Research and Innovation News

A Publication from the Division of Research, Innovation and Outreach

Issue No. 12  December 2023
VISION STATEMENT
To be a dynamic, an inclusive and a competitive centre of excellence in teaching, learning, research and service to humanity.

MISSION STATEMENT
To provide quality education and training, promote scholarship, service, innovation and creativity and inculcate moral values for sustainable individual and societal development.

IDENTITY STATEMENT
A community of scholars committed to the generation and dissemination of knowledge and cultivation of wisdom for the welfare of society.

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

CORE VALUES
Guided by our vision and mission statements, the Division of Research Innovation and Outreach has consistently worked towards establishing an optimal environment infused with a dynamic research culture that fosters excellence in research, scholarship, and innovative pursuits. As a division, our mandate aligns with the Sustainable Development Goals, AU strategic objectives outlined in Agenda 2063: The Africa We Want, the Government Economic Transformation Agenda, and Kenyatta University Strategic and Vision goals.

To ensure the effective realization of our responsibilities, the university management has instituted specialized centers and directorates to lead the division’s specific goals and objectives. Additionally, the institutionalization of research in Departments and Schools has been approved by our Vice Chancellor. Given that Departmental and School Boards for Research Innovation and Outreach have already been established, the appointment of Coordinators to chair the respective boards is currently underway.

Our achievements are evident in the increased number and size of research grants awarded by international partners and the government to the university, the establishment of specialized research laboratories, expanded capacity-building activities for staff and students in research, heightened funding for innovations, formation of new partnerships, and the dissemination of research findings through publications, seminars, symposia and conferences.

The Division of Research Innovation and Outreach extends gratitude to all contributors and looks forward to similar support in the coming year. Wishing everyone a Merry Christmas and a Happy New Year 2024!

Prof. Caroline Thoruwa
Ag. Deputy Vice-Chancellor, Research Innovation and Outreach
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We are excited to present the 12th Issue of our signature publication, capturing the remarkable achievements and groundbreaking research and innovation activities within the Kenyatta University community. This issue is a testament to the dedication and ingenuity of our esteemed researchers, scholars, and students who have tirelessly contributed to the advancement of knowledge and the pursuit of excellence. We note with appreciation the ongoing diverse and impactful work, reflecting the vibrancy of our academic community that seamlessly aligns with the divisional vision of creating and sustaining an optimum environment that encourages and promotes excellence in research, scholarship, and innovative endeavors. We applaud your passion for discovery and the willingness to share your findings with the world, inspires us all.

We acknowledge Kenyatta University management for the unwavering support and commitment to fostering a culture of research and innovation. A special appreciation goes out to our diligent editorial team, whose meticulous efforts have brought this publication to life. Their dedication to showcasing the wealth of knowledge emerging from our institution is commendable, and I am grateful for their commitment to quality and accuracy. As we approach the festive season, we take this opportunity to express our warmest wishes to the entire Kenyatta University community. May the spirit of Christmas bring joy and warmth to your hearts, and may the upcoming year be filled with new opportunities, success, and continued advancements in research and innovation.

Thank you for being part of our journey, and we look forward to another year of collaboration, discovery, and excellence.

Merry Christmas and a Happy New Year 2024!

Prof. Richard O. Oduor
Registrar - Research, Innovation and Outreach
RESEARCH NEWS
Research and Development Grants

July – December 2023
Promoting health equity by cultivating and supporting innovativeness within local communities

Dr. Eng. Fidelis Ndambuki Kilonzo of the School of Engineering and Architecture jointly with Prof. Boventure Agina of the School of Health Science and Dr. June Madete of the Department of Electrical and Electronic Engineering secured a grant of

USD 1,199,466

from Bill and Melinda Gates Foundation for the implementation of a 3-year MedTech Accelerator East Africa – Kenya project.
The project’s primary objective is to promote global health equity by empowering women and supporting the development of innovative products within communities. To achieve this, the project is set to establish a Medtech accelerator and Biodesign training programme in East Africa. This programme will facilitate collaboration between the local technology ecosystem and academia to accelerate the discovery, design, and delivery of tools, while also increasing the speed of iteration cycles and enabling the testing of products in real-world settings, including among pregnant women, children, and babies.

By launching a new Biodesign-training programme while learning from the existing Stanford Biodesign, the Bill and Melinda Gates Foundation and KU, in partnership with other local academic partner institutions, will enable the collaboration between academia, local and international partners to develop an ecosystem that cultivates, fosters, and supports innovative thinking and implementation within local communities, in order to promote global health equity.

Stanford biodesign innovation process
**Global Entrepreneurship Talent Management (GETM4)**

Dr. Ambrose Jagongo and Dr. Fredrick Ndede of the Department of Accounting and Finance have jointly secured consortium funding of **Euro 1,256,600** from the European Union to implement the **Global Entrepreneurship Talent Management (GETM4)** project. The consortium consists of 19 trans-national, trans-disciplinary, trans-generational, trans-sectorial and gender balanced research teams from the Global North and South.
The four-year project (2023 - 2027) will adopt a global approach that will allow researchers to gain first-hand and in-depth insights on relevant research topics and develop their skills through networking and trainings. The research will be underpinned by a “respectful impact” perspective as the project team believes research and innovation should be transferred and translated respectfully between the Global South and North and knowledge should be shared equitably and in all directions.

The overarching goal of the Global Entrepreneurship Talent Management (GETM4) project is to contribute to better health, wellbeing, happiness and sustainable development of individuals, organizations and society by developing talent for entrepreneurial action underpinned by responsible digital innovation.

Specifically, the project will work to facilitate the potential of entrepreneurial action in line with the EU Recovery Plan to build the Next Generation EU that is more digital and more resilient. The team will also provide insight on how entrepreneurial talent of individuals, higher education, and industry can play a crucial role in exploiting the opportunities and tackling the issues created by disruption to support not only economic development but also societal wellbeing in a digitized world.
Prof. Maina Mwangi of the Department of Agricultural Science and Technology and Director, Innovation Incubation and University-Industry Linkages has secured a collaborative grant of Euro 789,900 from the European Education and Culture Executive Agency, Erasmus+ Capacity Building for Higher Education programme to implement a research project titled “Universities promoting linkages for impactful training, innovation and technology transfer in Agriculture (UPLIFT-Ag)”. The three-year project will be coordinated by Kenyatta University and implemented jointly with 9 universities in Africa and 3 in Europe working closely with private sector actors and other development practitioners in the four African countries. The lead industry anchor is the Agriculture Sector Network (ASNET) of the Kenya Private Sector Alliance.
The UPLIFT-Ag project will support a multilateral partnership in implementing actions that will improve the relevance, quality, modernization and responsiveness of agricultural higher education in Kenya, Rwanda, Burundi and Zimbabwe to enable them establish effective academia-industry linkages for increased impact. It will also adopt improved teaching and innovative curriculum stems that facilitate transfer of technical and soft skills. Additionally, the project will work to strengthen the universitys’ innovation and entrepreneurial capacity allowing entrepreneurs to harvest, protect and commercialize their IP successfully.

