC in the country will attain international accreditation so as to increase the local capacity to absorb international multicentre clinical trials

By obtaining and maintaining international accreditation and establishing national and regional networks with other ethics committees and regulatory bodies, NBC will also achieve regional and global recognition. Peer mentorship visits and peer appraisal mechanisms established together with improved systems of operation are expected to ease pressure on NBC oversight and coordinating role demands to allow more time on development of policy and legislation roles

At the end of the grant period, 22 REC members will have undergone the mentorship programme. In the last year of the grant, NACOSTI will organize a research ethics conference to facilitate networking between established and newer RECs for benchmarking, experience sharing and learning. Invitations will be extended to other National Bioethics Committees in Eastern Africa Region and its members, and at least one EU-member state.

The aims of STReK are in line with the objectives of EDCTP2 of strengthening scientific capacity for clinical trials in endemic countries, which has research ethics as one of its component. This will enhance the conduct of phase 2 and 3 clinical trials in multicentre and multinational sites required due to the large number of study participants needed. STREK also supports EDCTP2 requirements that clinical trials be carried out in full compliance with internationally recognised ethical principles.

A LOOMING CRISIS WITH THE DEPARTURE OF EMINENT PROFESSORS AND RESEARCH LEADERS

How do we continually replenish the Research-Career Pipeline?

I was saddened to learn early this year that Prof. Ramesh C. Saxena, a former Principal Research Scientist at the International Centre of Insect Physiology and Ecology (ICIPE) was no more.

He will be best remembered for his work promoting neem from the ICIPE-Mbita station and throughout Kenya and East Africa. An excellent scientist, programme leader, and lasting friend of the founding Director of ICIPE, the late Prof. Thomas R. Odhiambo.

During the 80s and early 90s, ICIPE employed two eminent researchers named Saxena. Both originated from India. Professor Kailash Narayan Saxena (KN) was the head of the Crop Pests Research Programme (CPRP). Dr. Ramesh C. Saxena (RC) was a scientist in the programme. The former was a mentor of the latter.

I first met Ramesh in the Philippines on my return from New Zealand in 1989 freshly successfully completed my PhD. Ramesh had already left the ICIPE-IRRI collaborative programme and was a full-fledged scientist at the International Rice Research Institute (IRRI) located in Los Banos, Manila. Ramesh later re-joined ICIPE as Senior Principal Scientist in 1992 and was based at Mbita. It is was here that he started his pioneering work on neem.

My invitation to go to the Philippines was made by Prof. Zeyuar R. Khan the head of the ICIPE-IRRI collaborative programme shortly after I completed my PhD. He wanted me to help him develop a mass-rearing protocol for the yellow stem borer of rice.

Figure 9: Dr J. P. (JPR) Ochieng'-Odero - Prominent scientist

The Yellow Rice Stem Borer (Scirpophaga incertulas) is a major insect pest in rice growing areas of Asia. This pest has proved almost impossible to rear in the laboratory. Khan thought that with the skills I had gathered from working under the famous guru of artificial rearing, Pritam Singh, I would probably find a way to rearing the insect.

I met an excellent team of dedicated researchers working under Khan. One was a very sharp postdoc, Dr. Ramchandran, and a hard-working technician named Villanueva. To cut the story short, despite working hard and running many experimental rearing procedures we failed dismally. Khan informs me that to date there is no record of successful mass-rearing of the pest on artificial diet. This the very first failure I experienced as a young postdoc so soon after my earned PhD. It brought me rudely down from the lofty heights of being called `doctor' and made me feel infallible.

My three-month stay in the Philippines was very eventful and I made many professional acquittances as well as social friends. The country was full of rich history, especially of the 1986 People Power Revolution, where over a million Filipinos took to the streets to overthrow the corrupt and brutal regime of President Ferdinand Marcos.

The role of the Church was pivotal. The protestors were supported by the Catholic Church under the guidance of Cardinal Jaime Sin. Eventually, senior members of the army rebelled against Marcos. Los Baños was lively and bubbly. Metro Manila was huge and throbbing. The shopping was great and the open bars were most welcoming. I was able to take on my first consultancy advising the national Philippines Rice Research Institute (PhilRice) on designing and managing an insectary. I met Kanyeki, a friendly PhD scholar from Tanzania, who was working on the breeding of new varieties of rice. He had challenging times since typhoons kept on harvesting his final crop before he could collect data and demonstrate any success! Such is the frustrating stressful life of budding scientists.

I also met many distinguished persons who passed through IRRI and gave seminars. Most memorable is the founder of Grameen movement, Dr. Muhammad Yunus (those who may not know, Yunus is a Bangladeshi social entrepreneur, banker, economist, and civil society leader who was awarded the Nobel Peace Prize for founding the Grameen Bank and pioneering the concepts of microcredit and microfinance. These loans are given to entrepreneurs too poor to qualify for traditional bank loans). One afternoon, after a sumptuous lunch that included rice pudding, we trooped to listen to imbibe wisdom from this great man. Halfway through, an agricultural engineering professor from Ghana dosed off and began having night(day?) mares. He howled and groaned in anguish and Yunus had to pause for the man to be comforted as the rest of us laughed uncontrollably!

