National Commission for Science, Technology and Innovation (NACOSTI)

NACOSTI Plaza

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EDITORIAL

"Science and Technology for Prosperity"

This Volume of the STIR Bulletin covers the period July to September 2022, a period which is midway in the Calendar Year but a beginning in the Financial Year. As the first quarter of the Financial Year, we have been taking stock of the events of the FY 2021/2022 while at the same time setting sights on the plans for the FY 2022/2023.

FY 2021/2022 was an engaging year for the Commission with the task of overcoming the challenges posed by the Covid-19 weighing heavily on how the Commission undertakes its activities. Like the rest of the Country, the pandemic affected the operations of the Commission over the last two years as face-to-face interactions slowed down. In response, the Commission put in place ICT supported platforms that ensure continuity of service delivery and adopting more online interaction with its stakeholders.

These lessons learnt in the previous FY will continue to inform our service delivery in the FY 2022/2023 as we leverage on the role of STI in overcoming socio-economic challenges. As we strive towards a knowledge-based economy, output of research will inform policymaking, facilitate better understanding and furthering of best practices for all those working in various social, political, and economic fields. NACOSTI has planned to hold in partnership with other stakeholders, various conferences, workshops, and symposia to bring together scholars and practitioners in the STI sector to engage in topical issues. Towards this end, NACOSTI successfully held the East Africa Personalized Medicine Regional Stakeholder Workshop in Nairobi between the 13th and 14th July 2022. The Commission was also co-hosts of the Regional Workshop for Future Women Leaders in Nuclear in Africa, from 26th to 28th July 2022 in Mombasa. Highlights of these workshops are covered in this Bulletin.

The Ministry of Public Service and Gender, in FY 2022/2023 PC Guidelines, has retained the role of NACOSTI in coordinating the STI Mainstreaming indicator in the 19th Performance Contracting Cycle. The Commission will therefore continue providing guidance of Government Ministries, Departments and Agencies (MDAs) in mainstreaming of Science Technology and Innovation (STI) in their activities. This being the second year of undertaking this role, the Commission will work with the concerned MDAs to build on the gains made in the first year of implementation of this PC indicator.

I wish you a 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 3rd Edition of the STIR Bulletin of 2022, 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. It serves as part of the avenues through which we endeavor to reach a wider network of our stakeholders. In the recent past, we have interacted with stakeholder in the STI ecosystem through hosting and participating in conference, seminars and meetings both physically and virtually. This has enabled NACOSTI to share ideas with local and international experts and stakeholders cutting across various science fields and as a result enriched our capacity to execute our mandate.

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 others, the 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

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.

REGIONAL WORKSHOP FOR FUTURE WOMEN LEADERS IN NUCLEAR IN AFRICA

Figure 1: Group Photo

Kenya was privileged to host the Regional Workshop for Future Women Leaders in Nuclear in Africa, 26 July 2022 – 28 July 2022 in Mombasa, Kenya. The workshop had women from 29 African countries.

The objectives of the Women in Nuclear workshop was to support talents of women in nuclear science & technology; identify & strengthen roles of female scientists in Africa; enhance awareness about role of IAEA Technical Cooperation Programme in socio-economic development.

Amb. Dr. Monica Juma in her tweet celebrate the young, talented women who represented 29 African countries, including Kenya, during the workshop on Women in Nuclear. She further acknowledged that the Ministry of Education supports the IAEA's mission to empower women in the nuclear industry both now & in the future.

The women urged to continue impacting society positively.

Dr. Elizabeth Itotia shares her journey to becoming the first Kenyan Radiophamarcist


IAEA Director for Africa, Technical Cooperation @Profshaukat give his welcome remarks at the workshop for Future Women Leaders in Nuclear in Africa in Mombasa, Kenya.


International participants at the ongoing Regional Workshop for Future Women Leaders in Nuclear in Africa – 26-28 July 2022, Mombasa, Kenya.

Eng. Collins Juma, MBS giving their keynote speeches at the Women in Nuclear workshop in Mombasa.

KENYA SCIENCE BODY JOINS GLOBAL COUNCIL

Kenya science body joins global council

by George Kebaso
@Morarak

The International Science Council (ISC) has announced the admission of the National Commission for Science, Technology and Innovation (NACOSTI) as its new member following recommendation by the Kenya National Academy of Sciences.

NACOSTI is a parastatal with the mandate of regulation, quality assurance and promotion of research, science, technology and innovation.

Scientific unions

The move is based on NACOSTI's strategic position as a focal point for numerous international conventions and protocols related to Science, Technology and Innovation as well as advocating for more girls joining Science, Technology, Engineering and Mathematics (STEM) education.

In a letter to the Commission dated June 24, ISC President Peter Gluckman said NACOSTI now stands with over 200 international scientific unions and associations, as well as national and regional scientific organisations, including academies and research councils that are promoting science.

"On behalf of the Governing Board as well as all Members and staff of the International Science Council (ISC), I am delighted to officially welcome the National Commission for Science, Technology and Innovation as Category 2 Member," Gluckman stated.

Gluckman said ISC seeks to advance science as a global public good.