The project’s objectives are aligned to the goals of the European Sustainable Growth and Jobs, the Comprehensive Strategy for Africa and the EU-African Union Innovation partnership. The project’s objectives form the core work packages of the UPLIFT-Ag project which will also include communication and dissemination of project outputs.
Advancing inclusive and innovative digital education for migrant communities

Dr. Adelheid Marie Bwire of the Department of Educational Communication and Technology has secured a collaborative grant of Euro 719,939 from the European Education and Culture Executive Agency, Erasmus+ Capacity Building for Higher Education programme to implement a research project titled “Inclusive and innovative digital education for migrant community in Kenya (IIDEMIC)”. The project will be coordinated by Kenyatta University and implemented jointly with 6 partner institutions in Kenya, Somali, Turkey and Poland.
The project seeks to create a lifelong learning platform accessible to the refugee and migrant population to build requisite capacities aimed at increasing employability opportunities in Kenya and Somalia.

This will be complemented by a data centre developed with adaptive features that cater to all kinds of disabilities and special needs of refugees and migrants as well as an education programme aimed at developing teachers’ skills in inclusive pedagogy; strengthen soft skill competencies among Somali refugees in Kenya and internally displaced persons in Somalia to improve their entrepreneurial innovation and uptake of opportunities afforded through technology.

The beneficiaries of the IIDEMIC Project will be in-service teachers, undergraduate and professional trainees in areas that cover the project issues, mothers and their children, Higher Education Institutions (HEIs) academic and technical staff. One of the short-term effects will be to enhance the quality and content delivery to the students and personal enrolment to the course/module. The long-term effect from this project will be the creation of more competent and skilled graduates and professional experts through innovative and inclusive training and exposure to comprehensive modules.

The KU team supporting Dr. Bwire includes Dr. Marguerite Miheso O’Connor, Dr. Francis G. Mwangi of the Department of Educational Communication Technology, Dr. Beatrice Bunyasi of the Department of Early Childhood and Special Needs Education, Dr. Priscilla Ndegwa of the Department of Business Administration and Dr. Mildred Nawiri of the Department of Chemistry.

Training modules that will be developed based on the 10 areas of focus include:

- Entrepreneurship
- Teaching English to Speakers of other Language
- Adaptive Instructional Resources
- Contemporary Instructional Methods and Teaching Adult Learners
- Digital and Assistive Technology Learning Tools
- Inclusive Education for Migrants and Refugees
- Cultural Diversity, Democracy and Translanguaging
- Guidance and Counselling - Reintegration
- Maternal and Child Health and Promotion
- Basic Health Education

Project partners:

- MWSB Merito University Poznan
- Republic of Kenya Ministry of Education
- Yuzhno-Gomel State University
Prof. Philomena N. Mwaura of the Department of Philosophy and Religious Studies secured funding of **Euro 500,000** from the European Union for the **Virtual Exchanges in Religious Euro-African Dialogue (VEREAD)** research project which brings together a consortium of Universities from Europe (Poland, Italy, Netherlands, and France) and Africa (Kenya, Uganda, Tanzania, South Africa and Zimbabwe) to promote cooperation between students and staff from Europe and Africa through the dissemination of knowledge about religions and promoting participative learning and interactive exchanges of ideas among young people.
It is anticipated that upon successful completion, the project outcomes will include: acquisition of new knowledge and enhancement of methodological skills and critical thinking; strengthening intercultural communication; improvement of student’s data skills and further training of participating staff on online pedagogy and E-learning. The project will immensely contribute to the production of high quality research data on religions which will be significant in addressing religious extremism and radicalisation.

Prof. Philomena N. Mwaura will be supported by Dr. Zachariah W. Samita of the Department of Philosophy and Religious Studies and Dr. Eric Masika of the Department of Chemistry in the implementation of the project.
The study will seek to establish social and economic factors that promote sexual sponsorship among university students and the various forms of gender-based violence (GBV) that come with it. The project will examine existing structures that deal with GBV with the aim of making recommendations to strengthening them. Additionally, a determination of concrete strategies to deal with GBV and sexual sponsorship will be made with the aim of accelerating achievement of SDG III on good health and well-being, SDG V on gender equality, SDG VIII on decent work and economic growth, and SDG XVI on peace, justice and strong institutions.

Dr. Mandela will collaborate with other researchers from Kenyatta University, University of Eldoret and Masinde Muliro University of Science and Technology in undertaking the research.
Dr. Esther Munyiri of the Department of Hospitality and Tourism Management and Director Global Tourism and Crisis Management Centre (GTRCMC) has secured a collaborative grant of €360,042 from the European Education and Culture Executive Agency, Erasmus+ Capacity Building for Higher Education programme to implement a research project titled “Inclusive, Impactful and Integrated Higher Education in Eastern Africa (3is)”. The project will be coordinated by University of Girona, Spain and implemented by a consortium of 10 partner institutions in Kenya, Somali, Ethiopia and Greece.
In collaboration with European partners, the participating African universities will design policy instruments and action plans in the areas of internationalization, inclusiveness, educational innovations and academic excellence, community and industry outreach, and regional integration. These instruments and plans will be developed at each location in collaboration with associated partner organizations representing the local communities and industry, least favoured groups, policymakers, and others.

The outcome expected is a process of collaborative work that builds on known best practices, incorporates local socio-economic, cultural, and environmental idiosyncrasies. Provided with these policy and action plans, the newcomer African universities will be able to device a path to excellence by leveraging on the increased competence of their staff; their stronger links with the private sector and local communities; increased competences to work at international level, and also capacity to participate or coordinate future Capacity Building for Higher Education projects. It is also expected that these universities will start responding in the short and medium term to barriers against the accessibility of students and staff with fewer opportunities.

In respect to the Eastern Africa region, the project is expected to contribute in the mid and long-term to an enhanced cross-border cooperation, mobility of students and staff, resulting to a more innovative, peaceful, developed, and sustainable region.
The World Anti-doping Agency (WADA) and Athletics Integrity Unit (AIU) have placed Kenya in category A on doping menace rating implying the high risk of doping among Kenyan athletes. The two agencies are keen on making concerted efforts to curtail the doping menace - not only in Kenya, but in the region and by extension, the whole world. Prof. Elijah Gitonga - Associate Professor in the Department of Recreation and Sports Management won a grant of USD 20,000 from the WADA Social Science Grants to explore Kenyan coaches doping knowledge, motivational climate, confrontation efficacy and attitudes towards doping in Kenya. The study findings will be useful in enhancing the education of coaches on anti-doping and their utilization of online sources of information to enhance their knowledge on clean sport.
This will enable coaches to confront athletes susceptible to doping, as well as enhance understanding of the challenges faced in anti-doping efforts. Ultimately, the study outcomes will immensely impact on policy formulation on the recruitment and sanctioning of coaches by sports federations, Anti-Doping Agency of Kenya (ADAK), National Olympic Committee of Kenya (NOCK) and the Ministry of Youth Affairs, Sports and the Arts.