Shortly after I returned to Kenya, I was summoned to meet Prof. Odhiambo at his Duduville office located at the R&D complex. I announced myself to the secretary, the late Mrs. Grace Ochola, who expressed surprise to see that I was a short man. It seems my doctoral research training performance in Auckland could have only be attained by a tall person! Odhiambo was more

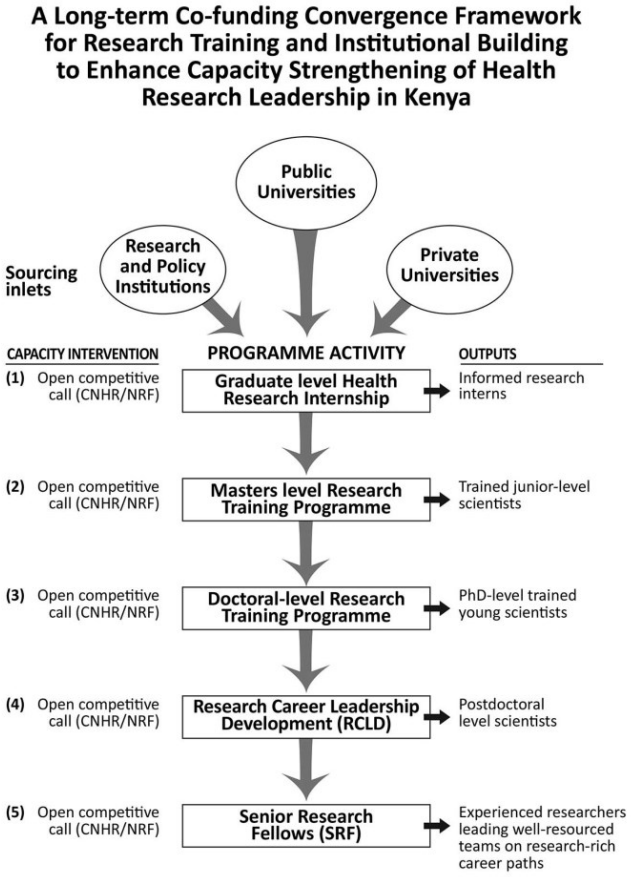
gracious and was most interested in how I was able to convince the University Senate to convert my masters' training to a PhD. He promptly gave me a challenge. To write a strategic plan for the Insect Mass Rearing Unit. I was dispatched to the ICIPE Mbita Field Station to undertake this task where I met agriculturist WWW Wapakala who was the Station Manager. On enquiring what I was up to, he retorted: `I hope your strategic plans don't turn tragic!'

R.C. Saxena is but one of many that I know who have departed recently. The attrition rate has recently been exacerbated by the ravages of the ongoing COVID-19 pandemic. All disciplines are affected, be they natural sciences, humanities, professional courses such as law, medicine to performing artists, and designers. Kenya recently lost eminent environmental lawyer Prof. Okidi, leading nephrologist Prof. Were and so on and so forth.

Where does this leave us?

My University of Nairobi friend dentist lecturer, Walter Odhiambo says `..the crisis of scholars in health research is already pinching spite of the stringent academic requirements for employment and promotion.

The foundation for a career pipeline begins at the elementary school level. It is here that we need to continually identify and cultivate young talents. Many of us recall the visits by career advisers during our high school education. I was persuaded to pursue a career in entomology after listening to an intellectually scintillating lecture by Prof. Thomas R. Odhiambo at the Louis Leaky Memorial Hall based at the National Museums of Kenya in 1976. There is also a need to provide robust mentorship opportunities to assist young graduates to make informed choices regarding the potential rewards of pursuing a life-long research career choice. Noticing the constant attrition of brainpower due to retirement, the founding Director of the Consortium of National Health Research, Prof. Gilbert Kokwaro and I developed a six-month internship programme (2008-2015) that successfully recruited, institutionally placed, and guided young graduate talents from all disciplines. Many later pursued postgraduate work in health-related disciplines and many are now postdoctoral research fellows working to become research leaders in prestigious institutions such as ICIPE, Strathmore University, and so forth own right. Elsewhere, I have argued that there is a need to define and support the implementation of new research training models that continually feeds and invigorates the functioning of the research career pipeline. Funding organizations such as the National Research Fund (NRF) of Kenya need to be seen thinking through and supporting convergence funding models.



JPR's musings on "ifs" and "if nots" of life
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AFRICA'S INNOVATION GAP: A VIEW FROM A MEMBER OF UN's EXPERT GROUP, DR. SALOME GUCHU

Dr. Salome Guchu is the newly appointed member of the ten-member expert group that will support the development of the UN Technology Facilitation Mechanism (TFM). The group will advise on ways to harness science, technology, and innovation to accelerate progress on the Sustainable Development Goals (SDGs). She shares below her view on Africa's innovation gap.