NACOSTI Director General Walter Oyawa (pictured) was recently appointed an ISC fellow.

"NACOSTI has finally arrived to occupy its cherished space... by rising up to fully discharge its key mandate of regulating, assuring quality and promoting research, science, technology and innovation for Public Good," he said.

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A letter to the Commission

International Science Council
The global voice for science

From the President

Walter Oyawa, Director General
National Commission for Science, Technology and Innovation Paris, 24 June 202

Welcome to the International Science Council Membership

Dear Mr Oyawa,

On behalf of the Governing Board as well as all Members and staff of the International Science Council (ISC), I am delighted to officially welcome the National Commission for Science, Techn and Innovation as Category 2 Member. You now stand together with over 200 international sc unions and associations, as well as national and regional scientific organizations, including academies and research councils, forming the world's largest international NGO that brings to the natural and social sciences. Please see our introductory brochure.

As a global science organization we seek to advance science as a global public good. Together v Members and partners we work at the global level to catalyse and convene scientific experti to advise and influence on issues of major concern to science and society. Both the resp practice of science and the responsibility of scientists to contribute their knowledge in the publi are essential to the ISC's vision, and the Principle of Freedom and Responsibility in Science v enshrined in the ISC Statutes.

Through our Members and our partnerships with ISC Affiliated Bodies, intergovernmen international scientific organizations, and with our wider network of expertise, we are unique capacity to bring together and integrate scientific excellence and science-policy expertise f fields of science and all regions of the world. The ISC 2020 Annual Report (our 2021 Annual Rep be published soon), as well as the ISC 2018 – 2021 Activity and Achievement Report provid information on our global reach and impact. We warmly invite you, your members and you networks to participate in ISC activities, and to be part of our wider international science comi Here are some examples of how you might like to engage with the ISC and our Membership:

1. Promote science as a global public good
The ISC 2022 – 2024 Action Plan *Science and Society in Transition* provides a practical frame work, which is prioritized around five domains of global impact. The successful implementatio projects highly depends on the participation of our Members and we invite you to collaborate and other ISC Members, as well as other international scientific organizations, funde stakeholders in the frame of our various activities and programmes.

Essential reading: Science as a Global Public Good

2. ISC General Assembly
Every three years, the ISC General Assembly will provide a unique forum for interdisciplina international exchange.

International Science Council
The global voice for science

3. Follow and connect with us
We invite you to sign up for our monthly newsletter, to connect with us on social media (via Twitter, Facebook, LinkedIn, Instagram and YouTube and to consider attending any upcoming ISC and partner events, which are listed on our event pages. We would be delighted to list any of your upcoming events, calls for nominations or vacancies, as well podcasts, online courses and other opportunities on our website – please share the respective details with us in case of interest.

4. Freedom and Responsibility in Science
We warmly invite you to participate in our efforts to uphold the free and responsible practice of science by engaging with the Council's Committee for Freedom and Responsibility in Science (CFRS). CFRS works to uphold and protect the freedoms that scientists should enjoy, and the responsibilities they carry, while engaging in scientific practice. This includes monitoring and responding to threats to scientific freedoms and advising on responsible practice in challenging contexts. CFRS monitors individual and generic cases of scientists whose freedoms and rights are restricted as a result of carrying out their scientific research, and provides assistance in such cases where its intervention can provide relief and support activities of other relevant actors. As an ISC Member, you can signal a case of concern with the committee by contacting Vivi Stavrou, the CFRS Executive Secretary. CFRS stands ready to work with you should you have concerns related to scientific freedom or responsibility anywhere in the world.

Essential reading: A contemporary perspective on the free and responsible practice of science in the 21st century

5. ISC Membership Notice Board – all information for ISC Members at a glance
The ISC Membership Notice Board is designed to collate key topics and issues that are of particular interest and importance to Members of the Council. It includes an overview of all current opportunities for engagement and upcoming deadlines in regard to ongoing calls for nominations and participation at the ISC and within the wider ISC scientific community, as well as access to key dates and documents. The information on the ISC Membership Notice Board is updated on a regular basis. We invite you to visit this page frequently and to share with us relevant calls, documents or other information that you may wish to share with the ISC membership.

Our membership liaison contact Gabriela Ivan will act as your focal point within the ISC. Please do not hesitate to contact her at any time.

The National Commission for Science, Technology and Innovation will be listed on the ISC Membership Online Directory shortly. Please do liaise with Gabriela on your entry for the Directory by providing official logo, website and description.

Thank you for your interest and dedication to the ISC, we look very much forward to our collaboration. For your ease of reference, we have made a welcome page of all the above information online that we invite you to share with colleagues and stakeholders: https://council.science/welcome-information-kit-for-isc-members/.

With kind regards,

Peter Gluckman, President, International Science Council

NACOSTI AND KMFRI TECHNICAL STAKEHOLDER ENGAGEMENT

Figure 2: The NACOSTI Board and Management with KMFRI Management during the Technical Stakeholder engagement at KMFRI Mombasa.

