Kenyatta University

Transforming Higher Education...Enhancing Lives

A Publication from the Division of Research, Innovation and Outreach

Research and Innovation News

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UNIVERSITY FUNDAMENTAL STATEMENTS

The Mission of Kenyatta University is to provide quality education and training, promote scholarship, service, innovation and creativity and inculcate moral values for sustainable individual and societal developments.

The Vision of Kenyatta University is to be a dynamic, inclusive and competitive centre of excellence in teaching, learning, research and service to humanity.

Kenyatta University is a community of scholars committed to the generation and dissemination of knowledge and cultivation of wisdom for the welfare of society.


Sensitivity and responsiveness to societal needs and the right of every person to knowledge.

The Vision of Kenyatta University is to be a dynamic, inclusive and competitive centre of excellence in teaching, learning, research and service to humanity.

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EDITORIAL

Welcome to the 6th issue of the Kenyatta University Research, Innovation and Outreach publication – The Research and Innovation News! In this publication, we highlight notable achievements and efforts by the University Management Board, schools, departments, directorates, members of faculty, students as well as key stakeholders in contributing to the University’s Research and Innovation agenda. The publication covers a wide range topical stories and news including but not limited to funded research and development grants won, dissemination of research findings, community engagements, incubations and innovations as well as visiting scholars. We congratulate and celebrate all of you for your support, efforts and achievements which are true to the Vision and Mission of Kenyatta University.

The Editorial Committee wishes you a Merry Christmas and Prosperous New Year - 2020

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MESSAGE FROM THE DVC - RIO

The inescapable role of the HE sector in any country is twofold: it must contribute to the global stock of knowledge and perhaps, more importantly, it must endeavour to produce new knowledge and ensure that this knowledge is put to use to overcome the challenges that exist in our immediate environment. It is therefore mandatory that the skills which students acquire as teaching takes place is utilized to innovatively make processes efficient or develop products. Our research and innovation output must resonate with the local challenges and problems plaguing our society, only then can we confidently claim to contribute to the various development agendas at the global, regional through to the national level. The University through the Division continues to provide an enabling environment that brings together faculty and industry as well as create opportunities for our students to have practical experience and explore their creativity and innovativeness.

This Research Newsletter seeks to highlight the research and innovation activities being pursued by our researchers. I am pleased that over the few years after the establishment of the Division, it is evident that our researchers, both staff and students, are having a growing passion for research and innovation. This is seen in the overwhelming response to funding opportunities and other wide-ranging impactful research activities including the recently held Biennial Research and Innovation Conference. All these are highlighted in this issue.

We all note with gratitude that the University continues to invest in further support for the research, innovation and outreach by allocating increasing resources to research and innovation activities and continuously strengthening our existing processes and systems. The recently branded and enhanced Vice-Chancellor’s Research and Innovation Grant and the proposed Kenya Innovation Festival to commence next year will, among others, open opportunities for strong linkages with industry and other strategic partners. As outlined in the University Vision and Strategic Plan (2016 -2026), we have an ambitious research, innovation and outreach game plan and we shall all aspire for significant achievement and impact as we continue to celebrate and share our research endeavors.

We all look forward to hearing more about the exciting research and innovation that is being undertaken at the institution.

Prof. F. Q. Gravenir
Deputy Vice-Chancellor
Research, Innovation and Outreach

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RESEARCH NEWS:
Research and Development Grants
KU and SU dons win a collaborative research to explore healthy diet and active lifestyle for the next generation

Researchers from Kenyatta University and Swansea University (UK) have won a collaborative research grant worth Ksh.38 million (£299,429) from the British Academy. The three researchers from Kenyatta University are Professor Vincent Onywera (Project Leader-Kenyan site) and Dr. Joy Wachira both from the Department of Physical Education, Exercise and Sport Science as well as Dr. George Owino from the Department of Sociology, Gender and Development. The researchers from Swansea University (UK) are led by Professor Gareth Stratton (Project Leader-Swansea site), Professor Sinead Brophy, Professor Huw Summers and Dr. Nils Swindell.

The project whose title is, ‘Kenyatta Healthy Diet and Active Lifestyle Infrastructure for the Next Generation (Keny-LINX)’ will aim at integrating social, exercise and health sciences, education and engineering disciplines to quantify the features and quality of physical activity for health and wellness. The ultimate goal of Keny-LINX is for all children in Kenya to be sufficiently active hence reduce the burden of non-communicable diseases (NCDs) caused by sedentary lifestyle, unhealthy eating, and their associated fiscal and social costs.
Using ecosystems based adaptation in managing and reducing disaster risks in Africa

KU under the leadership of Prof. J. B. Kung’u in partnership with UN Environment Programme secured funding of USD 62,860 from UNEP to organize the first Training of Instructors on Eco-DRR/EbA in Africa.

African countries are amongst the most vulnerable to the impacts of natural hazards. The continent holds half of the world’s most risk-prone countries and natural disasters such as drought, floods, landslides and storms, which have become a regular occurrence. Currently, there is an increase in the frequency and intensity of these disasters due to climate change. The damage to property and destruction of infrastructure slows and hampers development in the continent. A growing number of studies shows that ecosystem-based initiatives not only contribute to strengthening communities’ resilience, but they also make economic sense. Use of ecosystem-based risk reduction and adaptation (Eco-DRR/EbA) solutions to address disaster risks, incorporates the benefits of nature to improve community’s resilience and mitigate against the negative effects of natural hazards. Investment in ecosystem-based disaster risk reduction reduces both the short and long-term impacts of disaster on individual households, communities and the wider macroeconomy and therefore strengthening resilience to climate change.

Despite this rapidly growing body of documented evidence, the level of public investment in disaster risk reduction in many African countries remains insufficient. The role of higher education institutions (HEIs) in advancing disaster risk reduction is underpinned by a growing recognition that a well-educated population is a prerequisite for a “productive, prosperous and resilient country”. There is high potential for the HEIs in Africa to advance skilled human capacity in the disaster risk reduction domain and support disaster risk research and policy at all levels. Re-orienting the curricula and creating awareness in disaster risk-related areas is essential for promoting a culture of prevention and is directly applicable to a wide range of disciplines and sectors (including agriculture, business studies, education, environmental management, engineering, public health, urban planning, public administration and governance). A total of thirty one (31) participants mainly professors from various countries attended the first workshop held in October. The main objective of the workshop was to achieve sustainable and resilient development by learning about innovative tools, approaches, and institutional arrangements for advancing ecosystem approaches in disaster reduction.

The workshop sought to explore opportunities for advancing ecosystem-based disaster risk reduction and climate change in Africa. Participants shared ideas and teaching methods through problem-based learning and Eco-DRR/EbA using case studies. KU has designated to become the Eco-DRR Virtual Knowledge Hub for Africa and to continue to act as a resource base and mentor for encouraging uptake of Eco-DRR activities in the continent. KU is going to host a national Eco-DRR and CC workshop for policy makers, researchers and NGOs next year.

The funding is from European Union and Norwegian government through UNEP-Geneva.
Deploying Striga Smart Sorghum: the last mile

Dr. Steven Runo, Senior Lecturer in the Department of Biochemistry, Microbiology and Biotechnology got funding of USD 78,430 from The National Academies of Science (USA) to conduct research on dissemination of improved sorghum varieties to farmers in Western Kenya. Dr. Runo will work in collaboration with Dr. Emily Bellis of Arkansas State University, USA on the project titled: “Deploying Striga Smart Sorghum: the last mile”.

The research team will develop an innovation platform for deployment of sorghum varieties with durable resistance to the parasitic plant Striga that greatly limits production of cereals. Firstly, the team will work with local farmers and extension officers to select, from a set of Striga resistant varieties already tested under laboratory and field conditions, sorghum varieties with preferable traits. In this participatory variety selection process, farmers will be able to grow sorghum varieties in their farms before making their selection. As a result, the researchers will be able to identify farmer preferred, locally adapted sorghum varieties with improved potential to maintain resistance in farmers’ fields.

Secondly, the PEER-supported team will leverage Striga genomic data to determine how Striga adapts to various environments and determines host compatibility. These data and the research should help to develop a well-informed deployment strategy for Striga resistant sorghum based on (1) eco-geographic regions with the most aggressive Striga, (2) compatibility or incomparability between Striga ecotypes and selected sorghum varieties. Selected varieties will then be disseminated as Striga Smart Sorghum.

In the longer term, manufacturing and expand economic security will be enhanced. Because sorghum is considered a “women’s” crop in most Kenyan communities, this economic advancement will directly impact women. A further gender empowerment component of this proposal is the training of a female student at the Ph.D. level.