African economies are coming under increasing socioeconomic pressure due to diminishing resources, changing demographic trends, rising demand for goods and services, and emerging sustainability and security concerns.

Figure 10: Dr. Salome M. Guchu, Deputy Director of Research at the State Department of University Education and Research

To address these challenges, many African governments are exploring research and innovation as an engine for stimulating growth in line with Sustainable Development Goal 9, which underscores the importance of fostering innovation and investment in R&D.

However, in most African nations, research and innovation initiatives are implemented in a fragmented manner, without effectively engaging and encouraging private sector involvement. In Kenya, for instance, there is still a major gap in effective engagement and encouragement of the private sector's role in the research and innovation ecosystem.

Duplication of initiatives

In the past 10 years, Kenya's research and innovation policy, legislative and institutional arena has undergone significant transformation. There are several ongoing initiatives focusing on researchers, innovators and start-ups, as well as small and medium-sized enterprises (SMEs).

However, the implementation of most of these initiatives has not reflected effective connectedness among all players. For instance, private sector engagement is very limited, with most initiatives primarily focusing on universities and research institutions, while others have a separate focus on startups and SMEs. It's not uncommon for these initiatives to duplicate each other as they are implemented by different entities.

For instance, imagine that a bank enters into a partnership with a university to implement a competitive programme to support technopreneurs through an award and incubation programme. At the same time, a public agency partners with a telecommunication company and other partners to support innovations through a competitive award programme.

In practice, most applicants for both programmes tend to be the same, and because of the disparate support they seek, they end up spending more time pitching for funding than actually creating value out of their products and services.

Therefore, instead of nurturing innovation and technopreneurship, such support structures create a pool of candidates who have excellent presentation skills, who continue winning awards and grants from duplicate activities, but end up not effecting much progress in product development and commercialisation.

Two main questions

This disconnect in the innovation system, as well as the limited private sector engagement in developing and implementing research and innovation initiatives, begs two questions:

Firstly, can such fragmented initiatives significantly impact the national research and innovation ecosystem for socio-economic transformation? Secondly, is the Kenyan private sector effectively motivated to optimally contribute to strengthening the research and innovation ecosystem?

In Kenya, the role of the private sector in the economy is well recognised. There is a well-coordinated high-level forum for private sector engagement, which has played an important role in

ensuring continued improvement in the ease of doing business in Kenya.

But the contribution of the Kenyan private sector towards a strengthened national research and innovation ecosystem is still not optimal, as evidenced by limited private sector partnerships with academia, minimal engagement in collaborative research and innovation, and little reinvestment of innovation returns to knowledge-creation through R&D.

A third question then becomes: What would encourage effective participation and engagement of the private sector in strengthening research and innovation ecosystems?

The way forward

Both political and business commitments are needed. Political commitments, because they provide confidence and overall championship for research and innovation support. Business commitments, because they guarantee increased appetite for improved, new and emerging technologies.

But there isn't a one-size fits all approach to effectively encourage, involve and enhance private sector contribution to the research and innovation ecosystem. So there needs to be a joint focus on multi-disciplinary and multi-sectoral approaches within these commitments.

One way of aligning the various stakeholders' actions in Kenya would be to develop a mutually agreed research and innovation framework that aligns programmes in different sectors. Such a framework would ensure synergy, eliminate duplication, reduce resource wastage and provide a strong platform for dynamic private sector engagement.

The ultimate goal should be to champion robust joint efforts in research and innovation, as well as enhance smart R&D partnership practices. In the long run, the challenge of inadequate funding of research and innovation will be addressed through increased opportunities and strategic initiatives.

Salome M. Guchu is deputy director of research at the State Department of University Education and Research in Kenya's Ministry of Education. She is a member of the United Nations Ten-Member Group on Technology Facilitation Mechanism for SDGs (2021-2023), appointed by the UN Secretary General to advise on harnessing science, technology and innovation to accelerate progress on the Sustainable Development Goals.