The NACOSTI Board and Management, led by Prof. Raphael Manavu, a Board Member, conducted a technical stakeholder engagement visit to Kenya Marine and Fisheries Research Institute (KMFRI) in Mombasa on Friday, July 29, 2022. Prof. James Njiru, CEO of KMFRI, was represented by Dr. Melckzedeck Osore, who welcomed the delegation on his behalf. The discussion centered on the opportunities in Investments in Research, Science, Technology and Innovation (RSTI) that are available for Universities, Research Institutions and TVET Institutions in Kenya and beyond.

In view of engaging its key stakeholders, the Commission's Director General Prof. Walter Oyawa presented a detailed road-map on how Science, Technology & Innovation (STI) can be leveraged for socioeconomic development of the country noting that according to the United Nations Conference on Trade and Development (UNCTAD) Technology and Innovation Report in 2021, all countries need to pursue STI policies appropriate to their development stage and economic, social and environmental conditions. He stated that NACOSTI is seeking partnership with the entire STI sector to promote, regulate, advise and coordinate STI for inclusive and sustainable national development.

Figure 3: Picture during the Technical Stakeholder engagement at KMFRI Mombasa.

KMFRI indicated research opportunities in Mariculture – the farming of organisms for food and other products such as pharmaceuticals – milkfish farming in selected areas in the coastal region, the prawn farming and a new entrant Marine tilapia. The Institute has established a Marine Resource Center and has embarked on ocean floor mapping in order to utilize the numerous economic and environmental benefits to the Country. It emerged that developing appropriate research systems and capacity of resources like the human capital would increase the knowledge in research and understanding of marine ecosystems to unlock a huge potential in the ocean economy.

The team also discussed well about breakthroughs and challenges in the STI and research sector. The big concerns highlighted included the limited of financing for STI programs and activities, addressing the STI's innovation component in terms of patenting and commercializing the final innovation products, working in silos, which limits potential for growth, and how to explore the full untapped potential of the ocean economy through Research, Science Technology and Innovation.

SUCCESSFUL EAST AFRICA PERSONALISED MEDICINE REGIONAL STAKEHOLDER WORKSHOP HELD IN NAIROBI, KENYA

Figure 4: Group photo during the two-day East Africa Personalised Medicine Regional Stakeholder Workshop

Recently, over 70 participants from health systems policy makers, researchers, funding agencies, scientific societies, regional technology developers and international organisations in the field of Personalised Medicine (PM) and health research institutions met in Nairobi, Kenya, to discuss Personalised Medicine and identify regional specific needs around the area of PM for potential collaboration between other African Sub-Regions and Europe. The East African countries' participants

came from Kenya, Tanzania, Uganda, Rwanda and Ethiopia. Joining in the discussions were EU-Africa PerMed consortium members, from Europe, different African Sub-regions; West and Southern Africa and representatives from the European Union Commission (EC).

The two-day stakeholder workshop was held at the Winsor Golf Hotel and Country Club in Nairobi between the 13th and 14th July 2022 and was organised by the National Commission for Science Technology and Innovation (NACOSTI) on behalf of the EU Africa PerMed project.

The forum was insightful to East African countries as they learned about possibilities for collaborative partnerships/projects in the field of Personalised Medicine supported through the EC. As a keynote speaker and representing the European Union Commission (EC), Dr Jean-Luc Sanne, Policy officer at the Directorate-General for Research and Innovation, gave an overview of the EC strategic focus, highlighting opportunities for collaboration between Europe and Africa on PM and how African organisations can leverage on EC opportunities to strengthen implementation of PM in Africa.

The objective of the meeting was to discuss the PM agenda in East Africa and convene a regional committee to identify regional specific health needs to develop the potential for PM, as well as to identify challenges and opportunities for collaboration with Europe. As the host for the meeting, NACOSTI, represented by Mr. Gideon Kirui, the Director in charge of Finance and Administration emphasised on the importance of prioritising precision medicine, bringing into perspective the role of research and innovation.

Officially opening the workshop was Dr David Soti, Senior Deputy Director for Medical Services, who pointed out in his speech the importance of finding innovative solutions to implementing PM in East Africa, reiterating on the importance of bringing PM into the regional and national health agendas. Dr Soti also thanked the organisers and gave his assurance that the Ministry of Health of Kenya is in full support of the PM initiatives.

Following the official opening, participants were taken through the vision of PM in Africa and the rationale for a regional approach, a presentation made by Rizwana Mia from the South Africa Medical Research Council (SAMRC), who is also a member of the EU-Africa PerMed consortium. During her presentation, Dr Mia acknowledged the fact that different terms were used interchangeably, but often referring to the same thing, citing a few such as Personalised, Precision and Genomic medicine. She then provided an overview of the need to develop PM solutions starting off with precise diagnosis toward building personalised medical approaches. She highlighted the gaps in the global database due to African human genome diversity and the need to study African genomics to develop relevant treatments for the African continent, to address the continents large disease burden.

Erika Sela, from INNOVATEC, the coordinating organisation of the EU-Africa PerMed project, provided an overview of the project, stating its objective: Building Links Between Europe and Africa in Personalised Medicine. In her presentation, Ms Sela mentioned

that the project will facilitate the participation of African organisations in the activities of the International Consortium for Personalised Medicine (ICPerMed) and will build bridges between the research communities on PM in Africa and Europe.