Prof. Gitonga will be supported by Dr. Francis Mwangi of the Department of Physical Education Exercise and Sport Science and Mr. Martin Yauma Sisa, Ph.D student and Head of Education and Research at the Anti-Doping Agency of Kenya (ADAK) in implementing the project.
Concurrently, Prof. Gitonga with additional funding from WADA of USD 56,000 will be working with researchers from Kyambogo University (Uganda), University of Rwanda and University of Dar-es-Salaam (Tanzania) to examine the possible associations between **sport motivation, moral-decision making and attitudes towards doping of secondary school athletes in East Africa**. The findings of the study will be useful to parents, teachers and coaches to foster achievement of goals which lead to secondary school athletes developing mastery orientations and effort guided success. It is expected that the study outcomes will contribute to reduced incidences of cheating, enhance fair play and sportspersonship among the secondary school athletes in East Africa.

The two studies will significantly impact on anti-doping education and practice among the athletes fostering significant efforts in ensuring that clean sports are maintained and athletes are given the fundamental right to participate in a free doping sport.

**Project partners**

[Logos of University of Rwanda, University of Dar es Salaam, Kyambogo University]
Transitioning from classroom to work environment for fashion graduates
In the 21st century, the fashion industry is undergoing a radical transformation in design, technology, consumer preference, and climate change awareness. Consumers, activists and policymakers are demanding more sustainability, diversity and social responsibility from global fashion brands. Africa, on the other hand, seems to have a new awakening and appreciation for African prints as fashionable wear. However, it is not clear whether fashion education has kept pace with these changes, resulting in a skills-gap between fashion graduates and the expectations and opportunities of the industry. This gap affects the employability, creativity, and well-being of fashion graduates, as well as the innovation and resilience of the industry.

To address this gap, Dr. Jacqueline Kisato of the Department of Fashion Design and Marketing will lead a collaborative research project titled “Fashion curriculum and graduate transition into the work environment: comparative study for Kenya and Ghanaian fashion graduates” awarded USD 15,000 by CODERSIA.

The research study will evaluate graduate students’ transition in the fashion and textile programme, the critical workplace skills expected from graduates by employers in the Kenya and Ghana's fashion, textile and apparel industries. The study will contextualize country-specific graduate-work readiness frameworks that leverage stakeholder-academia collaboration using the triple helix model and explore ways to enhance cross-pollination of fashion-related research between Kenyan and Ghanaian fashion and textile scholars.

This research will leverage a participatory design process, in which fashion graduates, faculty and other stakeholders in the fashion industry value chain, will co-create solutions and recommendations for improving fashion education and practice.
Strengthening school-based teacher professional development in Kenya

Dr. Oliva Opere (Principal Investigator)

Dr. Teresia Mwoma (Co-Principal Investigator)
Genesis Analytics Limited a consultancy firm and Kenyatta University have jointly been contracted by World Bank (USD 46,862.50) to undertake a research study on how best to strengthen school-based teacher professional development in Kenya, with a particular emphasis on supporting teachers to deliver the competency-based curriculum and also ensuring peer learning.

The research team will further be expected to offer technical advice on how best to leverage the findings to introduce technology-enabled solutions based on global evidence and international best practices in supporting the government develop and pilot an app to support teacher professional development.

Dr. Olivia Opere of the Department of Educational Foundations will be supported by Dr. Teresa Mwoma of the Department of Early Childhood and Special Needs Education in delivering the research assignment.
The Directorate of Innovation, Incubation and University-Industry Linkages under the leadership of Prof. Maina Mwangi in partnership with Halcyon House (USA) and Sandbox Incubation Hub (Kenya) have been awarded USD 49,315 with co-funding contribution of USD 7,980 by the US Government, Department of State, Climate Solutions and Sustainable Entrepreneurship Fund to implement Climate Entrepreneurship Hub project.

The project aims to identify promising social entrepreneurs from sub-Saharan Africa and provide them with the critical training and resources needed to grow and scale their businesses and their impact. The project further seeks to improve the efficacy and capacity of entrepreneurial support organizations (incubation hubs, accelerators, etc) working with climate startups.

The objectives of the Climate Entrepreneurship Hub project include recruitment of promising climate-focused entrepreneurs in the African continent and convene them in a dedicated space for training to increase their capacity to develop and scale solutions to the climate crisis; connect entrepreneurs to sources of capital, increasing founders’ ability to deploy and scale innovations; conduct public programming for a broader group of founders interested in climate resilience and adaptation; and support capacity building among innovation hubs in academic and research centres and other entrepreneurial support organizations seeking to serve climate-focused entrepreneurs.

Serving climate-focused entrepreneurs

Project partners

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Halcyon

SNDBX The Village Formula
Strengthening sustainable food value chains: lessons from Kenya and Germany

Dr. Ibrahim Macharia of the Department of Agricultural Economics secured funding of Euro 14,520 for a study visit project titled “Strengthening sustainable food value chains: lessons from Kenya and Germany on circular economy and climate change adaptation strategies”, sponsored by the German Academic Exchange Service (DAAD) under the Study Visits for Groups of Foreign Students to Germany 2023/2024.
The visit which took place in November involved 10 students from the school of Agriculture and Environmental Studies and one supervisor. The project aimed to create a learning platform for students from Kenya and Germany to exchange experiences and best practices in agricultural sciences, specifically focusing on food chains, circular economy, climate change adaptation strategies and agricultural innovations.

The programme was organized in collaboration with two esteemed institutions—Weihenstephan-Triesdorf Applied University (HWST) and Neu-Ulm University of Applied Sciences (HNU). HWST is renowned for its expertise in the circular economy and sustainable agricultural practices, while HNU excels in innovation related to food chains, with a strong emphasis on sustainability and social responsibility.

The study visit included a detailed itinerary with lectures, visits to agricultural research institutes, innovation hubs, food production and processing plants, and other relevant organizations. The schedule also incorporated joint seminars, presentations, and cultural exchange activities.

The team during a visit to the Weihenstephan-Triesdorf Applied University (HWST) biogas plant, where they had a hands-on experience of its operations. The team learnt about the production process, from feeding the plant with dairy and maize silage to the filtration of biogas using charcoal pellets. The effluent from the plant was highlighted as valuable manure for farmers.