Source: https://www.researchprofessionalnews.com

PUBLICATIONS BY NACOSTI STAFF IN TOP-NOTCH JOURNALS

Dr. Mary N. Onsarigo

Topic: *Evaluation of genetic diversity of Pearl millet (Pennisetum glaucum L.) landraces from West Africa using microsatellite markers*

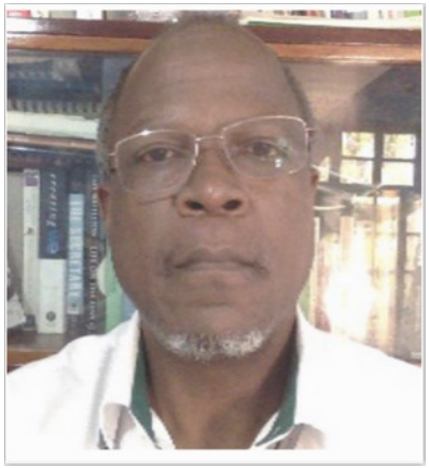
Authors: Mary N. Onsarigo, Dionysiuos K. Kiambi

The study assessed the patterns of genetic diversity and relationships among 30 West African pearl millet accessions, using 21 microsatellite markers. Population structure and population genetic diversity were also assessed. Cluster and principal coordinate analysis of the 30 populations revealed two distinct pearl millet accessions while the 49 individuals revealed four clusters, all based on geographic origins and genotypes. This study demonstrates the utility of simple sequence repeats (SSR) markers in detecting polymorphism, estimating genetic diversity, and assigning heterotic groups in a highly cross-pollinated species such as pearl millet.

Topic: *Assessment of banana streak MY virus-based infectious clone vectors in Musa ssp.*

Authors: Mary Nyambeki Onsarigo

The infectivity of one banana streak virus species was assessed in a broad range of wild and cultivated bananas. The results showed that most bananas were susceptible to infection but that, generally, minimal effects on the growth were observed. However, symptom variability was considerable with different bananas expressing distinct symptoms. Measurements of virus accumulation showed that this was also highly variable between plants.



Dr. David Otwoma

Topic: *Environmental assessment of heavy metal pollutants in soils and water from Ortum, Kenya*

Authors: FO Wanjala, NO Hashim, D Otwoma, C Nyambura, J Kebwaro, M Ndege, S Bartilol

Analysis of elemental concentration in soil and water was carried out in Ortum to ensure safe utilization of soil and water resources for agriculture, industrial, and household purposes. Elemental analysis of soil and water was done using the EDXRF spectrometer and the inductively coupled plasma – optical emission spectrometry (ICP-OES), respectively. A total of 59 soil samples from different locations and depth and 10 water samples were collected from Ortum using purposive sampling method. The results of the mean elemental composition of 13 elements Ni (ppm), Cu (ppm), Zn (ppm), Pb (ppm), K (%w), Ca (%w), Fe (%w), Ti (%w), Mn (ppm), Rb (ppm), Sr (ppm), Zr (ppm), and Nb (ppm) in soils were 58.11, 46.91, 73.49, 22.20, 3.83, 24.39, 1.72, 7.73, 1529.74, 60.98, 442.26, 410.63, and 29.36, respectively, and the mean of 19 elements Ni, Cu, Pb, Zn, Ag, Al, As, Ba, Ca, Cd, Co, Cr, Fe, K, Mg, Mn, Mo, Na …

Topic: Human exposure to background radiation in Ortum, Kenya

Authors: FO Wanjala, NO Hashim, D Otwoma, C Nyambura, J Kebwaro, A Mauring, J Bartilol, M Chege

The activity concentration of radionuclides 238U, 232Th and 40K in soil and the absorbed dose rate (ADRA) at 1 m above the ground in Ortum was determined. The activity concentration in soils ranged from 33 to 85, 20 to 67 and 148–1019 Bq kg–1, respectively with an average of 40 ± 1.43, 56 ± 1.46 and 425 ± 19.24 Bq kg–1, respectively. The activity concentration of 232Th and 238U was found to reduce with increasing depth while that of 40K increased with increasing depth. The average activity concentration in soil was higher than the world average values. The average ADRA in air at 1 m above the ground was found to be 112 ± 29.6 nGy h–1. The soil and rocks in Ortum are recommended for use because the activity concentration of the terrestrial radionuclides is lower than the recommended threshold values.

Ms. Rael Adhiambo

Topic: *Managing the invasion of guava trees to enhance carbon storage in tropical forests*

Authors: Rael Adhiamboa , Francis Muyekhoa , Irena F. Creedb,c, , Eric Enangac , William Shivogaa , Charles G. Trickc,d , John Obiria

Tropical forests account for a substantial percentage of the world's carbon stocks, but the consequences to carbon storage of the rapid invasiveness of the guava tree in these forests is not known. Two different forest management strategies are practiced in a tropical forest in western Kenya: (1) a protection strategy where human entry is prohibited except for minimalistic human presence (e.g., research activities); and (2) a conservation strategy where human access to the forest and its resources are permitted. We assessed the effects of these management strategies and different levels of disturbance caused by the legacy effects of legal logging activities and the contemporary effects of unauthorized harvesting of forest products on the abundance of guava and non-guava trees and carbon storage in both plant biomass and soil in this forest. We found that guava trees were less likely to thrive and carbon storage in plants and soils was similar in sites with minimal disturbance under both the protection and conservation strategies. However, as disturbance increased, whether by the historical or contemporary effects of human activities, guava trees were more likely to thrive and carbon storage in plants shifted from non-guava trees to guava trees, but without an effect on more stable soil carbon. We conclude that regulations should be strictly enforced to prevent all logging activity, but the conservation strategy would provide similar effects on both forest plant and soil carbon to the protection strategy, while providing benefits to the surrounding community who rely on the forest for cultural and spiritual nourishment.