Figure 5: Participants following the proceedings

The forum was also an opportunity to share findings from the EU-Africa PerMed project on Scientific and Policy Mapping in the East African region, highlighting limited research and information from the existing data on African populations for informed interventions and decision-making on PM and the fact that the status of PM implementation across the African continent was at different stages, using the further indicators: Governance of health research, financing of health research, resources for health research, health research outputs, international collaborations in health research, and PM/genomic research.

A very informative session followed with an overview of the status of PM in the East African Countries. Dr Francis Makokha, Head of the Human Health Research Program, Directorate of Research and Innovation, Mt. Kenya University, presented the current status of PM in Kenya, and highlighted the main challenges ahead: Cost implications, treatments based on foreign populations (key drivers in the Kenyan population not included in the available panels) and the lack of sufficient skills in genomics, proteomics, bioinformatics and synthetic biology and the need for more facilities. Prof Celestino Obua, the Vice Chancellor from Mbarara University in Uganda mentioned during his presentation the four key components of personalised medicine in Uganda: Understanding genetic differences and how they relate to people and their interaction and responses to diseases; understanding and use of technology; generating population level data and adequacy of infrastructure in the health system to accommodate research, and implement targeted diagnosis and treatment processes. Dr Agnes Jonathan, manager of the Sickle Cell Programme, Department of Haematology and Blood Transfusion at Muhimbili University of Health and Allied Sciences, Tanzania, also gave a very inspiring talk about a real case of PM model in Africa, the Sickle cell disease project (SCD), which is the single most important genetic cause of childhood mortality globally, and Tanzania has one of the highest annual births of SCD in the world, estimated to reach 11 000 births a year. Dr Alemseged Abdissa, deputy director general of the Armauer Hansen Research Institute (AHRI), in Ethiopia,

expressed Ethiopia's developments in the health sector particularly to the research innovation efforts made by AHRI. Participants in the meeting worked in five group sessions, divided by countries, to review the landscape in each of the five participating countries and to identify and prioritise needs and areas of interest in personalised/precision medicine.

The second day of the meeting mainly focused on carrying out a SWOB analysis (Strength, weaknesses, Opportunities and Barriers) to identify gaps, needs and areas of interest. This country level analysis conveyed an understanding of what each East African country possesses that could be leveraged to build capacity for growth in the region 3 including the competitive innovation ecosystem, technological, intellectual and physical assets, the interplay of government support – regulation policy and research funding, academic areas of interest, health system environment and critical infrastructure this will prove to be critical to developing the strategic direction and ultimately an implementation plan for the East African Region.

Some important issues were found to be the major challenges for developing PM in the region

- Limited funds
- Develop knowledge on the African genome for precise diagnostics and relevant drug treatment
- Pharmacogenomic aspects to address current serious adverse drug reactions on essential drug use
- Infrastructure to conduce genomic, data and health system science
- Ethico-legal issues

The workshop provided the opportunity to discuss about the need and potential to set up country/regional task forces to further strengthening science and policy initiatives for capacity building and collaborations in PM.

The East Africa regional workshop was the first of a series of regional workshops (North, West/Central and South Africa) organised in the cause of 2022. The outcome of all regional meetings will be discussed in the next EU-Africa PerMed Stakeholder Workshop in February 2023, in Cape Town, South Africa.

About the EU-Africa PerMed Project

The EU-Africa PerMed Project, themed "Building Links between Europe and Africa in Personalised medicine" is a 4-year action project receiving funding by the European Commission Horizon 2020 programme. EU-Africa PerMed seeks to facilitate and strengthen Research and Innovation collaboration between Europe and Africa in Personalised Medicine (PM), to foster joint projects and programmes as well as to facilitate the participation of African organisations in the International Consortium for Personalised Medicine (ICPerMed). The project was launched in February 2021 and is implemented by a consortium of 13 partners: 6 from Europe and 7 from Africa.

For further information and if you are interested in participating in one of our workshops, please contact: info@euafrica-permed.eu Website: https://www.euafrica-permed.eu/

KENYA URGED TO INVEST IN TARGETED TREATMENT

Figure 6: Prof. Omu Anzala thw two-day East Africa Personalised Medicine Regional Stakeholder Workshop

The Kenyan government has been urged to invest in personalized medicine in order to be able to reduce the disease burden and deaths that emanate from some of the critical conditions such as cancer. Personalised medicine is also described as targeted treatment.

Research experts from Europe and Africa congregating in Nairobi have acknowledged the importance of personalized medicine in targeted treatment but expressed concern that most of the countries in Sub Saharan Africa, Kenya included, are slow in adopting this technology.

During the opening session for the two-day stakeholders' workshop, experts described this new medical model as a game changer in identifying, characterising and providing targeted treatment for a specific person, condition and the affected part of a body.

Prof. Omu Anzala, a medical microbiologist at the University of Nairobi said that treatment response for sickle cell anemia treatment for instance cannot be generalised because different people react in diverse ways to medication and its management.