Dr. Ibrahim Macharia (2nd right, in a cap) and the students during a visit to the pig farm where they explored the meat processing company (Sand) and gained firsthand experience of the meat processing industry. Discussions revolved around operational processes, hygiene standards, and technological innovations, enhancing the understanding of industry best practices.
The group during their visit to the Müßighof farm where they gained first-hand experience on organic vegetable cultivation, animal husbandry, and social farming. The integration of these components within a holistic farming system reinforced the viability and benefits of sustainable and balanced future food production. Spanning 143 hectares, the farm practices organic cultivation of various crops utilizing ecological methods.

Beyond agriculture, the farm provides housing and employment for individuals with disabilities, fostering a collaborative environment in the creative sector. This encompasses an artist’s studio, ceramics workshop, farm museum, shop, and bistro. Twelve individuals with disabilities work on tasks tailored to their abilities, emphasizing a balanced and sustainable approach.

A joint seminar with HNU master’s students centered around an innovative social project on malnutrition among preschool-going students in Kenya. The session also featured interactions with two international students, one from Nigeria and another from Egypt, who shared their experiences and projects. Mr. Chudi from Nigeria presented the “Go-Women-Preneur Implementation Plan,” involving eleven smallholder businesswomen working collaboratively.
The exposure to Germany’s dual education system and agriculture technology application made a lasting impression, highlighting the significance of practical relevance in agricultural education. The trip not only broadened the students’ knowledge of agriculture and innovations but also provided experiences into European culture and technology. The inaugural study visit set precedence for future collaborations and significantly enriched the students’ global perspectives. The lessons learnt will echo in their academic and professional journeys, fostering a more comprehensive worldview.

The Students enjoying a bus ride from Nuremberg to Neu-ulm for their 3 day visit at Neu-ulm University.

Group photo with Prof. Thomas Bayer.
Select Ongoing Research Projects
Kenyatta University has been implementing East Africa Air Quality Community of Practice (Kigali, Kampala & Nairobi cities) since 2021 in partnership with Columbia University, New York and other scholars from Africa, Europe and USA. The project has the set-up of an Air quality monitoring site at the KU City Campus, hosting of physical and virtual international training workshops and research stays in USA to a total cost of USD 92,225.

The monitoring site is equipped with state-of-the-art reference monitors including Nox Analyzer, Ozone Analyzer and Teom Ambient PM2.5 Monitor. The site also has low-cost air quality sensors such as Real Time Affordable Multi-Pollutant (Ramp Sensor), Purple air monitors and clarity nodes.

Through the project, KU has continued to develop capacity of faculty in air quality monitoring and management, and build partnerships with other key stakeholders in the country and region including Nairobi County City Government, NEMA among others.

Increasing understanding of air quality: monitoring site set-up at City Campus

Dr. Godwin Opinde (KU) presents a token of appreciation to Dr. Daniel Westervelt during the East African Air quality hybrid training workshop held in August.

From Left Prof. R. Subramanian, Prof. M. Giordano, Prof D. Westervelt, Dr. Godwin Opinde and Prof. A. Presto during the AfriqAir/Cams-net meeting in Kigali on 9th March, 2023, after the selection of Kenyatta University as the host of the 2023 East African Inaugural Air Quality Training Workshop that was held in October.

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enabling the linkage of the NEMA (Air Quality Management Section) with the US Environmental Protection Agency by sponsoring two NEMA officers for a two-week knowledge exchange visit to the United States (this has contributed to the knowledge base of the Authority);

undertaking virtual East African Air Quality training which was attended by representatives from government agencies, NGOs, researchers and students in East Africa;

facilitating the listing of KU as a contributor/member of the Clean Air Solution Monitoring Network (CAMSNET), an international network of networks in air quality management;

providing KU staff and students conducting air quality research access to data from reference monitors and calibrate/co-locate low-cost air quality sensors for deployment in other locations for air quality measurements;

empowering KU to inform policy and regulations on air quality in Nairobi City and Kenya through data provision and research (KU nominated Dr. Godwin Opinde to be a member of the Nairobi Air Quality Working Group (N-AIR)- A World Resource Institute (WRI) Led Air Quality project);

signing of an MoU with Openaq to enhance its access to air quality data worldwide for purposes of research.

hosting the East African Air Quality hybrid training workshop in August, 2023 with participants from the US Embassy, Columbia University, North Carolina University of Agriculture and Technology, Carnegie Mellon University, Birmingham University (UK), Lund University (Sweden), Columbia Global Centre, National University of Rwanda, Makerere University- Air-Qo, University of Nairobi, JKUAT, Technical University of Kenya, NEMA (Kenya), KenGen, Geothermal Development Corporation, Nairobi City County, Kisumu City County, Mombasa City County, Civil societies and private companies;
Some of the equipment set up at the City Campus Air quality monitoring site

- **TEOM Particulate Monitor.**
- **Purple Air Monitor.**
- **RAMP Low-cost sensor (Measuring CO, Co₂, NO, NO₂, SO₂, PM2.5, PM10, Wind direction RH, Wind speed).**
Seated from L to R: Dr. Murugi (Colombia Global Center - Director), Ms. Pamela (USAID representative), Dr. James Koske (Representing the Vice-Chancellor, Kenyatta University), Dr. F. Kilonzo (Dean Engineering & Architecture), Dr. G. Opinde (KU), Dr. D. Westervelt - Columbia University (standing in the middle) with participants of East Africa Air Quality training workshop.
Reigniting the **agricultural flame** in Eastern Africa’s rural lands through CropDig

*Prof. Joseph Gweyi during a demo set up with the youth in Nakuru County.*
Africa’s agriculture nurtured by generations and sustained over the years through hard work has been facing a future dimmed by dwindling interest and limited profitability. Changing climatic conditions, limited resilience tools and the allure of urban life appealed to the younger generations has left farmlands neglected, negatively affecting productivity.

AIRTEA project is working on reigiting the agricultural flame amidst all these challenges. The project, revealing the transformative power of collaboration and innovation is being implemented by Kenyatta University, Koppert Biological Systems, Kenya Agricultural and Livestock Research Organization and Geospatial International Research.

Women who form an essential part of the workforce in areas where agriculture is primarily driven by smallholder farmers still have limited access to information stifling their potential, adaptability, productivity as well as profits. On the other hand, the youth who are to take on the craft are increasingly looking beyond the farm drawn by the possibilities of urban life.

AIRTEA has recognized the crucial role of these groups (women and youth) and is working to equip them with the tools to thrive. The development of the innovative mobile Application- “CropDig” has created a learning and knowledge sharing hub where farmers, extension officers, technology experts, and county leadership come together to shape the future of agriculture.

The project has revealed the transformative power of technology. While traditional approaches to technology development have struggled to reach marginalized rural communities, AIRTEA’s focus on technology design, robust training, and capacity building opened up new possibilities.