MORE PRODUCTIVE JOBS HOLD THE KEY TO KENYA'S RESILIENT RECOVERY FROM THE COVID-19 PANDEMIC

Figure 11: Group Photo

Kenya's largest age cohort is between 10 and 14 and will be joining the labor force over the next decade. This inflection point coincides with the country's effort to steer towards economic recovery from the COVID-19 crisis. Can the jobs and labor market keep up to deliver on this socio-economic dividend?

The latest Kenya Economic Update Edition 23: Rising Above the Waves, notes that with the working age (18-64) tapped to increase by 1 million per year, this young and growing population will significantly increase the labor supply while reducing the dependency ratio. If this increase in labor supply can be matched by a corresponding increase in good quality jobs, then average household and per capita incomes will increase. However, unlocking this first potential demographic dividend will depend on sufficiently increasing good economic opportunities, especially for youthful labor market entrants. Failure to do so could increase the risk of social unrest as large incoming youth cohorts are faced with limited opportunities.

"Kenya will need to boost both formal quality job creation and informal sector productivity to generate sufficient quality jobs if it is to accommodate the increased number of labor market entrants," said Keith Hansen, World Bank Country Director for Kenya.

What are the key factors influencing the labor market?

Kenya's economy is changing, with services becoming more central, but there is still considerable scope to accelerate transformation. The services sector contributed over half of all value-added in 2019 making it the largest contributor to the gross domestic product (GDP) and its growth, with the agriculture and industry sectors contributing smaller amounts. Yet, wide differences in labor productivity across sectors remain with industry as the most productive sector but accounting for only a small share of jobs. Most Kenyans work in agriculture or in low-productivity services jobs, where productivity has stagnated.

According to the report, labor supply in Kenya is abundant, but certain demographic groups are more vulnerable to inactivity. The labor force participation rate has increased significantly, by 6 percentage points between 2006 and 2019. However, Kenya's female labor force participation rate, however, falls below that of some regional peers in East Africa.

Those with higher education had particularly high labor force participation (LFP) rates, while certain vulnerable groups are more often inactive. For example, there is marked increase in LFP among those who are better educated, with 92% of those with completed tertiary education participating in the labor force in 2015/16 compared to 79% of those who have completed secondary education. At the same time, LFP is much lower (a) among those living in the North and North Eastern Development Initiative (NEDI) counties, with just 53%of the working age population participating in 2015/1626; (b) among females (69% in 2015/16); and (c) among those with primary education (68%).

Job creation slowed down even prior to the COVID-19 crisis as employment diversified from agriculture in the decade to 2015/16 resulting in a larger proportion of service sector employment. As a result, while over half a million more people were employed (3%) in total between 2015/16 and 2019, employment transition to more productive sectors has stalled in the last five years.

Earnings depend strongly on educational attainment. The premium in earnings compared to having no formal education begins at 27% for individuals who have completed secondary education, 72% for those with completed college education and 158% for those with completed tertiary education. On this account, Kenya has made great strides in providing education, but both education and skills remain low among the current stock of workers.

Although access to education has increased among the younger cohorts, improving the quality of education remains important. Workers often lack basic skills such as reading or writing, and computer skills. A 2013-17 skills survey found that most adults with secondary education are functionally illiterate in English. Also, among individuals with university education less than one quarter are functionally literate in English. Employers furthermore identify the inability to handle computers for work related tasks as one of the most significant skills gaps among white-collar workers. For those already working, training and retraining opportunities remain limited.

How can Kenya produce more productive jobs?

"To produce more quality jobs Kenya needs to continued investment in early childhood development, increased primary healthcare coverage and quality of education that can provide fundamental skills to be productive and adaptive to changing skill demands to future entrants in the labor force," said Ramya Sundaram, World Bank Senior Economist.

Current workers, especially youth and women, need multifaceted support, combining training to develop different skills, financing, and support in connecting to better opportunities, to increase their employment and earnings. As workers face multiple constraints in finding employment, there is a need for integrated interventions that address the multiple constraints they face to increase their productivity and find employment. These include interventions that tackle both the lack of skills of various dimensions (socioemotional, cognitive, technical, ICT42), on-the-job training and job search support for those seeking wage employment, and support to start businesses (including both financing, business training, behavioral facets, and connecting to markets).

To increase success in the school-to-work transition, technical skills, whether taught in general higher education or TVET, need to be more relevant; and strong private sector involvement is key. The education system needs to ensure it provides its graduates with the skills that employers are looking for. In higher education, curricula need to be adjusted to encompass task-based activities to prepare youth for work after graduation.