"It will help us address prevention of diseases at very early stages by individualising diagnosing, monitoring, treatment and management for specific conditions," he said.

This is also applied in the response to vaccines, which Prof. Anzala noted that the development of vaccines must be in tandem with the way recipients react to them for a good outcome.

"The way we respond to vaccines is not the same globally," he noted.

This, he said, means that from the beginning when designing the vaccines, specialists must be clear that this is the product they want to use for a specific health condition.

"For us as Africa we are beginning to say that we don't want to be left behind. We want to have the human resource, infrastructure and ensure that all of us at every level we are coordinating, not only within our country but across the continent so that we map out who we are so that as we administer these medications, we

are looking at individuals and not generalising the interventions," he added.

Tanzania for instance, a country that tops in Africa with the highest prevalence in sickle cell anemia has been able to reduce this disease burden by investing heavily in infrastructure where the country has put in place a comprehensive care programme from diagnosis programmes and to screening of children.

Dr Agnes Jonathan, a Project Coordinator for the Sickle-cell Pan African Research Consortium (SPARCO) said that before there was no newborn screening in most of the hospitals in Tanzania, but now that has gone down.

"For instance, two years ago we did not have newborn screening and for those who came were brought in late, so mortality was high. But now through newborn screening this has helped a lot, because now babies are identified, screened at birth and those who identify with the disease, we enrol directly to our clinic, and this has reduced mortality," she said while giving an overview of the status of personalised medicine in Tanzania.

Personalised medicine, also described by the European Commission – the first region in the world where it has taken root - as precision medication or targeted treatment involves a new medical model used to differentiate human genes, in order to tailor the right therapeutic strategy for the right person at the right time.

It's also used to determine human beings' vulnerability to disease as well as to deliver timely and targeted prevention.

The workshop hosted by the National Commission for Science Technology and Innovation (NACOSTI) with contribution from the European Union (EU) and Africa Personalised Medicines (PerMed) consortium members aims at integrating more African countries in the global Personalised Medicine (PM) research agenda.

It has brought together stakeholders from the East African region including health system policy makers, research and innovation (R&I) funding agencies and councils, health care providers, researchers, scientific societies, industry, regional, technology developers and international organizations drawn from Kenya, Tanzania, Uganda, Rwanda and Ethiopia.

During the scientific and policy mapping exercise carried out by the project, these countries were found to have capacity in PM research with R&I governance structures in place.

Source: https://www.pd.co.ke/news/kenya-urged-to-invest-in-targeted-treatment-139025/

PRESIDENTIAL WORKING PARTY ON EDUCATION REFORM

Prof. Raphael Munavu, NACOSTI board member, was appointed as the Chairman of the Presidential Working Party on Education Reforms by Gazette Notice No. 11920 dated September 30, 2022. NACOSTI congratulates for his well-deserved appointment

Figure 7: Prof. Raphael Munavu during the Regional Workshop on BWC in Eastern Africa

Bio

Prof. Raphael Munavu is a Professor of Chemistry at the University of Nairobi where he has served since 1976. He is current Chairman of the Kenya National Academy of Sciences (KNAS) as well as Chairman of the Council of South Eastern University College (SEUCO).

Prof. Munavu attended Kalamazoo College (B.A, 1967-1970); Wayne State University (M.Sc., 1970- 1972) and the University of Detroit (Ph.D, 1972-1975). He is a specialist in Organic, Environmental and Industrial chemistry. Publishing over sixty refereed and commissioned papers, he has written extensively on the role of Higher Education, Chemistry, Science, Technology and Innovation in socio-economic development.

He has also undertaken consultancies on the environmental impacts of utilizing various natural resources. His research interest is in discovering and developing appropriate and innovative chemical processes for the conversion of locally available resources into useful products.

His achievements include:

Conversion of readily available carbohydrates (sucrose, lactose, fructose and glucose) into furfural, hydroxymethyl furfural (HMF) and HMF dimers using DMSO. These products have proven and potential industrial uses. Munavu's team were first to report on these DMSO-mediated reactions

The behaviour of alcohols and diols in the presence of DMSO, dialkylsulphides and bromine. His team were first to report on the synthesis of methylene acetals using diols in the presence of DMSO and bromine. The reaction intermediate, trimethylsulphonium bromide, is now commercially available.

Extraction, chemical studies, and potential uses of vegetable oils from the seeds of local plants. The oil of Croton megalocarpus, Jatropha and cape Chestnut are now being piloted for production of biodiesel in Kenya.

MAINSTREAMING SCIENCE, TECHNOLOGY AND INNOVATION IN MINISTRIES, DEPARTMENTS AND AGENCIES

Figure 8: Group photo - In-person four-day training was conducted from 14th to 17th December 2021 in Naivasha

Investments in Research, Science, Technology and Innovation (RSTI) is indispensable for any country or institution that seeks to enhance national security and accelerate realization of inclusive and sustainable socio-economic development. The catastrophic impacts of COVID19 Pandemic devastated the entire world and brought to the fore the immense and life-saving role of STI as a first responder in the global fight against the pandemic and future disasters, thus revealing the need to mainstream and integrate STI strategies in programmes, projects and service delivery systems in MDAs.