The team will validate genes responsible for different resistance mechanisms as these can, in the near future, be transferred and combined in farmer-preferred varieties. The farmers will be involved in evaluating and selecting the best resistant sorghum varieties. The researchers will then text and develop low-cost fertiliser technologies that increase Striga resistance and yield of these sorghum varieties. The developed technologies will be disseminated through extension workshops and videos, enabling millions of farmers to become food secure and generate income from selling their surpluses.

Striga Smart Sorghum Solutions for Smallholders in East Africa

The Royal Society (United Kingdom) has approved GBP 222,245 to fund a collaborative project between Kenyatta University and the Natural Resources Institute (NRI) of the University of Greenwich in the United Kingdom.

The project titled “Striga Smart Sorghum Solutions for Smallholders in East Africa” will be led by Prof. Jonne Rodenburg of the University of Greenwich with Dr. Steven Runo of the Department of Biochemistry, Microbiology and Biotechnology as the Co-Principal Investigator. Prof. Rodenburg and Dr. Runo will seek to overcome constraints of sorghum production due to the problematic Striga which causes more damage than ordinary weeds. Striga infection can be reduced by cultivating resistant varieties, or by using fertilisers, which also directly improve productivity on poor soils. As no solution alone can provide complete control, the researchers are aiming to improve and combine both solutions to help farmers to obtain complete Striga control and high sorghum yields. The team will validate genes responsible for different resistance mechanisms as these can, in the near future, be transferred and combined in farmer-preferred varieties. The farmers will be involved in evaluating and selecting the best resistant sorghum varieties. The researchers will then text and develop low-cost fertiliser technologies that increase Striga resistance and yield of these sorghum varieties. The developed technologies will be disseminated through extension workshops and videos, enabling millions of farmers to become food secure and generate income from selling their surpluses.
The School of Creative and Performing Arts, Film and Media studies, Kenyatta University through the Dean, Prof. John Mugubi has secured funding totaling to Kshs. 16.9 Million from the European Union to undertake a joint programme of exchange of staff including but not limited to research staff, artists and PhD students for four (4) years, that is, from January 2020 - 2023. The total grant amount secured in partnership with five institutions, namely: Academy of Art in Szczecin, Poland, National Museum in Szczecin, Poland, Universita degli Studi di Macerata, Italy, Pwani University, Kilifi, Kenya, and Beneath the Baobabs Limited, Kilifi, Kenya is Kshs. 96.7 Million.

The project is entitled: “Transcultural Perspectives in Art and Art Education” (TPAAE).

The Coordinator of the project, Professor Alexandra travelled from Poland for the official signings of the consortium agreement with Kenyatta University, a ceremony that was presided over by the Vice Chancellor, Prof. Paul Wainaina on the 3rd of October 2019. The team of Professors Alcaraz and Kamil Kuskowski also met the project coordinator, Prof. John Mugubi and the working team in order to firm up aspects of the project before the start of the project in January 2020.

Sustaining Technical and Analytic Resources (STAR) is a five-year project of the Public Health Institute, supported by the United States Agency for International Development (USAID). The project’s overall goal is to strengthen the capacity of global health professionals, organizations, and companies so they can implement stronger programs, achieve better results, and make a bigger impact in the global health field, was awarded USD 7,500.

STAR pairs academic institutions from different countries in knowledge-sharing experiments where they collaborate towards solutions to global health challenges and generate new knowledge, translating it into learning resources that are accessible to practitioners around the world.

This year members of faculty from Kenyatta University’s (KU), Department of Population, Reproductive Health and Community Resource Management led by Dr. Rosebella Iseme (principal investigator) were amongst the 2019 – 2020 STAR collaboration laboratory awardees. KU was paired with Valley View University from Accra, Ghana.

The two institutions are currently working towards identifying effective mechanisms and conditions for a successful cross-institutional collaborative approach to curriculum design and implementation. Systematic and objective evaluation of the curriculum design process will be undertaken to provide genuine opportunities for high quality instruction and improved student learning at both institutions. The project will entail designing a new curriculum in Infectious Disease Prevention and Control that will be evaluated by Valley View University, in turn KU will evaluate the implementation of an already existing curriculum in Biomedical Technology at Valley View University.

At the end of the project the two partners will publish both curricula and the evaluation tool designed jointly as a means of ensuring their contributions make it out of the lab and into the hands of the broader global health community.

The other KU project team members include; Dr. Eliphas Gitonga, Dr. Redempta Mutisya, Dr. Judy Mugo, Ms. Monicah Wambugu and Dr. Jane Kieru.

KU Researchers building capacity in prevention and control of infectious diseases under the STAR – Collaboration Laboratory Project.
Kenyatta University participating in Special Olympics global evaluation in collaboration with Special Olympics International and the American Institute for Research

Dr. Jane Mwangi of the Department of Physical Education, Exercise and Sport Science and Dr. Edina Thangu of the Department of Recreation Management and Sports have won a grant of USD 10,581 to participate in Special Olympics Global Evaluation that targeted four Nations (Kenya, China, India and Greece). The research is titled ‘Evaluating the Impact of Special Olympics Unified Schools’ Programs in Selected Integrated Primary Schools in Kenya.’

Special Olympic, Kenya has embarked on establishing unified school championship programs across fifteen counties. These programs are run in partnership with the schools’ administration.

As the unified school championships continue to expand, studies in the USA have shown that the programs have yielded positive results for both learners with and without intellectual disability in Kenya; however, there is little information about unified school programs whereas it is paramount to periodically evaluate the impact on attitude, perception and social-emotional learning outcomes among learners with intellectual disability and those without and provide some objectively measurable effects of the program.

The project is funded by Special Olympics International and is coordinated by American Institute for Research (AIR).

Dr. Edna Thangu

molecular profiling of aflatoxin producing Aspergillus species

Dr. Lilian Gato, of the Department of Chemistry Kitui Campus has been awarded a mini-grant of $10,000 from National Academy of Sciences (NAS) and the US Agency International Development to support the research project titled; Development of a visual detection microarray based method for detection of multiple aflatoxin producing Aspergillus species. This is part of the United States Agency for International Development (USAID) program to increase Partnerships for Enhanced Engagement in Research (PEER).

The mini grant research project will undertake molecular profiling of aflatoxin producing Aspergillus species. This fungi contaminates crops in the field, at harvest or during post-harvest storage and is subsequently passed along the food chain. People can therefore be exposed by eating contaminated plant products or by consuming meat or dairy products from animals fed on contaminated feeds. Farmers and industrial workers dealing with affected grain cereals can also be affected by inhalation or human skin penetration.

The recent "White Alert" expose which brought to light the high levels of aflatoxins in maize flour and peanut butter is an indicator of the effects of the fungi. A temporary remedy of removal of the products from the commercial outlets, only underestimates the effect of consumption of such contaminated products. The effect of aflatoxin toxins is therefore harrowing attainment of Vision 2030 and is expected to affect several of the SDGS especially on health, reducing poverty, economic innovation and development.

The grant is also aimed at mentoring young scientists, the funds will provide a one-year mentorship program to a cohort of mentees to boost their personal and professional development. Dr. Gato will focus on microarray development to detect different genes from the severe Aspergillus while Dr. Lucy Kamau Co-investigator (Dept. of Animal Science) will be responsible for identifying the genetic regions specific to each Aspergillus, culturing the Aspergillus and DNA analysis. These will eventually be detected on the chip. Detection of aflatoxins on this chip will help profile the maize and peanuts produced in different regions as well as the prevalence of the Aspergillus species.
In May 2019, Brunel University London put up a call for network development with African universities and research institutions. A proposal titled ‘Sustainable Energy Equality through Reliable Solar Technologies (SEERS)’ was submitted by a KU team led by Eng. Elias Ako of the Department of Energy Technology and Dr. Sammy Latema of the Department of Environmental Planning and successfully won the grant of £10,000 (Ksh1,300,000). The team is working in collaboration with Dr. Harjit Singh from Brunel University. The funds are basically for networking between the two Universities.

In phase one of the project implementation, the two partners collaboratively identified local problems whose solutions were then proposed to the GCRF application in October 2019 for funding.

A one day stakeholder’s workshop was held in July 2019. The workshop was attended by 50 participants mainly professionals in Industry, Ministry of Energy, Rural Electrification and Renewable Energy Cooperation (REREC), Energy and Petroleum Regulatory Authority (EPRA), Kenya Renewable Energy Association (KEREA), Association of Energy Professionals, East Africa (AEPPEA) and Academics among others.

The objective of the workshop was to map energy deficit end-users (buildings, industries) in rural and/or urban areas and understand energy demand and its characteristics for at least one major end user. Solar technologies able to match this energy demand profile and their economics will be discussed and an assessment of the proposed socio-environmental-economic impacts performed assuming realistic deployment scenarios.