Source:https://www.worldbank.org/en/country/kenya/publication/kenya-economic-update-more-productive-jobs-hold-the-key-to-kenya-s-resilient-recovery-from-the-covid-19-pandemic

TREE PLANTING EXERCISE

Global warming is a subject that has continued to raise concern in the present century. Climate change is a global challenge that needs immediate intervention in the interest of blending humanity and nature. Tree planting is without doubt an initiative towards achieving unity between the forests, climate and mankind. Trees have social, economic, environmental, communal and even more so in the wake of the current health global challenge has medicinal properties. COVID -19 pandemic has reaffirmed the importance of finding alternative and/or traditional approaches towards complementing the contemporary solutions to medical challenges.

The Kenyan Government has acknowledged that more than 200,000 acres of forest cover has been dwindling in the recent years and therefore need for afforestation. A President's Directive on Greening Initiative in line with the National Strategy aims at planting 1.8 billion trees and achieve more than 10% forest cover in the country by 2022.

Figure 12: KFS Field Officer, Ms. Patricia Kitheka guiding the tree planting exercise

In this regard, NACOSTI staff in conjunction with STI partners, KENIA, NRF, NBA and KNQA participated in a tree planting exercise at the NACOSTI Headquarters. The exercise was led by Prof. Walter O. Oyawa and graced by KFS Field Officer, Ms. Patricia Kitheka. A total of two hundred and fifty seedlings comprising of Markhamia Lutea, Warbugia Ugandensis, Avocado, Mango, Nandi flame and Prunus Africana were planted.

Other pictorials

SCHOLARSHIPS

The ICGEB together with the UN Technology Bank for Least Developed Countries and TWAS and have partnered through an ambitious programme targeted at scientists from least developed countries to pave the way to enhancing the scientific competences of early-career researchers in LDCs.

The programme agreement is called PACTs (ProgrAmme of CollaboraTions with LDCs) that offers early- career scientists from the 46 least developed countries (LDCs), who are aged 45 or under, exchange visits of up tosixmonths at the ICGEB laboratories in Trieste (Italy), New Delhi (India) and Cape Town (South Africa). Scientists will be working in the fields of **biomedicine, biotechnology** and **agriculture**. It will also include a third scheme to provide training in biotechnology policy and regulatory science by ICGEB experts.

Prospective Fellows can apply by logging into the **Application Portal** filling in the online application formfor the South-South Programme or the South-North Programme, uploading all supporting materials and submit their application materials before **31 August 2021**.

For further information about the PACTs program, please see the Announcement on the ICGEB Web site.

For addition inquiries or questions related to the programme and requirements, please contact:
Ms. Martina Viviani, ICGEB Fundraising, Technology Transfer & Innovation Officer | E-mail: grants@icgeb.org

Mr. Moshe Kao, Programme Management Officer, UNTBLDC | E: moshe.kao@un.org

Dr. Max Paoli, TWAS Programme Coordinator | E-mail: mpaoli@twas.org

For questions related to the Application Portal, please contact: **Ms.Fabrizia Niscio**| E-mail: f.niscio@unesco.org

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PUBLIC NOTICE

Licensing of Research in Kenya

The National Commission for Science, Technology and Innovation is established by the Science, Technology and Innovation Act, No. 28 of 2013 (the Act) as a State Corporation. The Commission **regulates and assures quality in Science, Technology and Innovation Sector and advises the Government in matters related thereto**. In this regard, the Act stipulates seventeen functions of the Commission.

Among the functions of the Commission, Section 6(1)(f) of the STI Act 2013 specifies that the **Commission shall** accredit research institutes and **approve all Scientific research in Kenya**.

Consequently, **Section 12(3) of the Act requires that any person undertaking or intending to undertake research in science and technology in the country,** or who accesses, handles, or transfers any material or technology or moves it within, from or into the country, **shall apply to the Commission for the grant of a licence in accordance with the Act**.

Section 12(5) of the Act further directs that no licence shall be granted by the Commission for any research involving activities which;

(a) may **adversely affect the culture of any community** in Kenya;
(b) may adversely affect the environment;
(c) may result in the exploitation of intellectual property rights of communities to their traditional knowledge.
(d) may, in the view of the Commission, **adversely affect the lives of Kenyans**.

Section 13(1) of the Act reinforces Section 12(5) by directing that the Commission shall, upon receipt of an application under section 12, evaluate the application, and if satisfied that the conduct of the research is beneficial to the country, and that the research shall not adversely affect any aspect of the nature, environment or **the security of the country**, issue to the applicant licence in the prescribed form.

Pursuant thereto, members of the public are hereby notified that according to the Science, Technology and Innovation Act 2013, all Scientific research in Kenya must be approved and licensed by the Commission.