CropDig, is a game-changer designed to address the challenges faced by farmers and serves as a platform to bring extension officers and farmers together to provide farming knowledge and solutions that enhanced resilience, especially in the face of changing climatic conditions.

Farmers can now easily access use-ful information on good farm practices based on their region and farm location. The information ranges from choosing right quality seeds, selecting appropriate inputs, learning correct application procedures for the inputs, and controlling pests and diseases. All these at a click of button on the farmer’s mobile phone.
Through workshops and training sessions, knowledge sharing has become a tool of empowerment, fueling a renewed interest in agriculture, especially among the youth.

AIRTEA hopes to introduce Agricultural Business Learning Alliances (ABLAs), that will usher in a new era of agri-entrepreneurship. These alliances will serve as incubators for farming businesses, providing mentorship and guidance on market dynamics, financial management, and business planning.

Through ABLAs, smallholder farmers will be transformed into savvy entrepreneurs, viewing their farms not just as subsistence plots but as opportunities for economic growth.

AIRTEA continues to bring hope to Eastern Africa’s agricultural landscape and highlights the significance of collaboration, innovation, and knowledge-sharing in driving meaningful change. The project has already illuminated a path for farmers and rekindled youth’s interest in agriculture.

Prof. John Gweyi 10th from left and other consortium members during training for youth in Homabay County.

Youth group members exploring the mobile app CropDig.

Next steps

Project partners
Marking and Pegging of Riparian Land:

Kamiti River Catchment
Kenyatta University hosts the RCE Greater Nairobi which covers four counties: Nairobi, Kajiado, Kiambu and Machakos whose purpose is to promote partnership, dialogue, networking and advocacy on Education for Sustainable Development (ESD) with the ultimate aim of raising public awareness and inspiring community action that will lead to economic and environmental sustainability. RCE Greater Nairobi as a key stakeholder in the conservation of Kamiti River Catchment was involved in conducting a baseline survey on the catchment degradation.

The County Government of Kiambu incorporated a joint approach in the conservation measures by collaborating with eight water service providers (WSPs) Kiambu Water and Sewerage Company (KIWASCO) a key entry point. Other stakeholders include the Water Resources Authority (WRA), Water Resources Users Associations (WRUAs), land owners and Kenyatta University (KU).

Marking and pegging of the riparian land were part of the conservation measures undertaken in the catchment restoration project. In a launch event at Githiga on 23rd August 2023 Mr. David Musyoki from Water Resources Authority, Machakos, enlightened the landowners and stakeholders on the policies pertaining to riparian land. Dr. Esther Kitur of the Department of Environmental Sciences and Education gave a brief on the effects of climate change on water bodies and riparian land. Mr. Boniface Mbuga, Managing Director Kiambu Water and Sewerage Company, reiterated the water service providers’ commitment to support the
conservation of water resources since they are major abstractors of water from the rivers.

Representing the Governor, Mr. David Kuria, CECM Environment and Natural Resources, echoed the effects of climate change and the pressing need to plant bamboo trees and allowing reeds to grow along riparian land as an additional measure of protecting the rivers.

Mr. Kuria noted that Kiambu County was the first County Government to launch the marking and pegging of riparian land in Kenya and asked stakeholders to make it notable for other counties to benchmark.
Research Ethics

Trust
To instill public confidence in science and scientists

Authenticity
To protect your reputation as a scientist and the credibility of your research

Values
To uphold common moral and social values

Why is Research Ethics Important?

Safety
To ensure the well-being of your participants and the population at large

Collaboration
To increase cooperation among researchers
Many researchers encounter ethical dilemmas, and some even face the consequences of journal rejection or retraction due to failure to adhere to ethical guidelines.

The importance of ethical decision making in academic research cannot be overstated, as it is central to ensuring that participants derive maximum benefits from their involvement. Adhering to ethical principles is essential for upholding the integrity of the study and safeguarding the rights and welfare of the participants.
**Ethical principles:**

**Human Subjects Protection:** Respect human dignity and take special precautions

- **Honesty:** Ensure honesty in all forms of scientific communication with colleagues, sponsors or the general public
- **Objectivity:** Avoid bias in all aspects of research
- **Integrity:** Maintain consistency of thought and action
- **Carefulness:** Avoid errors or negligence at all times
- **Accountability:** Be responsible for all concerns related to your research

- **Intellectual Property:** Avoid plagiarism, give proper credit to all contribution in your research and honor all forms of intellectual property
- **Confidentiality:** Protect and safeguard all confidential information recorded in your research
- **Responsible Publication:** Publish for the sole reason to advance the knowledge in your field
- **Openness:** Share information about your research and be open to criticism and new ideas
- **Transparency:** Disclose all the necessary information needed to evaluate your research

- **Respect for Colleagues:** Respect and treat all your colleagues fairly
- **Social Responsibility:** Aim to promote social good through your research
- **Responsible Mentoring:** Help and mentor other researchers and promote their welfare
- **Legality:** Observance of applicable laws and policies
- **Animal Care:** Respect and care for all animal species

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Innovation News
Bridging the gap and leveraging technologies across the sectors

ONCE SYNC team inspiring growth and knowledge at galaxy farm’s automation workshop for young farmers.
ONCE SYNC stands out as a leader in the digital transformation space, harnessing advanced technologies like Blockchain and Artificial Intelligence to develop industry-defying solutions in sectors such as health, finance, agriculture, land, and the public sector. Their story is one of perseverance and determination, striving to close the digital divide not only in Kenya, but throughout Sub-Saharan Africa.

World Bank statistics reveal that less than 4% of commercial credit reach farmers, and fewer than 50% of rural women access healthcare. ONCE SYNC has set out to close these gaps, providing solutions to connect rural communities and individuals living under $2 a day.

In the Health Sector, ONCE SYNC has introduced a robust Health Management Information System (HMIS) empowering rural health facilities with digital tools. The Financial Sector has witnessed the implementation of payment gateways and core banking solutions, while the corporate world is benefiting from ONCE SYNC’s Entreprise Resource Planning (ERP) and Human Resource Management tools.

The company’s impact is demonstrated through its collaborations. For example, Chai Sacco now benefits from improved credit delivery channels to tea farmers, which has transformed the agricultural landscape. Galaxy Flowers, a horticulture farm, has experienced operational automation, resulting in increased employment opportunities for youth and women. Additionally, through its partnership with the Ministry of Agriculture, ONCE SYNC is mapping Arid and Semi-Arid Land (ASAL) areas, creating opportunities for last-mile services to reach the rural poor.

ONCE SYNC CEO George Maina shares insights on company’s impact in East Africa and unveils future growth plans at the 2023 CGIAR Green Innovation Event.
Bee MultiScent Technology is set to revolutionize the scent conditioning industry, offering unparalleled customization and convenience. The patented hardware device empowers users to effortlessly create personalized atmospheres using a technology powered by the Internet of Things (IoT) to automate scents conditioning.