The International Foundation for Science (IFS), non-government organization, has its largest presence in developing countries where it contributes to the strengthening of capacity to conduct relevant and high-quality research. Acknowledging the considerable difficulties facing scientists in developing countries in their attempt to carry out research, IFS has made it its major task to understand the constraints to successful research and how to use acquired knowledge to provide an appropriate support package.

IFS support is primarily financial, often in the form of a grant for the purchase of equipment and supplies required for a specific scientific project proposed by the researcher. The 2019 PhD Awardees all coming from the Department of Biochemistry, Microbiology and Biotechnology attributed their successful spree to the support offered by the faculty at the department who took time to guide and review their application prior to submission.

Mr. Joel Mawanga,
Grant: USD 11,850;
Project title ‘Unravelling host factors responsible for post attachment resistance to striga in the wild relative of maize zea diplopereni’

Mr. Josphat Mutinda,
Grant: USD 11,862;
Project title ‘Examining the role of bacteria in mediating oviposition responses of malaria mosquitoes’

Mr. Njagi Shadrack,
Grant: USD 12,000;
Project title ‘Bioassay guided isolation of anti-proliferative compounds from cassia abbrevata and vitex doniana’
Kenyatta University’s Strategic and Vision Plan (2016-2026) puts academic excellence, distinguished scholarship, creative research, innovation and community service at the core of university operations. The University Management continues to enrich its research environment in order to support faculty and students to engage creative research, entrepreneurship as well as community outreach. These efforts are aimed at contributing towards realization of Kenya Vision 2030, the Sustainable Developmental Goals (SDGs) and the Big Four Agenda.

It is against this backdrop that the University launched ‘The Vice-Chancellor’s Research and Innovation Grant’. The grant is meant for both full time academic and technical staff of Kenyatta University. The new grant was launched on the 23rd October 2019 during the official opening of the Kenyatta University Biennial Research and Innovation Conference - 2019 by the Chief Guest Dr. Juma Mukhwana, the Director General and Chief Executive Officer of the Kenya National Qualifications Authority (KNQA).

During the unveiling and launch of the new grant Dr. Mukwana noted that research and innovation form the backbone of the development agenda of any society and universities are expected to contribute to nation building as well as respond to global obligations such as the UN Sustainable development goals (SDGs) through research, innovation and community outreach. He lauded the University Council and Management for continually availing resources to support research, entrepreneurship and innovation.

The overarching goal of the Vice-Chancellor’s Research and Innovation Grant is to support projects that:

- Produce innovations leading to new (or improved) products, services, processes or methods anchored on intellectual property with potential for commercialization.
- Open up opportunities for strong linkages with industry and other strategic partners in various sectors.
- Articulate impact pathway and clear return on investment.
- Provide a strategy for sustained scale-up and continuity at the end of the grant period leveraging funding and resources from other sources.

The grant is open to researchers, innovators, and entrepreneurs engaged in research and innovation activities in Kenyatta University. The grant application period is from 23rd October 2019 to 23rd November 2019. The awardees will be announced within 30 days after the closing date.

Ongoing Research
The MOCAT project involves the International cooperation of these 8 universities to jointly develop sustainable solutions that improve the quality of education at universities (including international) through the development of modern methods, tools and materials for academic staff in the field of Teaching Methodology.

The purpose of the project is the development of know-how and sharing experience among the partner universities, as well as the development and implementation of a competence model of an academic teacher, including training materials for online and blended modules, whose use will drive methodological, teaching, and multicultural competencies of university teaching staff.

Dr. Purity Muthima of Department of Educational Management Policy and Curriculum Studies benefited from the DAAD sponsored first Dialogue on Innovation Higher Education Strategies (DIES) and Centre for Research on Evaluation Science and Technology (CREST) Alumni Networking Seminar that was held in November 2019 at Stellenbosch University, Cape Town in South Africa. The 18 participants were selected from African universities.

The DIES/CREST course for doctoral supervisors at African universities aims at producing a new cadre of doctoral supervisors at African universities that are engaged in national and international networking activities which improve their capability to collaborate and benchmark with other institutions to enhance the quality of supervision at their own institutions and beyond.

There has been a rapid increase in doctoral enrolment in African universities. This is as a result of the need for more scholars and scientists to contribute to innovation and development in order to enhance participation in the knowledge economy. The increased enrolment has created a dire need for more well prepared doctoral supervisors to adequately equip the scholars.

Some of the outcomes of the meeting included: A project plan for research, networking and capacity development in doctoral supervision; Research on doctoral supervision and dissemination of research results; application of skills developed for the planning, implementation, evaluation research and capacity building projects in doctoral supervision at participants universities, among others.
Enhancing food security in rural and urban areas through outreach youth champions (EFSOYC PROJECT)

The world’s population largely comprises of the youth, with an increasingly competitive yet shrinking labour market. It is imperative that the youth and especially graduates of HEIs, design, lead and manage innovative projects that can drive change in their communities and help in realizing the sustainable development goals.

It is against this backdrop that Kenyatta University (KU) is implementing a project funded by Bill & Melinda Gates foundation to undertake an 18-month pilot project entitled “Enhancing Community Food Security in Urban and Rural Areas through Outreach Youth Champions (EFSOYC)”. This youth-led innovation and food security project focuses on SDG 2 and the Big 4 agenda among last mile communities.

The goal of the project is to enhance food security and improve livelihoods in urban and rural areas through agri-enterprise initiatives targeting the most food insecure farming households using Outreach Youth Champions. The target communities are those living in semi-arid areas and the urban populations. The competitively selected OYCs having been taken through an intensive training are currently implementing innovative agri-based projects designed to enhance food security amongst 160 households in Kajiado, Makueni and Nairobi Counties. These projects are focusing on sack technology and vertical gardening; reduce, recycle, reuse; vegetable drying to increase lifespan; bio-intensive farming; use of shade nets, use of a solar powered cold room to preserve food and use of sand and sunken beds to retain water and grow crops amongst last mile communities.

The project is not only building a network of youth leaders and change agents as champions in promoting best agriculture practices and food security initiatives in urban and rural communities but also developing youth social-entrepreneurs. It is envisaged that after the pilot phase there will be scale up so as to extend the reach of the project approach to other communities. This is a collaborative project with team members from Kenyatta University and Empserve Kenya. www.ku.ac.ke/efsoyc

Hansard production process within the devolved structure and its implication for democratic governance – KU researcher investigates

Dr. Mugo Muhia from the Department of Literature, Linguistics and Foreign Languages of Kenyatta University together with Sammy Gaker of Egerton University and Peter Muhangi of Catholic University of Eastern Africa are currently undertaking their NRF funded research: Hansard report production Process in the Devolved Government structure in Kenya and its Implication for Democratic Governance.

Hansard reports - the verbatim recording of legislative proceedings - form a vital resource of the democratic governance process as they serve as the official record of the legislative processes. The reports provide a source of reference for any stakeholder interested in the legislative business. They also make transparent the decision-making process of people’s representatives in the legislative process, allowing key state actors and citizens to understand, support and assess the decisions made by the legislature as well as take appropriate civic actions. Thus Hansard reports’ authenticity, accuracy, conciseness and accessibility or lack of therein impacts on the quality of democratic governance process.
At the advent of the devolution structure in 2013, the available technical infrastructure and expertise for Hansard report production was at the national parliament. Six years on, do we have in place the technology, competent human resource and enabling policies to manage Hansard report production functions at the County levels? The research which is completing the first year of its three year span is investigating all these aspects.

The study is divided into two phases: the quantitative (collecting data using questionnaires and structured observations in all 47 county assemblies). Qualitative (results from the quantitative data will be used in purposefully selecting one third of the 47 County for a follow-up, in-depth qualitative study). The study is of interest to scholars and policy-makers interested in representative democratic governance and devolution. It would also be of interest to the Judiciary, the National Assembly, the Executive (both at the County and National levels), the Senate, oversight bodies such as the Auditor-General, donors, civil society, and the public alike since they all have a stake in the production of quality Hansard.

The researchers presented two papers drawn from the ongoing research in the recently concluded Kenyatta University Biennial Research and Innovation Conference titled: Politics and Architecture: Do Kenya’s County Assemblies Design Carry Democratic Socio-Political on Cultural Symbolism? and Hansard Production Human Resource Capacities in County Assemblies in Kenya and their Impact on Democratic Governance.
School of Medicine lauded for exemplary organization of international medicine students’ elective terms

The president / CEO of Global Educational Commission for Foreign Medical Graduates (ECFMG), Dr. William Prinsky and the Vice-President of Global Educational Exchange in Medicine and the Health Professions (GEMx), Ms. Anna Lacone, visited KU in August 2019 to learn on the impact of GEMx partnerships identify various initiatives global participating Universities/organizations they work with in Africa they can undertake and explore ways on how to strengthen the existing partnership. Dr. Prinsky and Ms. Lacone congratulated the School of Medicine for the exemplary organization of international medicine students’ elective terms.