As stipulated in Section 15 of the Act, any person who accesses, handles, transacts, transfers or moves any specified technology or any material necessary for scientific research within, into or from Kenya without a licence issued under this Act; or contravenes the provisions of Section 12 of the Act, **commits an offence** and shall, in addition to any other penalty which may be provided for in this Act or any other written law, **be liable on conviction to a fine not exceeding five million shillings or to imprisonment for a term not exceeding four years, or both.**

For further clarification kindly contact the Commission, or visit online services at https://research-portal.nacosti.go.ke/

PROF. WALTER O. OYAWA, PhD
DIRECTOR GENERAL
1st March 2021

SERVICE CHARGES

Fees/Charges for Research Licensing

Table 1: Current fees/charges for Research Licensing

No	Category of Research License	Reviewed
1)	Kenya Citizens: Diploma/Undergraduate	Ksh. 1,000
2)	EAC Citizens: Diploma/Undergraduate	Ksh. 1,000
3)	Kenya Citizens: MA/MSc	Ksh. 5,000
	EAC Citizens: MA/MSc	Ksh. 5,000
	Kenya Citizens: PhD	Ksh. 5,000
	EAC Citizens: PhD	Ksh. 5,000
	Kenya Citizens: Individual/Postdoc	Ksh. 20,000
	EAC Citizens: Individual/Postdoc	Ksh. 20,000
4)	Public Institutions	Ksh. 20,000
5)	Private Institutions	Ksh. 20,000
	Non-Africans: Diploma/Undergraduate	US$ 400
	Non-Africans: MA/MSc	US$ 400
	Non-Africans: PhD	US$ 400
	Non-Africans: Individual/Postdoc/Non-academic	US$ 400
6)	Non-EAC but from an African Country	US$ 400

Notes:

1. Non-Kenyans in local institutions with work permits and/or Permanent Resident Permits to pay same as Kenya citizens.
2. Students in local institutions of higher learning pay same as citizens.
3. The Supervisor may apply on behalf of a class undertaking Diploma or Degree course, however the service cost will be dependent on the number of students

Fees/Charges pertaining to Research Institutions

Table 2: Current fees/charges for Registration of Research Institutions, Accreditation of Research Programmes, and Monitoring and Evaluation of Research Institutions

No.	Services	Current fee in KES
1)	Registration of Research Institutions	275,000
2)	Accreditation of Research Programmes	275,000
3)	Inspection, Monitoring and Evaluation of Research Institutions	A basic fee of 275,000 be levied in addition to any costs that will related to the inspection

DRAFT GUIDELINES FOR STAKEHOLDER INPUT, COMMENTS, AND RECOMMENDATIONS

The National Commission for Science, Technology and Innovation (NACOSTI) is established by STI Act 2013(Rev. 2014) with the objective of regulating and assuring quality in the science, technology and innovation sector and advise the Government in matters related thereto. Further, Section 6(1)(p) of the STI Act mandates the Commission to develop and enforce codes, guidelines and regulations in accordance with the policy determined under this Act for the governance, management and maintenance of standards and quality in research systems. In this regard, the Commission has developed draft guidelines as listed below, and hereby invites stakeholders for their written input, comments, suggestions and recommendations by September 2021.

- **DRAFT "NATIONAL GUIDELINES FOR REGISTRATION, LICENSING, AND REGULATION OF RESEARCHERS IN KENYA".**
  The Guideline is in line with Section 15 of the Legal Notice 106 of 2014, of the STI Act 2013, titled "STI (Registration and Accreditation of Research Institutions) Regulations, 2014", which mandates the Commission to register, license and regulate researchers in the Scheduled Science areas.
- **DRAFT "NATIONAL GUIDELINES FOR ACCREDITATION OF ACADEMIC JOURNALS IN KENYA".**
  The Guideline is in line with Section 26 of the STI Act which specifies that "Research findings and information regarding research systems shall be stored or disseminated, utilized or applied in such a manner as may be prescribed by the Commission from time to time

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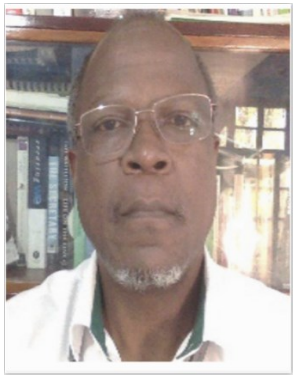

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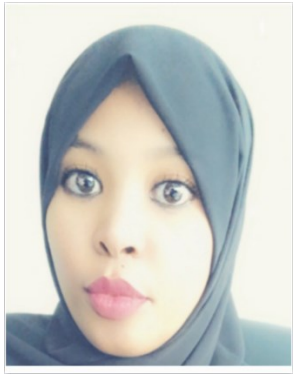

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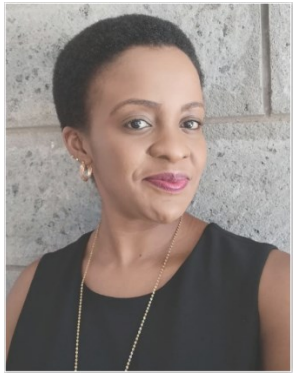