The Vision 2030 and its five-year Medium-Term Plans recognize the role of RSTI in increasing productivity, enhancing efficiency levels, accelerating economic development, as well as creating comparative advantage and competitiveness of the country. RSTI is also recognized as key in transforming the country from a factor-based to an innovation-led, knowledge-based economy.

Kenya's policy and regulatory framework on RSTI has steadily evolved. In 2013, the Science, Technology and Innovation Act was enacted, and provides for among other things, establishment of the National Commission for Science and Technology (NACOSTI). The Commission is mandated to regulate and assure quality in the science, technology and innovation (STI) sector and advise the government on related matters.

In furtherance of its mandate, the Commission during the FY 2021/2022, advised the government through the Ministry of Public Service and Gender to incorporate a performance indicator on STI mainstreaming in the 18th Cycle Performance Contract Guidelines. NACOSTI oversees Implementation of the indicator. Now in its second cycle (having been retained in the 19th Cycle Performance Contracting Guidelines for the FY 2022/2023), the indicator seeks to enhance development and application of STI in MDAs operations, programmes and projects in line with provisions and aspirations of the STI Act.

The STI Mainstreaming performance indicator guidelines provide the requirements for MDAs to fulfill in the course of implementation. MDAs are first required toappoint an STI Focal Person and Champion(s) to coordinate STI mainstreaming, and to

document available Research, Technology, and Innovation, as well as human resource capacity. Further, they are required to develop or implement an institutional STI Mainstreaming Strategy; develop and implement an annual work plan and submit quarterly and annual reports to NACOSTI using the reporting template.

An overview of the status of implementation of STI Mainstreaming in the FY 2021/2022

During the FY 2022/2023, a total of 192 MDAs reported which is equivalent to 48% of the MDAs that were required to implement the indicator. The highest number of reports were received from TVETs and tertiary institutions, The reports covered different aspects of RSTI including, research programmes, projects and funding sources; technology innovation, transfer and commercialization, and modes of dissemination of research findings and recommendations.

The average achievement was 78% for all the MDAs whose performance was reviewed, 92% had appointed Focal Persons and 60% reported they had appointed Champion(s) for the period under review.

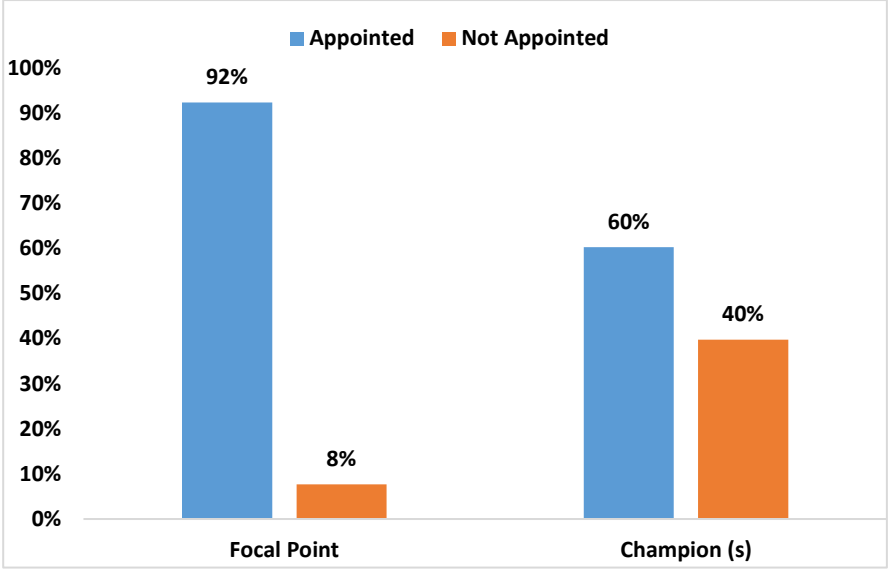

Figure 9: Performance on requirement to appoint an STI Focal person and Champion(s) to coordinate STI mainstreaming.

NACOSTI proactively engaged in capacity building of MDAs to implement the PC indicator. The measures undertaken during the year included: Sensitization and training (virtual and physical); Continuous support through desk officers; Physical visits to MDAs to offer guidance; and iv) Availing tools and guiding instruments through NACOSTI website. This being the second year of undertaking this role, the Commission will work with the concerned MDAs to build on the gains made in the first year of implementation of this PC indicator.

OVER 100 RWANDANS SET TO GRADUATE IN NUCLEAR SCIENCE

Figure 10: Minister for Infrastructure Ernest Nsabimana speaks to the media after a meeting on Nuclear Science and Technology in Kigali on July 18. Photo: Courtesy.

A total of 100 Rwandans are next month expected to graduate with different levels in the industry of nuclear science and technology in what is seen as a major boost for the industry that is new in Rwanda.

The studies include everything from radiation oncologists, medical physics, radiation therapy technologists, nurses as well as the economics of those industries.

Ernest Nsabimana, Minister for Infrastructure, revealed the development on Monday, July 18 during an interview.