KU has been a partner of the GEMx programme since 2017, the programme supports students to undertake their medical electives in other countries. The students, who have so far benefitted from the programme gave feedback on their experiences and what they had learnt in foreign countries over the four week elective terms. They also compared health systems in different countries. Some were privileged to attend and present papers at conferences while others participated in community camps. It was generally observed that the exposed students performed better in their studies, one of the participating students, Gesare Beryl, was declared the best student during the graduation ceremony held on 26th July, 2019.

Through this program, ten (10) Kenyatta University students have taken their elective terms in Universities that include Makerere University (Uganda), University of Kwa Zulu Natal (South Africa), University of Zimbabwe (Zimbabwe) and Limerick University (Ireland), from 2017 when Kenyatta University was granted GEMx membership, to date. In return, Kenyatta University has hosted fourteen (14) foreign students from Makerere University, Kabale University and Kampala International University.

GEMx also encourages both students and their mentors to engage in health outcome research on regional exchanges and impact on the students’ facilities, the network and the community.

Collaboration with the University of Nairobi, UNESCO and KU on students’ mobile app - RADA

Dr. Eunice Ng’og’o of the Department of Food Nutrition and Dietetics established several collaborations with institutions and organizations in research activities during her 9 months sabbatical leave. One of the collaboration that focused on students’ health and wellness involved the University of Nairobi and UNESCO. The collaboration entailed the development of a mobile app known as RADA. This was informed by the realization of the rising cases of HIV infections and other sexually transmitted diseases, unplanned pregnancies, mental illness, suicide, violence in relationships and drug, alcohol and substance abuse.

The team focused on good nutrition habits for the mobile APP, which was launched on 13th June 2019 at the University of Nairobi (UoN).

The team (UoN and UNESCO) has plans to upscale this APP to other Universities with the aim of improving University students’ wellness and health. KU has been selected as a partner University in this regard, UoN and UNESCO held a dissemination session at KU on October 2019 with a lot of support from Dr. Tabitha Wangari Director Wellness Centre KU. Dr. Eunice Mvungi Lecturer Department of Educational Psychology Mr. Brian Mutua ICT, KU and two KU undergraduate students Micah Ooko (Environmental Sciences) and Nyawira Ng’aing’a (Department of Food, Nutrition and Dietetics) are leading a group of about ten KU students who will participate in the development of the KU version of the mobile App. The project will be domiciled at the Directorate of Wellness for the purposes of monitoring and sustainability.

From left to right are Dr. Harun Kimani, Dr. Titus M. Kahiga, Dennis M. Donohue, Faith Nawagi, Ms Anna Iacone. Others are officials from the Projects Office of the School of Medicine and some student beneficiaries of GEMx elective term grant.

Rada App

Kenyatta University team and the University of Nairobi team during the dissemination activity held on 9th October 2019 at Kenyatta University.
Kenyatta University has partnered with the Inter-University Council for East Africa (IUCEA) to train postgraduate (MSc) students from Uganda (4), Tanzania (1), South Sudan (1), Rwanda (3) and Burundi (2) in Integrated Soil Fertility Management (ISFM), Crop Protection (Pathology), Biotechnology, Entrepreneurship and Mathematics.

The programme which was launched in the 2019/2020 academic year and supported by the East Africa Community (EAC) and the German Development Bank (GFW) attracted over 250 applicants across EAC member states. The partnership is one of the flagship projects of The East Africa Community and aims to create future change agents who identify themselves with the integration agenda of the East African Community (EAC) and willing to share economic and development-oriented expert knowledge. The East Africa Community recognizes the importance of academic collaborations, students and staff exchanges and encouraging students to pursue higher education in other countries as necessary steps towards cooperation and economic prosperity.

The East Africa Community further identifies quality education as a precursor to economic prosperity of the region and has selected leading intuitions across the region to implement the German Development Bank (GFW) funded scholarships. Kenyatta University has a robust international office responsible for supporting integration of students across the world and the Directorate of Research Support and Dissemination that coordinates resource mobilization and selected scholarship programmes.

Kenyatta University prides herself in providing high quality programmes that attract individuals who wish to be globally competitive. This has been made possible by heavy investment in infrastructure and facilities that offer students the best experience in quality academic.

Forty (40) Medicine, Nursing and Pharmacy students competitively selected from Kenyatta University and Jomo Kenyatta University of Agriculture and Technology were trained in Health Research skills and knowledge from 2nd to 6th September, 2019 at Kenyatta University. The inaugural training was intended to enable the students become Health Practitioners who can also undertake research and make evidence based clinical decisions.

The training closing ceremony held on Friday 6th September, 2019 was graced by Prof Paul Okemo the Acting DVC (Academic). The DVC pointed out that Kenyatta University was glad to host the training and was to continue to collaborate and offer more facilities in future. He commended the aim of the training that was geared towards strengthening health research and ethical practice that will improve the quality of healthcare in Kenya and beyond.

The students then proceeded to their elective sites to undertake both clinical and research activities. Present during the training were the KU focal persons Dr. Titus Kahiga and Dr. Francisca Ongecha.
Kenyatta University has renewed partnership with the German Academic Exchange Programme (DAAD) to host Masters and Doctoral training in Biotechnology, Renewable Energy Technology and Environmental Planning and Management. The programme aims to train qualified graduates to take over responsible positions in their or for their region of origin, encourage the participation of women and underprivileged groups in academic advancements and to ensure that organizational, financial and personal capacities of partner institutions are strengthened.

Since the commencement of the partnership in 2015, KU has admitted over 100 (MSc. and PhD) students under the German Academic Exchange Programme (DAAD) scholarship from different countries including Ghana, Tanzania, Uganda, DRC, Kenya, Sudan, Ethiopia, Benin and Somalia.

The partnership is sponsored by the Federal Ministry for Economic Cooperation and Development (BMZ) – Germany and it aims at strengthening higher education and research in eastern Africa and the region. Students under the programme are exposed to Kenyatta University’s rigorous postgraduate training and practical lessons in some of the best research facilities and laboratories in the region. The cooperation is part of Kenyatta University’s strategic objective to train qualified manpower with the necessary competency to positively contributes to the development of their countries and the region.

Mr. Felix Matheri, a DAAD beneficiary (PhD-Biotechnology) setting up a practical at the plant transformation laboratory - Kenyatta University

Dr. Maina Mwangi, Director Research Support and Dissemination and Coordinator, DAAD programme at Kenyatta University
Solar Powered Cold Room: another one from KU

A class project by two students from the School of Engineering and Technology incubated to a promising start-up that lengthens the shelf life of perishable farm products.

Solar powered cold room is an invention designed to prolong the shelf life of perishable produce by use of available solar energy. Petar Mutua and Peter Muhoho cofounded Colreftec Solutions Ltd, a startup company providing cold room services to client. The innovators at the Chandaria Business Innovation and Incubation Centre (BIIC) and an alumni of Kenyatta University, Mechanical engineering students turned their class project into a Start-up after realizing the gap on post-harvest losses in the country.

The innovation focuses on the field of Heat, Ventilation and Air Conditioning (HVAC), with the increasing effects of climate change, food security is in jeopardy and the country.

The highly secure solar powered cold room has the capability to prolong the shelf life of perishable produce from the normal 5 days to 32 days. This allows the farmers and the small scale traders to look for market without incurring losses as the cold room has the capability to prolong the shelf life of the perishable produce from the normal 5 days to 32 days.

The Innovators, (Peter Mutua and Peter Muhoho) are keen to contribute to food security by helping reduce post-harvest losses currently standing at 20% to 50% by 2022. This innovation is in line with SDGs as well as Kenya’s Big Four Agenda.

Different sizes of the solar power cold rooms exhibited at the ASK show in October.

The locally fabricated solar powered cold rooms preserve the produce within the set ups. This saves on the losses incurred due to spoilage caused by temperature fluctuations.

The condensing unit, lighting of the bulbs and the security unit is powered by energy stored in the batteries. The condensing unit runs during daytime and the security unit is powered by energy stored in the batteries.

Innovative sanitation solution reducing toilet back splash back

Innovative sanitation solution reducing toilet back splash back

According to the world Health Organization (WHO) more than 200 million women suffer from toilet acquired infections and diseases. This calls for more innovative technology in the sector. Arigiene LTD one of the Startup incubated at the Chandaria Business Innovation and Incubation Centre is a manufacturing company which aims at solving challenges associated with sitting toilets to revolutionize toilet hygiene by designing and building innovative technology in the sector.

The Startup founded by Anna Chari and Frank Mwakitakula have developed a sanitation product Hygiene Rix. Hygiene Rix is a multipurpose toilet liquid product that reduces the surface tension of water through creation of thick foam that rises about 4-6 cm above the toilet bowl. The foam eventually dissolves immediately after flushing the toilet.