The concept uses IoT technology providing remote control from anywhere in the world through a smartphone app with users changing scents, monitoring scent levels, and scheduling scent changes. The technology represents a significant leap forward allowing users to choose multiple scents with a click of a button or by flipping through their phones, igniting a scent change.

The cutting-edge multi-scent diffusers redefine fragrance experiences by infusing designer perfumes with essential oils. The system supports up to 20 different scents, providing customers with a variety of options to choose from, either medicinal or luxury scents. The startup relies on degradable scent solids with essential oils, ensuring the device is eco-friendly and safe for the environment.

This technology enables users to remotely switch off the device to save scent life and avoid unnecessary diffusion when not in use. Additionally, Bee multiscent reduces environmental pollution by replacing metallic cans with refillable scents glass containers. Unlike aerosol sprays that use flammable LPG, this system can use essential oils, which are non-flammable and more environmentally friendly.

The inclusion of a parental control feature adds an extra layer of versatility and safety. This feature ensures that settings are protected by a passcode or a special switch, preventing unauthorized tampering, especially in households with children. Finally, the ability to send notifications when scents are running low and the refill is a practical feature that ensures users not run out of their preferred scents unexpectedly and helps maintain a seamless user experience.
Kenyatta University – Rice360 Design Competition

Kenyatta University in collaboration with Rice360 Institute for Global Health Technologies hosted the first edition of the Kenyatta University-Rice360 Design Competition in August, 2023. The competition was preceded by a two-day design boot camp where innovators developed their prototypes. The competition was held under the theme ‘Designing for One Health.’ Oxygen Alliance partnered with the competition and provided merchandise and trophies for the event.

The Kenyatta University-Rice360 Design Competition showcased low-cost health technologies for resource limited settings designed and prototyped by undergraduate student innovators. The competition provided a platform for innovators to showcase the technologies and services they have developed to meet real-life challenges in resource limited communities.

Professionals and stakeholders from industry, government and academia served as judges, project mentors and technicians. Judges provided encouraging feedback to innovators during the competition. Project mentors, individuals from the entrepreneurship ecosystem, provided pitch training, great insights on project scoping, and market pathways for products. Technicians provided prototyping services to all innovators.
Innovators working on their innovations during the competition’s boot camp

The event began with a pitch competition after which innovators exhibited their projects to judges and invited guests from the MedTech ecosystem. It was a wonderful convening filled with a lot of learning activities for undergraduate innovators. The winners of the design competition also attended the inaugural Transforming Africa MedTech Conference convened in partnership with Villgro Africa and Jaza Rift Ventures.

Innovators firming up their innovations in preparation for the competition
Competition winners Juma Theophilus and Alexander Kinyanjui from KU for their project titled ‘Comprehensive, friendly and tailored access to mental health services by PsychX’.

1st runners up from JKUAT for their project dubbed CURECAB.

2nd runners up Kachila Dennis, Ochieng Isaac and Gichuki Brian from KU for their project titled ‘Design and development of medical gas supply pipeline control and monitoring system’.
3 Research Dissemination and Uptake
Helping communities understand drivers of child acute malnutrition in Marsabit and Isiolo Counties

Catholic Relief Services (CRS) in collaboration with Tufts University and Kenyatta University have been implementing a two-year (2021-2023) research study on “The seasonality of child acute malnutrition in Marsabit and Isiolo Counties”. This study being coordinated by Prof. Sophie Ochola of the Department of Food, Nutrition and Dietetics, is part of the USAID Nutrition in ASALs Within Integrated Resilience Institutions (NAWIRI) five-year Bureau for Humanitarian Assistance (BHA) funded research and development programme in the two counties.

The study sought to understand the drivers of child acute malnutrition in areas experiencing persistently high levels of acute malnutrition focusing on four sentinel sites, each representing different livelihood systems and climatic conditions; among pastoralists, agro pastoralists, pastoralist fisher folk, and households living in peri-urban areas transitioning out of pastoralism. These livelihoods were represented by Laisamis, Garbatulla, Loiyangalani, and Ngaremara Wards.

Community dissemination at Laisamis subcounty in Marsabit County.
The study revealed that the prevalence of wasting consistently exceeded the emergency threshold of 15% throughout the data collection period. The highest level of acute malnutrition was observed in Laisamis, with no observable differences between Garbatulla and Ngaremara. The drivers of wasting varied across the sites, reflecting the heterogeneity in climate, environment, and livelihoods. Factors such as food insecurity, sleeping under a mosquito net, vitamin A rich fruit consumption, overall livestock ownership, and the dependency ratio were found to be associated with wasting in specific sites. Despite the protracted drought during the study period, seasonal patterns in nutrition indicators were identified, signifying the importance of considering seasonality in addressing acute malnutrition.

The differences observed across the three sentinel sites underscore the need for context-specific interventions. The findings contribute to the understanding of the complex drivers of acute malnutrition and emphasize the need for targeted and multifaceted approaches to address the challenge of persistent global acute malnutrition.

The team taking children measurement in Isiolo county during data collection.
Study findings of Garbatulla, Ngaremara and Laisamis Wards
Study findings of Garbatulla, Ngaremara and Laisamis Wards

Learning briefs developed from the study

Vulnerability, Risk, and Resilience:
The implications for the drivers of malnutrition in Isiolo and Marsabit Counties, Kenya

WHAT is the state of acute malnutrition in Marsabit and Isiolo Counties and WHO is at risk?

Prof. Sophie Ochola and team preparing for community dissemination at Ngaremara in Isiolo County.
Transforming Africa Meditech Conference

Villgro Africa and Jaza Rift Ventures, in collaboration with Rice360 Institute for Global Health Technologies, Kenyatta University, Ifakara Innovation Hub, and Product Development Partnership (PDP) Forum convened the first annual pan-African medical technology conference aimed at building a future for a comprehensive and transformative African medical technology industry. Over 100 guests from Kenya and other countries within the region convened to discuss the status of medical technology development in Africa. The two-day conference saw stakeholders, policy makers and academicians discuss on how best to steer biomedical engineering and technological advancement in Kenya and Africa.

The Chief Guest Prof. Paul K. Wainaina, Vice-Chancellor Kenyatta University talked about the significance of transformative power of industry and university partnerships to address healthcare challenges facing the nation. He emphasized the importance of partnerships that would facilitate the alignment of university curriculum with current market trends and industry developments in the field of medical technology, thereby bridging the gap between academic knowledge and real-world applications.

Keynote Speaker Dr. Victor Konde-Scientific Affairs Officer with the United Nations Economic Commission for Africa (UNECA) emphasised on the importance of building capacity on human linkages with particular interest in investing in people and not innovation.