Ms. Mildred Mugambi
Senior Corporate Communications Officer

Ms. Ruth Were
Senior Supply Chain Management Officer

Mr. Denis Yegon
Senior ICT Officer

Mr. Samuel Njuguna
Analyst,
Humanities and Social Sciences

Ms. Lilian Awala
Licencing, Monitoring & Evaluation Officer

Mr. David Amiani
Licencing, Monitoring & Evaluation Officer

Ms. Joan Chepleting
Research Quality Assurance Officer

Mr. Steven Indimuli
Research Quality Assurance Officer

Ms. Rael Adhiambo
Analyst,
Earth and Space Science

Mr. Ezekiah Gatheru
Analyst,
Infrastructure, Information & Communication Sciences

Ms. Pauline Kuyan
Accountant

Mr. James Otuga
Property Management Officer

Mr. Rollex Opondo
Records Management Officer

Mr. Phelix Awuor
Records Management Officer

Mr. Cyprian Karithi
Records Management Officer

Ms. Alice Otwori
Senior Office Administrator

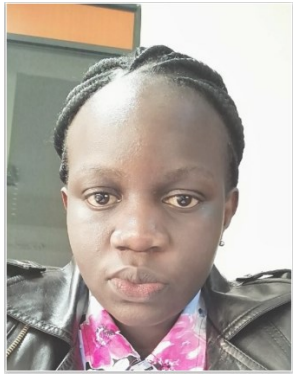
Ms. Wairimu Ikua
Senior Officer Administrator

Ms. Christine Kayesi
Senior Officer Administrator

Ms. Millicent Okuku
Officer Administrator

Ms. Marren Oriko
Supply Chain Management Assistant

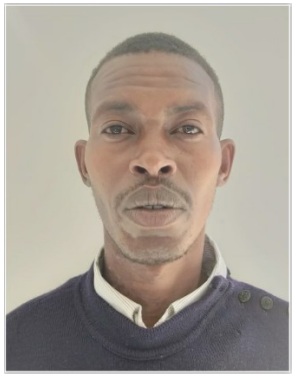
Ms. Ruth Asati
Senior Customer Care Assistant



Ms. Lourine Auma
Accounts Assistant

Mr. Paul Anuro
Senior Driver

Mr. Pius Samoei
Senior Driver



Mr. Abdi Ibrahim
Senior Driver

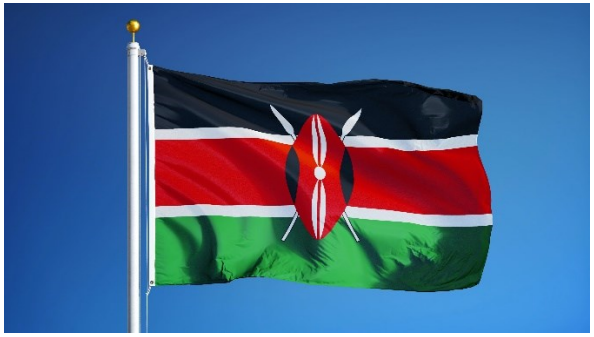
KENYA'S NATIONAL ANTHEM

Kiswahili

1
Ee Mungu nguvu yetu
Ilete baraka kwetu
Haki iwe ngao na mlinzi
Natukae na undugu
Amani na uhuru
Raha tupate na ustawi.

2
Amkeni ndugu zetu
Tufanye sote bidi
Nasi tujitoe kwa nguvu
Nchi yetu ya Kenya
Tunayoipenda
Tuwe tayari kuilinda

3
Natujenge taifa letu
Ee, ndio wajibu wetu
Kenya istahili heshima
Tuungane mikono
Pamoja kazini
Kila siku tuwe na shukrani



English

1
O God of all creation
Bless this our land and nation
Justice be our shield and defender
May we dwell in unity
Peace and liberty
Plenty be found within our borders.

2
Let one and all arise
With hearts both strong and true
Service be our earnest endeavour
And our homeland of Kenya
Heritage of splendour
Firm may we stand to defend

3
Let all with one accord
In common bond united
Build this our nation together
And the glory of Kenya
The fruit of our labour
Fill every heart with

THE EAST AFRICA COMMUNITY ANTHEM

1. Ee Mungu twaomba ulinde
Jumuiya Afrika Mashariki
Tuwezeshe kuishi kwa amani
Tutimize na malengo yetu.

Chorus
Jumuiya Yetu sote tuilinde
Tuwajibike tuimarike
Umoja wetu ni nguzo yetu
Idumu Jumuiya yetu.

2. Uzalendo pia mshikamano
Viwe msingi wa Umoja wetu
Natulinde Uhuru na Amani
Mila zetu na desturi zetu.

3. Viwandani na hata mashambani
Tufanye kazi sote kwa makini
Tujitoe kwa hali na mali
Tuijenge Jumuiya bora.

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