Both the product and system has been developed by ARIGIENE Ltd. The innovators realized the need to close the gap in the sanitation sector as toilet flush back is annoying while a number of infectious diseases and viruses have been attributed it. Harmful bacteria such as Escherichia coli, Salmonella, Shigella, Staphylococcus and Yersinia amongst other flu viruses in the toilet apparatus lead to diarrhea, UTIs and other diseases.

The innovators have developed the product in collaboration with gear box that facilitated fabrication of the system and Kenyatta University, Department of Chemistry aided in product development and testing.

The innovators have pitched the product in several events in search of funding, this includes a pitch at the Oslo Innovation Week, Norway, after emerging winners at the Nairobi Innovation week. The Startup founded by Anna Chari and Frank Mwakitakula have developed a sanitation product Hygiene Rix. Hygiene Rix acts as a whitener and a germs disinfectant. The product is used via a ‘system’ automated finger print scanner. Hygiene Rix gadget which is basically a replacement of the cistern lid that works on ‘press before use’ parameter, releasing the foam into the toilet bowl. The foam eventually dissolves immediately after flushing the toilet.

The innovators have pitched the product in several events in search of funding, this includes a pitch at the Oslo Innovation Week, Norway, after emerging winners at the Nairobi Innovation week.
Ecofriendly wastewater treatment using automated solar powered electrolysis cells

Brian Omaanya, an undergraduate student at the Department of Agricultural and Biosystems Engineering, has developed an eco-friendly wastewater treatment innovation. The innovation is a complete setup involving an electrolysis cell to channel wastewater. The coagulation and flocculation process occurs with the current being applied, capable of removing small particles setting them into motion. The electrolysis cell consists of pairs of metal rods, electrodes, anodes, and cathodes. Using the principles of electrochemistry, the cathode oxidizes (loses electrons), while the water is reduced (gains electrons), effectively treating the wastewater. The system is solar controlled to ensure that it utilizes the renewable source of energy. Currently, the innovation is at the final stages of patenting facilitated by the Directorate of Innovation Incubation and University-Industry Linkages. Brian has exhibited and won accolades for his innovation, he was awarded the 2nd Runners-Up Trophy for Outstanding Innovation in the University/Technical Institutes Category, during the IKOSAFI Innovation Competition organized by the Ministry of Water, Sanitation, and Irrigation. The Innovator also showcased his innovation during the KUBRIC 2019 Conference.

Brian proud of the Ikosafi Award

Brian explaining his innovation during the Biennial Research and Innovation Conference held in October 2019 at KU-BSSC.
Kenyatta University together with its partners will host the first ever all-inclusive innovation exhibition titled: The Kenya Innovation Festival 2020. This one week event will be held in June 2020 and will attract stakeholders from academia including technical training institutions, government, private sector, entrepreneurs, practitioners, high schools, civil society and other key partners from Kenya and around the world to celebrate and showcase their business start-ups, projects, innovations and inventions. The festival is going to be a signature event in the Kenyatta University calendar to be organized every year. In the spirit of devolution and inclusivity, the event will be rotational so that it can be hosted in a different county each year.

The collaboration on KU-HNU-DAAD which is currently in its third phase, brought together students from business school in Neu-Ulm University Germany and technical students from Kenyatta University (KU) incubated at the Chandaria Business Innovation Centre in a bid to grow an enterprise. The two teams worked hand in hand for ten days which comprised of industry visits in the relevant fields. Neu-Ulm University students were business coaches and provided the much needed expertise in business development to their KU technical counterparts. On the other hand the German business students were exposed to practical insight in the business ecosystem in Kenya.

Under the supervision of the project leads, Prof. Thomas Bayer of HNU and Dr. George Kosimbei, KU, the students were helped to shape their ideas into business enterprises through market research conducted in the surroundings, customer identification, identification of start-up needs and improving their business models among other aspects. At the end of the 10-day interaction the HNU-KU student teams made presentations on the insights gained over the duration of the interaction. Among the insights included the need for the innovators to align their concepts to the needs in the market.

Both groups forged strong relations under the exchange programme which is expected to extend beyond to enable the startups growth. The teams also attended a team building event at the Kenyatta University Park to blend the two communities before the start of the teamwork.

Business coaches meet technical expertise to build startups

The KU-HNU students presents their insights during the final day of their exchange programme in September 2019.
The ICTP’s Associate Scheme is one of the oldest programs that were established to provide support to distinguished scientists in developing countries. The Associateship enables individual scholars maintain beneficial long-term relationship with the stimulating and active scientific environment of ICTP. This, to a large extent, helps to eliminate the “brain-drain” in the Third World countries. Since associate members are also active scientists in their resident countries, they are expected to play a major role in improving science by enhancing STEM education at all levels and planning research projects related to the specific needs in their region.

Dr. Lucy Kiruri of the Department of Chemistry got the Associateship with ICTP in 2018 as an associate; one is required to regularly visit the centre for at least 180 days within six years. This year, Dr. Kiruri visited the ICTP from 1st May – 30th June. During the visit, she was able to explore new areas of research in biophysics which include metadynamics, protein simulations and encapsulation of drugs into polymeric materials for drug design and delivery. She had an opportunity to engage and form new collaborations with Scientists in the Department of life sciences, Prof. Ali Hassanali (ICTP, Italy) and Prof. Laio Alessandro (Sissa, Italy). Other benefits included attending scientific activities such as the “International Day of Light” (16 May 2019) and “Women in academia: is gender parity really around the corner?” among others.

Dr. Lucy Kiruri

Visiting ICTP has been an important event in my life. I have learned many new ideas that will enhance my teaching and research endeavors.”
Dr. Leonard C. Mwita

Dr. Leonard C. Mwita of the Department of Kiswahili visited Kabale University, Uganda from 5th August 2019 to 5th November 2019 as a visiting scholar under the Inter-University Council for East Africa (IUCEA) Staff Mobility programme. Kabale University is one of the nine public universities in Uganda situated south-west of Kampala and has two campuses: the main campus which is called Kikungiri Campus, and Nyabikoni Campus. Dr. Mwita was hosted by the Institute of Languages, Department of Kiswahili based at Kikungiri Campus. The Institute teaches English, Kiswahili, French, and Runyakitara.

The main activities undertaken while at Kabale University included: i) teaching two undergraduate classes (KLS 211: Kiswahili Morphology; and KLS 311: Dictionary Making and Usage); ii) development of a Master of Arts in Linguistics programme and a Master of Arts in Kiswahili programme for the Institute of Languages; iii) engaged in community outreach by visiting and talking about the importance of Kiswahili in nation building in the local radio stations; and iv) interacted with members of Kiswahili Students Association and encouraged them to take a more active role in propagating Kiswahili in Uganda.

Dr. J. K. S. Makokha

Dr. J. K. S. Makokha of the Literature, Linguistics and Foreign Languages visited the University of Tübingen, Germany within the context of BMBF/DAAD thematic network project titled “Future under construction in the global south.” During his visit Dr. Makokha gave a postgraduate students and staff seminar on “Literatures of the Indian Ocean World” and took part in a panel discussion on Afropolitanism and Pan Africanism in the Global South. The visit also entailed a Routledge Series Book launch session in which Dr. Makokha presented his recently launched book entitled: Cultural Archives of Atrocity: Essays on the Protest Tradition in Kenyan Literature, Culture and Society (2019). The book interrogates how narratives on atrocity have taken different discursive dimensions from history, political and human rights perspectives. Using cultural texts from literature, film, theatre and other domains, the peer-reviewed chapters of the book are geared towards understanding the manifestations, extent, political and economic implications of atrocities.

Dr. J. K. S. Makokha, (3rd right, 1st row) as a panel discussant on Afropolitanism and Pan Africanism in the Global South.

Dr. Justus K. S. Makokha, (2nd right, 1st row) during his recent trip to the University of Tübingen, Germany.
Dr. Anthony Muriithi Ireri, of the Department of Educational Psychology, School of Education, won the 2019 CICOPS Fellowship and had a research visit to the University of Pavia, Italy from 10th May 2019 to 14th June 2019. This is an annual fellowship for the University of Pavia under the Centre for International Cooperation and Development. During the visit, Dr. Ireri was hosted by Prof. Lavrina Barone in her LAG Laboratory within the Department of Brain and Behavioural Sciences.