He was speaking at the sidelines of the 33rd Technical Working Group of the African Regional Cooperative Agreement for Research, Development and Training related to Nuclear Science and Technology (AFRA) meeting underway in Kigali.

The move comes at a time Rwanda seeks to leverage nuclear science and technology to promote economic growth and transformation mainly because nuclear is seen as a key enabler to propelling certain industries such as energy, health, security, and others.

“We are looking to partner with more countries to continue building the capacity of our nuclear scientists. In August we have about 100 who are going to graduate,” Nsabimana responded, when questioned on the pool of Rwandans skilled in nuclear studies.

Currently, Russia trains the majority of Rwanda’s nuclear scientists. Both countries have also recently inked a deal to establish a Centre for Nuclear Science and Technology in Rwanda, an agreement Nsabimana confirmed to still be valid despite the Russia-Ukraine crisis.

Since 1990, AFRA, an intergovernmental agreement established by African Member States, seeks to strengthen and enlarge the

contribution of nuclear science and technology to Africa's development.

Minister Nsabimana said that the government is pursuing a number of actions that lay the foundation for the country's use of nuclear technology for peaceful purposes.

For instance, industry experts are invited to train locals in legal and regulatory environments.

There are many challenges specifically in Sub-Saharan Africa including technological issues, finance, limited capacities among others.

But, Minister Nsabimana is convinced that there are also opportunities that can trigger growth using various nuclear applications and practices.

The benefits

Rwanda currently benefits from nine regional projects under the AFRA programme.

The projects mainly focus on capacity building, technology and knowledge transfer in various fields, including nuclear safety, nuclear applications to enhance crop productivity and climate-resilient agriculture.

Other areas include strengthening food contaminant detection and monitoring, improving the quality of radiotherapy and radiation medicine, strengthening radioactive waste management and the regulatory infrastructure for the control of radiation sources.

"Rwanda is convinced that the investment in this new area of nuclear science and technology will transform lives of the population across Africa in the near future," Nsabimana said.

Yves Hategekimana, a Rwandan researcher at Aerospace Information Research Institute at the Chinese Academy of Sciences in an earlier interview said that with the rising population, the world requires alternative sources of energy to meet the needs of the future.

"Using nuclear science we can meet our energy targets, which will translate into more job creation because, without energy, a country can't achieve industrialisation," he said.

He also argued that the application of nuclear science and technology could boost Rwanda's space capabilities. That is because nuclear energy is used in batteries that power robotic spacecraft and satellites during space navigation.

Promotion of gender mainstreaming

Catherine K. Mwaba, radiation and clinical oncologist who is also in Kigali for the 2-day meeting believes that there are enormous opportunities for women in nuclear.

Mwaba who also doubles as a member of AFRA management committee, says opportunities range from health, Agriculture, water and sanitation among other sectors.

While it has always been a male dominated industry, she believes that, “Interest in science especially to women should be introduced at a young age.”

Mwaba shared similar sentiments with Minister Nsabimana, who made case for recognizing gender promotion in nuclear studies.

“It is also critical through a range of measures such as prioritizing the training of women scientists and engineers; improving the design and delivery of projects in agriculture, human health, etc. This will allow women to realize their human rights and full potential in this field,” he said.

Source: https://www.newtimes.co.rw/news/over-100-rwandans-set-graduate-nuclear-science ’

New Members Elected to IAEA Board of Governors

Eleven countries have been newly elected to serve on the 35-member IAEA Board of Governors for the 2022–2023 period. The election took place on Thursday, 29 September, at the plenary session of the 66th IAEA General Conference.

The newly elected Board members are the following: Brazil, Bulgaria, Costa Rica, Denmark, Kenya, Namibia, Qatar, Saudi Arabia, Singapore, Türkiye and Uruguay.

Figure 11: A meeting of the IAEA Board of Governors

For the 2022–2023 period, the new composition of the 35-member IAEA Board will be as follows: Argentina, Australia, Brazil, Bulgaria, Burundi, Canada, China, Colombia, Costa Rica, the Czech Republic, Denmark, Finland, France, Germany, Guatemala, India, Ireland, Japan, Kenya, the Republic of Korea, Libya, Namibia, Pakistan, Qatar, the Russian Federation, Saudi Arabia, Singapore, Slovenia, South Africa, Switzerland, Türkiye, the United Kingdom of Great Britain and Northern Ireland, the United States of America, Uruguay and Viet Nam.

The Board of Governors is one of the two policy-making bodies of the IAEA, along with the annual General Conference of IAEA Member States. The Board will meet on Monday, 3 October, to elect its officers.

Source: https://www.iaea.org/newscenter/news/new-members-elected-to-iaea-board-of-governors-2022

NACOSTI STAFF NEWS

NACOSTI BIDS FAREWELL TO STAFF

Mr. Bonface Wekesa
Ag. Director, Research Accreditation and Quality Assurance

Ms. Marren Oriko
Supply Chain Management Assistant

The following employees have left service since July 2021 to date.

1. Mr. Boniface Wekesa - Ag. Director, Research Accreditation and Quality Assurance, retired from service.
2. Ms. Marren Oriko - Supply Chain Management Assistant, retired from service.