The event served as a platform for innovators to pitch their ideas and prototypes to invited investors and saw 5 winners go home with tokens of appreciation to help them improve on their prototypes.
Pioneering sustainable change in biodegradable packaging and sanitary towels

Microplastic pollution has become a global concern due to its repercussions on health and climate change. For many sub-Saharan countries grappling with environmental degradation, biomass waste offers an alternative for packaging and sanitary towels. On October 24th, 2023 a team of scholars led by Dr. Jacqueline Kisato of the Department of Fashion Design and Marketing launched minimum viable products (MVPs) of biodegradable sanitary towels and packaging made from biomass waste in a stakeholders’ workshop held at Utalii Hotel, Nairobi.

The scholars have engineered a production model for biodegradable products which are crafted from the same biomass waste, ensuring a closed-loop system that is good for the planet. During the event, the keynote speakers Prof. Maina Mwangi - Director Innovation, Incubation and University Industry Linkages at Kenyatta University and Ms Cynthia Orang’a (Regional Innovation Scholarship Fund) – RSIF, reiterated that microplastic pollution is a global surge that needs urgent action to mitigate its impact.

Seated left to right: Maureen Mwamusi (Standard Chartered Bank) holding a banana paper packaging. Dr. J. Kisato and Bilha Inyanya, (Brand Ambassador Family Bank) holding prototypes of sanitary towels from banana and pineapple. Prof Ambrose Kipsoid (DVC - Administration, Planning and Strategy, Moi University and Co-PI) holding the packaging prototypes. Back row; Postgraduate team and technical assistants in the project.
The journey from concept to tangible products began in 2020, Dr. Jacqueline Kisato – working together with Co-PI Prof. Ambrose Kiprop and Dr. Jerry Ochola (Moi University), Dr. Kenneth Chelule (Kenya Industrial Research Institute)-KIRDI and co-opted Dr. Gladys Mwangi (KU). This project was funded by the National Research Fund (NRF) in July 2020.

The multi-institutional and multi-disciplinary team worked to address two pressing issues: a) tapping the underutilised biomass waste to address the need for biodegradable packaging and sanitary products, and b) creating new entrepreneurial pathways for economic empowerment, especially for unemployed youth and women.

In addition, the project included mentorship of postgraduate students researching in these areas. To enhance the value addition of the minimum viable products, Dr. Kisato has partnered with a team of researchers from JKUAT and Busitemi University to add value to these products in an ongoing research project funded by RSIF. From concept to commercialization, the researchers recognize the importance of addressing microplastic waste, fostering green entrepreneurship, and alleviating period poverty. The research project is aligned with the climate action framework laid out in COP28. By embarking on a commercialization trajectory, the scholars will become active participants in enhancing sustainability, equity, and a resilient future for our planet.
Kenya University Women’s Economic Empowerment (KU-WEE) Hub engaged government Ministries, Departments and Agencies (MDAs) in a workshop to discuss gender data. The half-day workshop held at the La-Mada Hotel was part of a larger advocacy strategy aimed at engaging in county and national level dialogues to not only disseminate but also advocate for the uptake of generated evidence. This is in line with the Hub’s research approach that seeks to go beyond generation to application of gender data in the formulation and implementation of Women’s Economic Empowerment (WEE) policies and programmes across government levels in Kenya and beyond.

Eighteen representatives from different Ministries, including those from the State Department of Basic Education, the State Department of Higher Education and Research, the State Department of Tourism, the State Department for Gender and Affirmative Action, the State Department for Public Service, the State Department for Industry, the Technical and Vocational Education and Training Authority (TVETA), the Public Service Commission (PSC), the National Gender and Equality Commission (NGEC), the Kenya Institute for Curriculum Development (KICD), the Tharaka Nithi County Government and the Kenya National Bureau of Statistics (KNBS) took part in the workshop.
In her opening remarks, the KU-WEE Hub Leader, Prof Judith Waudo, emphasized the importance of quality data production and use. The workshop was officiated by the Vice-Chancellor Kenyatta University, Prof. Paul K. Wainaina, who was represented by Prof. Caroline Thoruwa, Ag, Deputy Vice-Chancellor Research Innovation and Outreach (RIO). The Vice-Chancellor noted that despite arduous efforts, there is still substantial disparities between research, policy, and practice which is exacerbated by a lack of understanding of how researchers can produce more valuable work, how practitioners can obtain and use that work effectively, and how policymakers can foster the conditions necessary for both to happen. He urged researchers to strengthen their stakeholder engagement to ensure that they share findings at every stage of the research. This would facilitate understanding of the goal and ownership of the evidence generation process which in turn would facilitate development of a strong advocacy strategy.

The Hub researchers shared findings of the ongoing studies from the three thematic areas, namely: Women’s Roles in the Public and Private sectors, Women’s Skilling and Mentoring, and Violence, Crises and Women’s Work.

The advocacy meeting revealed the need for doing more focused and comparable, workshops with the MDAs majority of whom are currently developing or reviewing existing policies.
Kenyatta University in partnership with the African Association for History Education (AHE-Afrika) organized the 5th AHE-Afrika History Education International Conference that was held between 2nd and 4th August, 2023 at Kenyatta University, Nairobi, Kenya.

The conference bought History Educationists from Africa and beyond to engage in scholarly conversations on aspects of History Education from African perspectives. It also delivered a unique forum for scholars, teachers, curriculum developers, assessors, quality assurers, and publishers to share and deliberate on a wide range of issues pertaining to History Education in Kenya and in Africa, particularly on the politics, policies, and practices that define this field in specific African contexts. A special prominence was placed on critically examining and debating the state of History Education in Kenya and Africa and its place on the agenda of Pan-Africanism, African renaissance, and sustainable development.
Dr. Esther Mbithi of the Department of Literature, Linguistics and Foreign Languages and her students participated in the 6th Mashariki conference that took place in Kampala, Uganda. The biennial conference brings together scholars from around the world for a vibrant celebration of the literature and culture of the Eastern African region.

Dr. Mbithi and her team presented four research papers. The first one was titled “Backwards into the future: A comparative study of Rebeka Njau’s “The sacred seed and mirrors of my life”. The second paper was titled “Just how many can many be? The number of characters in children’s literature.” The third paper was on “The guise of postcolonialism: a reading of Devil on the Cross and Coming to Birth” and the fourth paper presented was on “How thorough can a feminist be? A deconstructive reading of Imbuga’s work”. Dr. Mbithi is keen on lobbying for next edition of the conference to be hosted by Kenyatta University.

Dr. Daniel Otieno Okech of the Department of Educational Management Policy and Curriculum Studies visited Aston University in Birmingham, UK and participated in a conference organised by the British Educational Research Association (BERA) where he chaired a parallel session on “Teacher Education in a New World” and presented a paper on “Teacher professional development through Virtual Exchange”.