During the visit, Dr. Ireri learnt different research-based interventions for sensitive parenting and even participated in week long training on CONNECT Parent Group Training co-facilitated by the host Prof. Lavrina Barone and Prof. Marlene Moretti, of Simon Fraser University, Canada. The Connect Parent Group is an evidence-based, manualized 10-week program that enhances social, emotional and behavioural adjustment, as well as attachment security in children and adolescents aged 8 to 18. Dr. Ireri also benchmarked on research and teaching activities in the areas of psychology and Neuroscience; as a deliverable from the visit, Dr. Ireri presented a proposal to CICOPS on a project of validating the Connect Parent Group among Kenyan Parents in collaboration with Prof. Barone and Prof. Moretti. The project is envisaged to start in March 2020.

At the end of the visit, Dr. Ireri was awarded a certificate and the honour to bear the title of A CICOPS Fellow. As fellow, Dr. Ireri will be expected to champion collaboration activities between Kenyatta University, University of Pavia, and CICOPS.

The purpose of the visit was to discuss the possibility of Linnaeus University faculty assisting in supervising the Masters students in the area of Psychiatry, Midwifery and Oncology. The scholars initiated writing of a joint grant proposal to fund faculty and students from the two universities for exchange Programmes also explored was the possibilities of future research collaborations between the two universities in the area of Community Health Nursing. This was discussed after they visited local community and it was found to be viable. Dr. Amanda and Dr. Hellstrom visited local hospital Embu level 5 hospital and Kirwara Level 4 hospital to have a perspective of the health care available locally.
The International Centre for Genetic Engineering and Biotechnology (ICGEB) is a unique intergovernmental organization established as a special project of United Nations Industrial Developmental Organization (UNIDO). Fully autonomous since 1994, it runs 46 state-of-the-art laboratories, in Trieste, Italy, New Delhi, India and Cape Town, South Africa and forms an interactive network with over 65 Member States. The ICGEB champions scientific cooperation and advanced education (PhD and Postdoctoral fellowships, international scientific meetings, and competitive grants), Technology Transfer to industry, Biosafety, Projects, and Partnerships for the attainment of the sustainable development agenda.

ICGEB’s Dr. Lawrence Banks was in Nairobi to hold an Awareness Workshop, including Grant writing and insight into the activities of the ICGEB that aim to drive innovation and build potential. In addition, championing communications and public engagement particularly for STEM education, Hosted by the National Commission for Science, Technology and Innovation NACOSTI, and by its Director-General and CEO, Dr. Moses Rugutt, ICGEB appointed Governor and Liaison Officer for Kenya. Dr. Banks met with officials from Kenyatta University and faculty members and students of the department of Biochemistry, Microbiology and Biotechnology during his visit in August.

Dr. Lawrence Banks.
Director General, ICGEB

STUDENTS EXCHANGE PROGRAMME

From left: ICGEB Dr. Lawrence Banks with the Vice - Chancellor Prof. P. K. Wainaina and NACOSTI Director General Dr. Moses Rugutt during the courtesy call.
I am a MSc. student at the department of Food, Nutrition and Dietetics. I am currently studying at the University of Helsinki in the department of Human Nutrition and Food Related Behaviour as part of a three-month exchange programme (1st September to 13th of December). The exchange program is part of Kenya-Finland Education and Research Alliance (KENFIN-EDURA) collaboration on capacity building between Kenyatta University, University of Helsinki and Hagga-Helia funded by the Ministry of Foreign Affairs Finland. I am one of the student beneficiaries of this collaboration whose main goal is capacity building. The goal of the exchange program was to build capacity on skills on data management and analysis, as well as thesis writing. The course included theory sessions, practical manipulation of data and seminars on thesis writing under the guidance of Prof. Mikael Fogelholm. I wish to thank the KENFIN-EDURA project and team members for this opportunity through which I have gained immense experience.

Esther Anono, MSc Student
Department of Food, Nutrition and Dietetics

Esther with fellow students enjoying the spring weather at University of Helsinki

Medical Elective attachments provide great opportunities for students to learn in terms of skill and knowledge acquisition in an environment different from that of their home university. Such attachments are a great way of giving students and even graduates real insight into the world of work, gain practical skills, help strengthen one's curriculum vitae, build and reinforce theory learned in class and make one more employable. They give one an opportunity to put one's skills to test in real-life situations, explore possible career options and gain insight into a career path.

The University Teaching Hospital (UTH) in Lusaka is the biggest hospital, health training institution and main referral health institution in Zambia. It is located in the capital city Lusaka approximately 4km east of the city centre. It has a bed capacity of 1,655 and its catchment population is about 1.8 million people. UTH provides primary, secondary and tertiary care. It is the principal medical training institution in the country for medical students, interns and postgraduate doctors. It also provides training for nurses and clinical officers.

“On the first two weeks, I rotated through cardiac unit under the directive of Dr. Chansa and Dr. Chimana. On the two weeks that followed, I did Gastrointestinal under the directive of Dr. Patel and Dr. Mubunno and Neurology under Dr. Saylor and Dr. Kapolowe. On the last two weeks, I did Infections and Pulmonology under Dr. Lakhi, Dr. Brian and Dr. Chitanika.

GEMx medical elective experiences

“My experience at the University Teaching Hospital, Zambia”
Admissions entailed seeing patients in the outpatient department and male admissions ward and deciding on their treatment plan as well as whether to admit them or not. This would run the whole day and occasionally the whole night. The major ward rounds were the best in each and every unit. A lot of cases were discussed and I had a chance of getting analysis and opinions from the knowledgeable consultants on each and every case. I learnt so much in terms of knowledge and skills and especially how to tackle different issues. We were challenged with many questions that gave us a lot to think about after the ward rounds.

Clinic days were interesting in that we could see very many patients and their conditions and how they were managed. Most doctors and consultants also went the extra mile of explaining to us patient conditions before the patient entered the clinic and after they had left. Some of the procedures I was able to do included: drawing blood, cannulation, performing a lumbar puncture, ascitic abdominal taps, echocardiography and electrocardiography. Patient counselling went a long way in this as some of the procedures had a certain stigma associated with them and we had to explain to the patient the importance of this while imagining ourselves in their position.

During my attachment at UTH, my job assignments entailed repetitive tasks. These included taking history and examination of patients, coming up with differential diagnosis and narrowing down to definitive diagnosis. I would also come up with the possible management of those patients I had cared for. I would then present my findings from these patients to the doctors and they would do a constructive criticism of my work which was a good learning point for me.

Some of the afternoons I spent in the library within the hospital reading up on the interesting cases that I had seen in the course of the day. Sometimes we would have small discussions with other students concerning certain conditions. On some afternoons, I would go and see the patients on my own, while on others I would spend in the emergency department which was bustling with different activities as doctors did their best helping those that came in. During the weekends, I would stay at home and study and sometimes go to the mall with some of the students to do the week’s shopping. Sometimes I would interact with students from the boarding house and they would tell me more about UTH and Zambia itself as I told them about my country Kenya.

I couldn’t have imagined a better place to do my electives, I am truly grateful to the coordinators of the GEMx program for giving me this rare opportunity to do my electives at The University Teaching Hospital, Zambia. I have learnt so much in my six weeks here and this will go a long way in making an impact in my career as I serve people. I have gained a lot experience that will stand with me in good stead not just professionally but personally as well. Learning things in the classroom is good but the amount you learn in the real world is also very important and I hope I can have a similar experience as I continue with my medical education and in my future job experiences.”

Aurelia, enjoying the scenic view of Victoria falls.

Wentworth Hospital, Durban

The elective placement was a 4-week programme in Family Medicine at Wentworth Hospital, Durban – Kwa-Zulu Natal province, South Africa from 1st to 30th November 2019. It was facilitated by the GEMx elective exchange programme. Family medicine is a generalist discipline unlike other medical disciplines, its focus is on the person and family in the context of the community.

Wentworth Hospital, being a district hospital is part of primary care provision in the Ethekwini health district that services a number of catchment areas. They focus on provision of services that not only restore health, but also facilitate well-being in the person and community. The hospital has family physicians as well as very experienced generalist doctors and nurses working there. The Nelson R. Mandela School of Medicine (University of Kwa-Zulu Natal) is attached to the hospital for its Family Medicine training. It also has physiotherapy, psychiatry, psychology clinics, social work, dietetics, occupational therapy departments amidst many other community health outreach projects. Other than primary care, it also has an Accident and Emergency department which receives acute emergencies from the nearby areas. This enabled us to be exposed to a holistic system of patient care.
“We began with a comprehensive orientation by a Family Medicine registrar at Wentworth Hospital, Dr. Mukhinindi as well as the GEMx Elective Coordinator at UKZN, Professor Mergan Naidoo. Dr. Mukhinindi gave us an overview and walk-through of the clinical areas where we would be rotating in each of the four weeks. We also discussed our proposed schedule, objectives and expectations of the Family Medicine elective program at Wentworth.