NACOSTI wishes them all the very best in their future endeavors and the next season of their lives.

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION (NACOSTI)
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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 (STI) Act, No. 28 of 2013, Revised in 2014 (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 (17) functions of the Commission. Among the functions of the Commission, Section 6(1)(f) of the STI Act 2014 [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 a licence in the prescribed form.

Pursuant thereto, members of the public are hereby notified that according to the Science, Technology and Innovation Act 2014 [2013], 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

NACOSTI is ISO 9001:2015 Certified

SERVICE CHARGES

Fees/Charges for Research Licensing

Table 1: Current fees/charges for Research Licensing

No	Category of Research License	Fees/charges
1)	Kenya Citizens: Diploma / Undergraduate	Ksh. 100
	Kenya Citizens: MA/MSc	Ksh. 1,000
	Kenya Citizens: PhD	Ksh. 2,000
	Kenya Citizens: Individual / Post Doctoral	Ksh. 5,000
	Public Institutions	Ksh. 10,000
	Private Institutions	Ksh. 20,000
2)	EAC Citizens: Diploma / Undergraduate	Ksh. 100
	EAC Citizens: MA/MSc	Ksh. 1,000
	EAC Citizens: PhD	Ksh. 2,000
	EAC Citizens: Individual / Post Doctoral	Ksh. 5,000
3)	Rest of Africa: Diploma / Undergraduate	Ksh. 200
	Rest of Africa: MA/MSc	Ksh. 2,000
	Rest of Africa: PhD	Ksh. 4,000
	Rest of Africa: Individual / Post Doctoral /Non-academic Doctoral	Ksh. 10,000
4)	Non-Africans: Diploma / Undergraduate	US$ 150
	Non-Africans: MA/MSc	US$ 350
	Non-Africans: PhD	US$ 400
	Non-Africans: Individual / Post Doctoral /Non-academic	US$ 500

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	250,000
2)	Accreditation of Research Programmes	250,000
3)	Inspection, Monitoring and Evaluation of Research Institutions	A basic fee of 275,000 will be levied per inspection in addition to any other additional costs that will be 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. In this regard, the Commission has developed draft STI Priorities, and Guidelines as listed below, and has circulated the same to stakeholders for their input, comments, suggestions, and recommendations. The Commission therefore reminds stakeholders who have not yet submitted their written input, suggestions and recommendations to the Commission for consideration to do so by latest 30th November, 2021. The documents may be downloaded at NACOSTI Website www.nacosti.go.ke

- **DRAFT "PRIORITIES IN SCIENTIFIC, TECHNOLOGICAL AND INNOVATION ACTIVITIES"**
  The Priorities in Scientific, Technological and innovation activities in Kenya are in line with Section 6(1)(a) of the STI Act which stipulates that "the Commission shall 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"
- **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".

CURRENT NACOSTI STAFF

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Director General/CEO

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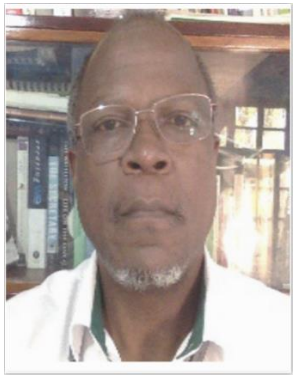
Dr. David Njubi
Ag. Director, Scheduled Sciences

Mr. Gideon Kirui
Ag. Director Corporate Services



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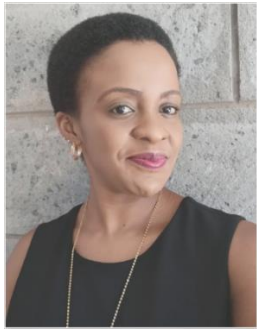

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Ms. Nahida Annar
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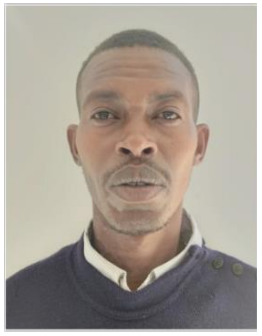
Mr. Paul Anuro
Senior Driver

Mr. Pius Samoei
Senior Driver



Mr. Abdi Ibrahim
Senior Driver

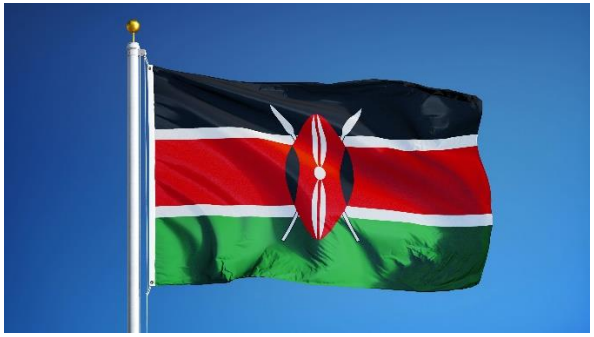
KENYA'S NATIONAL ANTHEM

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.

NACOSTI HOTEL AND CONFERENCE

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