**Week One:** Outpatient Department and the procedure room.

We participated in a number of activities which included:

- Procedures: Drawing blood, inserting intravenous lines, doing lumbar punctures, ascitic tap, incision and drainage, suturing and removal of sutures
- Clerking of patients: We saw patients coming in with a variety of conditions, including Gastro-esophageal Reflux Disease, haemorrhoids, Chronic Obstructive Pulmonary Disease as well as diabetic and hypertensive chronic care patients. We took a history from these patients and created a plan for management with the medical officers that worked there each week. We were assessed by the medical officers in our data gathering, diagnosis, therapy and counselling in several Mini-Clinical Evaluation Exercises.

**Week Two:** Acute Medical Ward and High Care

It entailed rotating in the Acute Medical Ward (DS) and High Care for 5 days. There were at least two ward rounds each day, one with a Family Medicine physician and another with a specialist, Medical Officer or Registrar. During the ward rounds we would discuss the aspects of history, presentation, clinical exam, diagnosis and management of different patients. After the ward rounds we would assist the interns and nurses in procedures like ECG placement and interpretation, peak expiratory flow measurement as well as drawing blood. We would also clerk patients in readiness for presentation during our ward rounds and tutorials.

**Week Three:** HIV (Masambiane) Clinics

At the beginning of the rotation, we were taken through an orientation of the care of HIV patients and guidelines used in their management. We learnt that South Africa has a high burden of HIV and TB and therefore most nurses have been trained to prescribe medication and manage patients without complications. We get access to South Africa guidelines for HIV and TB mobile applications that made it easier to manage patients. We also had a tutorial on initiating a Patient on Antiretroviral Therapy and Opportunistic Infections in HIV.

**Week Four:** Accident and Emergency Department

Our last week was spent in the Accident and Emergency room. We triaged and clerked new patients and presented our findings to the medical officer and intern on call. We learnt to respond to emergencies promptly, for example; resuscitation for patients in shock and assisted in procedures like suturing and reduction of fractures. At the end of the week we took a test to assess our skills and knowledge gained during the elective as well had a reflective discussion with Professor Mergan and feedback on the elective.

We would like to acknowledge Prof. Mergan Naidoo, the GEMx elective coordinator at UKZN for such a well thought out programme that ensured our stay was productive. We also express our earnest gratitude to the Wentworth Hospital staff who were invaluable and eager to teach us. We are very grateful to our university GEMx coordinator, Dr. Kahiga for his assistance with the application process and we also thank the entire School of Medicine projects office for facilitating the preparation and addressing our concerns promptly.”

With Dr. Richard Lessels, (C) infectious diseases specialist and group leader at the KwaZulu-Natal Research Innovation and Sequencing Pattern (KRISP) at UKZN

Enjoying the Durban Botanical Gardens
I joined Kenyatta University the year 2014 for my MSc in Agronomy in the School of Agriculture and Enterprise Development (SAED). The Kenyatta University VC’s Research Grant under the guide of Dr. Joseph Onyango Gweyi, Dr. Nicholas Kibet and Dr. Evans Changamu enabled me to carry out my field research faster and thus finish within the required time frame. My study was titled “Effects of nitrogen forms on growth, yield and nutritional quality of Amaranth in Kiambu and Kirinyaga counties, Kenya”. The selfless effort, supervision and motivation of my supervisors enabled me to develop four publications in peer-reviewed journals and three conference presentations from the study. I sincerely acknowledge Kenyatta University – Vice Chancellor’s Grant as completion of the project would not have been possible without the support acquired through my mentors who secured the grant. I also wish to thank the entire School of Agricultural and Enterprise Development (SAED), Kenyatta University for provision of necessary facilities and favourable learning environment. Timely completion of my MSc studies contributed greatly to being awarded PhD study scholarship by German Academic Exchange Services (DAAD) that I am going to undertake at Georg-August Universität, Göttingen-Germany from October 2019. I am a proud alumna of Kenyatta University. God bless Kenyatta University.
Implications of agricultural land use on food production in Ruiru Sub-County Kiambu, Kenya

Rapid transformation of agricultural land into built environment without clear knowledge of how key agricultural products and services will be provided in future should be of concern to any development policy makers and actors in Kiambu County and Kenya at large. Although much income may be realised by the investors, the benefits are generally low to the wider resource-poor community. Further, reduced availability of farmland means increased intensification and hence high risks of degradation and poverty. The question that Prof. Fuchaka Waswa and team worked to address was whether the apparent rapid transformation in land use in Kiambu is guided by any land use master plan and policy with deliberate effort to save and preserve prime agricultural land for posterity, in a country where much of the land area is arid and semi-arid.

The study revealed that agricultural land has reduced from 52% to 30% during the 1998 and 2016 period, by 2019 agricultural land has been further reduced as more land has been converted to non-agricultural use. Urban land has increased from than 1% to about 11.34% in the same period. The main cause of land use changes is the shift to housing and real estate investment. Urbanization pressure is putting too much demand on available agricultural land other causes include road construction and quarry areas which taken much previous agricultural land away.

MSc Student Ronald Yego disseminating research findings to Agricultural Officers and contact Farmers in Ruiru Sub-County October 2019

POLICY BRIEF No. 1

Saving Agricultural Land for Food Security Production and Planning in Ruiru Sub-County, Kiambu

Policy Implications:

2. Rapid urban expansion from 2002 to 2019 in some areas which in future causes development pressure increased from 1998-2016 declined areas reduced from 1998-2019.
3. As a result, agricultural land has reduced from about 52% in 1998 and 30% in 2019 respectively.
4. This explains the rapid reduction in agricultural land and planning policy making system has increased in the city.
Rainwater Harvesting for Domestic and Peri-Urban Agriculture in Ruiru Sub-County, Kiambu

Introduction

Ruiru is a water scarce county. Being a city with high agricultural value, this has become a critical issue. The available rainfall has reduced drastically and in some years, the rainfall has been very poor. It has been noted that rainwater harvesting has become critical in ensuring rainwater availability in the city. Rainwater harvesting is practiced in rural and agro-urban areas by the population to ensure rainwater availability for multiple purposes which depend on rainfall quantity and quality. The climate change impacts in the area are: rainfall amount and distribution, drought spells and floods.

Rainwater harvesting systems can be classified as:
1. In-ground collecting basins
2. Roof-top collectors
3. Inlet Mulberry
4. Reservoirs

Rainwater harvesting systems are cost-effective and sustainable. Systems can be used to complement or replace municipal water supplies. The demand for water from rainwater harvesting systems is expected to increase due to the reduction in rainfall and water supplies. Rainwater harvesting can also be used to supplement water supply for drinking, irrigation, and industrial purposes.

Policy Suggestion

- Implement policies that promote rainwater harvesting systems in urban areas
- Increase awareness among the population about the benefits of rainwater harvesting systems
- Provide incentives for individuals and organizations to adopt rainwater harvesting systems
- Develop and allocate funds for rainwater harvesting projects
- Encourage the development of rainwater harvesting systems in schools and universities
- Establish partnerships between governments and private sector to promote rainwater harvesting systems

The effect of land uses changes brought out by the study include;

Food security at stake; decline in farming area which implies reduced area for food production – small quantities of farm produce available in the market, access to food will require purchases which depend on household income levels; maize production has reduced by 60% and Beans by 41%. Preference is now on leafy vegetables, which however come with health risks due to the source of water used for irrigation (polluted streams with domestic and industrial effluent).

• Loss of Livelihood: livelihoods of farmers curtailed creating the need to pursue alternative sources of income generation with the limited employment opportunities, farming as a viable area of income generation is being slowly killed in some areas.

Settlements automatically take away tree cover and natural environmental aesthetics. Land use change impacts domestic water supply and alternate methods such as rainwater harvesting should be scaled-up to supplement metered water supplies.

The project provided evidence of loss of agricultural land and the urgent need to formulate policies to save and preserve such land for posterity, especially with regard to food production and environmental health. The project also showed the huge potential in rainwater harvesting for water security in residential estates in the Ruiru Sub-County and how to leverage on this potantial to supplement metered water supplies as well as provided the status of soil fertility within urban and peri-urban farming systems and how to maintain it for sustained land productivity and household incomes.

The team disseminated its findings via a stakeholder workshop held at Kiambu with Agricultural Officers and Farmers in Ruiru Sub-County in October. However, some of the barriers still hinder growth of solar system investments in the region. These include the issues of affordability, access to finance, awareness and inadequate technical capacity for design, installation, testing and maintenance of solar PV systems. Training of local professionals and technicians can contribute significantly toward enhancing adoption of solar technology in the region. The Department of Energy Technology in the School of Engineering and Technology in conjuction with the East African Centre of Excellence for Renewable Energy and Efficiency (EACREEE) recently conducted a two-week East African Regional Training Course on Standalone Solar PV Systems Design, Construction, and Installation. The training course consisted of lectures and practical session on design and installation of Solar PV systems. It covered a variety of topics, including an overview of solar PV technology, introduction to basic electricity, system design requirements and technical specifications, load estimation, battery storage, solar system operation and maintenance.

east-african-regional-training-course-on-standalone-solar-pv-systems-design-and-installation
Investing in solar and other renewable energy technologies is vital for provision of affordable, reliable, and sustainable energy for all by 2030. However, some barriers still hinder growth of solar system investments in the region. These include the issues of affordability, access to finance, awareness and inadequate technical capacity for design, installation, testing and maintenance of solar PV systems. Training of local professionals and technicians can contribute significantly toward enhancing adoption of solar technology in the region. This regional training was therefore very important for enhancing capacity of our local professionals in the solar industry.

The training course which was officially opened by the Vice Chancellor Kenyatta University, represented by Prof. Frederick Gravenir, Deputy Vice Chancellor, Research Innovation and Outreach was organized by; the East African Centre of Excellence for Renewable Energy and Efficiency (EACREEE) in collaboration with the International Solar Alliance (ISA), National Solar Energy Institute (INES) of France, The French Government, the United Nations Industrial Development Organization (UNIDO) and the Austrian Development Agency (ADA), Ministry of Energy Kenya and the East African Community (EAC) and Kenyatta University.

UKIYO - E woodcut printmaking workshop

The Department of Fine Art and Design held a woodcut printmaking workshop on 3rd and 4th October 2019. The purpose was to introduce the Kenyan artist to the traditional methods of Japanese UKIYO-E woodcut printmaking. Printmaking is a studio process of creating multiple impressions of an artwork on paper. Woodcut is a relief printing approach where a woodblock surface is curved out to give a raised composition area. This raised area is inked to print the artwork impression on paper. The impression on the paper is a mirror image of the raised composition area on the woodblock. The workshop was sponsored by the Government of Japan through its subsidiary organization, the Japan Foundation. The Japan Foundation aims to cultivate friendship and ties between Japan and the world, and create global opportunities to foster friendship, trust, and mutual understanding through culture, language, and dialogue. The Japan Foundation and Kenyatta University already have an existing collaboration in the form of dispatching Japanese language specialists to the University. The Japan Foundation dispatched Ms. Nana Shiomir for the Art and cultural exchange program. Nana Shiomir is an extraordinary artist-printmaker who studied at the Royal College of Art from 1989 - 1991. Ms. Shiomir often makes reference to masterpieces from the Japanese UKIYO-E tradition in her own work. Her printing approach can be described technically as a combination of relief and intaglio using water-based woodcut printmaking inks.

The woodblock printmaking workshop was the inaugural collaboration in Fine Art with the embassy of Japan. The technique introduced by Nana Shiomir was very motivating to the students; the interest was evident in the students' artworks done on the second day of the workshop. The department also benefited from a donation of printing material and Nana Shiomir’s published book.
Ms. Beatrice Limo, a lecturer at the Department of Educational Management, Policy and Curriculum Studies was recently awarded with Head of State Commendation - HSC. She is currently pursuing a PhD in Education Planning and Economics of Education. She is the Founder and Chairperson of a Non-Governmental Organization based in Kericho County, Kipkelion Empowerment Organization (KEO), which is involved in community development programmes geared towards youth and women empowerment.

The Kipkelion Empowerment Organization has economically empowered and uplifted the living standards of more than 5,000 youth and women in the county. This is through the training of its members on sustainable income generating projects giving them knowledge to start and run their projects. The organization has successfully implemented projects such as dairy farming, poultry farming, pig rearing, passion fruit cultivation and coffee farming sensitization. Through partnerships, the organization has successfully installed smoke-free jikos and provided drinking water purifiers to many of its members. The organization employs 16 youths on a fulltime contract and offers internship opportunities to 5 youth annually.

She was honored as a Heroine (Shujaa) during Mashujaa Day celebrations for her efforts in fostering peaceful co-existence and improvement in the livelihoods of the people in the community. The celebrations were held in Mombasa County on Tuesday 20th October 2019.
We, 200 delegates from over 15 countries representing the academia, government, private sector, civil society, practitioners, students and other organizations, met at the Inaugural Kenyatta University, Research and Innovation Conference from 23-26 October, 2019 at Kenyatta University in Nairobi, Kenya.

The overarching goal of the Conference was to provide a platform for dialogue on the state of knowledge and practice in the priority areas for development in-line with Sustainable Development Goals and the country’s development agenda.
We had several panel discussions and the panelists included experts from government, private sectors, academia as well as the civil society.

Overall, 3 pre-conference events, 3 plenary sessions and 20 parallel sessions were held to discuss issues related to strengthening of research and innovation for development in Africa and Globally. The discussions highlighted key issues underpinning the current trends in Kenya’s Vision 2030, the Big Four Agenda as well as SDG and resolved to take specific research, innovation and outreach action to support the our National and County Governments realize their goals and aspirations.

The meeting noted that:
1. Demand for higher education in Kenya and other African countries continue to increase putting a lot of pressure on the quality and relevance of education.
2. Kenya and the rest of Africa has a lot of human capital that can be used to change the continent positively.
3. Sub-Sahara Africa including Kenya continues to face hunger, poverty and malnutrition in the midst of plenty.
4. Africa including Kenya continues to be affected by both Communicable and Non-Communicable Diseases putting a big burden on the already overstretched health system.
5. Infrastructure and the wider built environment as well as special Communicable configuration have a central role to play in the realization of SDGs, Kenya Vision 2030 as well as the Big Four Agenda.
6. Achieving the SDGs as well as Kenya’s Big Four Agenda requires a critical mass of well-educated citizens with necessary technical and soft skills backed up by positive attitude.
7. Development and support for gender equity and equality in Research and Innovation are key in the realization of SDG as well as Kenya’s Big Four Agenda which are all interrelated.
8. There is need for strong and active partnership and collaboration between the academia, government, private sector, civil society etc.
9. There is need for more investment in research and innovation in Africa to spur competency based postgraduate training.
10. The industry as well as other development partners need to invest in collaborative research and training to support the work that our universities and other research institutions are doing.
11. There is a housing deficit in Kenya and many other Africa countries and the demand for affordable housing is still on the increase.
The Inaugural Kenyatta University Research and Innovation Conference 2019 participants deliberated on the above key issues and agreed on the need to:

1. Establish, strengthen and expand University-Industry-Government partnership
2. Disseminate or share research findings beyond the academic community and across the African continent and beyond to ensure uptake and behaviour change.
3. Support and promote innovation at all levels with the aim of commercialization, manufacturing and job creation.
4. Break the silo mentality and promote a culture of multi and cross disciplinary research and innovation.
5. Support and promote innovation for sustainable food and nutrition safety and security in Kenya and the entire African continent.
6. Diversify food choices and patterns to ensure food and nutrition safety and security in Kenya and the entire African continent.
7. Support the Kenyan Competency Based Curriculum with the aim of producing entrepreneurial students and graduates who are job creators rather than job seekers.
8. Analyse the 1st, 2nd and 3rd industrial revolutions and trace our position and place as a continent as we face the 4th industrial revolution.
9. Revitalize postgraduate studies in Kenya and Africa to ensure timely completion rates for postgraduate students without compromising quality and standards.
10. Policy makers need to put the citizens at the center of decision making
11. Establish and promote systems, structures and communities that promote health and well-being so as to address the increasing challenge of communicable and non-communicable diseases.
12. Constant monitoring and evaluation programs both at the national and county levels on the progress towards attainment of SDGs as well Kenya's Big Four Agenda.
13. Bridge the gender gap by supporting and promoting female participation in support of SDGs and Kenya's Big Four Agenda.
14. Support peaceful application of nuclear science and technology in addressing the SDGs and Kenya's Big Four Agenda.
15. Support locally produced goods and services to promote the local industry.
16. Enforce ethics in the conduct of research, innovation and protection of intellectual property.
17. Explore and implement the Public Private Partnership model and using cheaper and safe materials to facilitate provision of affordable housing for all citizens.
18. Embrace and implement the use of design positioning and navigation systems as well as Intelligent Transport Systems to address the transportation challenges that Kenya and the rest of Africa is currently facing.
19. Tap into locally existing technical expertise supported by international experts to address the SDGs and Kenya's Big Four Agenda.

This Communiqué was issued on the 25th October 2019 at Kenyatta University, Nairobi, Kenya.

SUBTHEMES:
1. Technological Innovations, Disruptive Technologies and Industrialization.
2. Strategic Capabilities, Industrial Responsiveness and Socio-Economic Development.
4. Emerging Marketing Trends, Blue Economy and Entrepreneurship.
7. Collaborative Project Management and Agribusiness Value Chain.

Theme: Academia-industry Partnerships For Competitive Innovations And Global Sustainable Development.