The presentations and sessions exposed participants to emerging pedagogies and current conversations across various issues in education such as artificial intelligence, diversity, decolonising education, educational justice, and inclusion. It further accorded Dr. Okech with the opportunity to network and establish contacts for future professional collaboration in research and publications.

Dr. Otieno with Session presenters, Dr. Maria Campbell (St. Angela’s College) and Dr. Suzanne Rice (University of Melbourne).
11th International Association for Landscape Ecology (IALE) World Congress - 2023

Prof. Paul K. Wainaina, Vice-Chancellor Kenyatta University (third right-front row) with other guests and Conference Organizing Committee.
Kenyatta University was honored to be the primary co-host of the 11th IALE World Congress - 2023 that was held at Safari Park Hotel in Nairobi, Kenya, from 10th – 15th, July 2023 under the theme “Transboundary Resource Management, Climate Change and Environmental Resilience”. The congress was held for the first time in the Global South. Other partners included: Regional Center for Mapping of Resources for Development (RCMRD), National Museums of Kenya (NMK), Institute of Climate Change and Adaptation, University of Nairobi (UoN), the United Nations Environment Programme (UNEP).

The event attracted landscape ecologists, the public, private, and non-profit sectors all addressing a comprehensive range of environmental challenges and their potential solutions. “It is through conferences such as this that we can share the broad spectrum of local and global ecological issues,” said Mr. John Elungata, the Secretary for Administration, representing Hon. Soipan Tuya, Cabinet Secretary, Ministry of Environment-Climate Change and Forestry. Also emphasizing the need for cooperation of various stakeholders, in his remarks, Prof. Paul K. Wainaina, Vice-Chancellor Kenyatta University reiterated that in order to successfully restore landscapes and ecosystems, it is necessary to utilize both research and collaboration. He further encouraged participants to keep abreast with the developments in scientific frameworks, technological and modelling tools for resource assessment and environmental management.

The International Association for Landscape Ecology (IALE) is a worldwide organization for landscape ecologists that promotes global collaborations by creating platforms for discussion to address topics in landscape ecology that range from local to global in scale.
6th Africa Interdisciplinary Health Conference (AfIHC 2023)

The conference accentuated the role of Interdisciplinary collaboration especially when dealing with challenges and calamities that affect the world. The Covid-19 aftermath, the rise of chronic diseases and climate change effects left the world and more so Africa most susceptible to risks of major health burden, food insecurity, critical disruption of education systems and other intensified social and economic challenges.

It is against this background that Push Aid Africa Inc. (PAAF) in collaboration with Kenyatta University organized the 6th Annual Africa Interdisciplinary Health Conference in August under the theme, “Mitigating pandemics, climate change, and chronic diseases in Africa: The role of interdisciplinary collaboration”.

The conference ensured distinctive emphasis on the importance of interdisciplinary exchange by connecting health-related researchers, academics, students and practitioners including governmental, private, and bilateral organizations in Africa to share new information on advanced technologies, strategies, and implementations of services to improve health outcomes in Africa.

Prof. Caroline Thoruwa, Acting Deputy Vice-Chancellor (Research, Innovation & Outreach) (Third right, first row) with delegates during 6th AfIHC.
The cancer burden is rising globally, exerting significant strain on populations and health systems at all income levels. In Kenya, cancer is the third leading cause of death after infectious and cardiovascular diseases. Cancer imposes a significant burden on our communities, affecting not only the individuals diagnosed but also their families, friends, and caregivers.
It’s against this background that Kenyatta University in partnership with the Integrated Cancer Research Foundation (ICRF) organized the 1st Cancer Research Symposium held between 6th and 8th December, 2023 under the theme “Capacity building for molecular cancer research and care in Kenya.” The theme underscores our commitment to advancing the field of cancer research and healthcare, with a focus on the molecular intricacies that shape our understanding and treatment of this formidable challenge.

The symposium brought together distinguished researchers, clinicians, sponsors and other stakeholders for a cause that resonates deeply with many people. The conference attracted over 100 participants from 31 different institutions from Kenya and beyond.

Other partners included: Thermo Fisher Scientific Inc., CA Medlynks, Change Biotec, Illumina and Kenya University Biotechnology Consortium (KUBICO) and INQABA whose generous support emphasized the commitment different institutions share towards advancing cancer research and care.

The indispensable role of multidisciplinary collaborations in the fight against cancer was spelt out in the presentations and posters displayed. Such collaborative efforts bridge the gap between laboratory discoveries and clinical applications, ultimately translating research findings into improved patient outcomes.
4

Mobility/ Visiting Scholars/ Fellowships
Dr. Purity Muthima

Dr. Purity Muthima from the Department of Educational Management, Policy and Curriculum Studies, School of Education completed her 3-year education fellowship at Bayero University Kano, Nigeria sponsored by Association of Commonwealth Universities cum British Nigeria Education Trust (ACU-BNET) Fund. The titular fellowship programme is aimed at facilitating exchange of knowledge and expertise in the field of education. Fellows visit the host institution for about three weeks each year, over a three-year period.

Dr. Muthima's final visit entailed interactions with the postgraduate students, sharing of findings from one of the projects (Effect of Apprenticeship, Internship and Mentorship Programmes on Young Women Economic Empowerment) being undertaken at the Kenyatta University Women Economic Empowerment (KU-WEE) Hub; participating in the student defense sessions and sharing best practices; a series of collaborative meetings and discussions on areas of mutual interest that culminated to a new collaboration between Kenyatta University and Bayero University Faculty of Education.

“The final visit was truly auspicious as my mentor and host Prof. Sagir Abbas had been appointed as Vice-Chancellor and I was able to shadow him in some of his high-profile meetings.”

Dr. Muthima (2nd Left) with the Dean and Chairman from the Faculty of Education and Psychology.
In the spirit of promoting equity in education and encouraging women to study, very nice CRECHE (baby care rooms) are provided in each campus where student mothers can breastfeed their babies, especially being a community where women get married early.

The postgraduate students presented their thesis before a panel without referring to any document or presentation; a practice that enhanced the understanding of their work.

As a matter of decorum throughout the campus, the university established a distinct dress code and placed signs in strategic locations to encourage adherence.
Dr. Pamela Ngugi

Kenyatta University and The Beijing Foreign Studies University (BFSU) - China signed an MOU in 2021 with the aim of fostering and strengthening collaboration between the two universities as well as creating new opportunities, share knowledge and experiences with other scholars from BFSU. The Beijing Foreign University has a strong African Studies Faculty that houses the Department of Kiswahili among other departments. It is in line with this collaboration that Dr. Pamela Ngugi from the Department of Kiswahili is visiting BFSU as a guest lecturer for a period of nine months (September, 2023 to May, 2024)

During the exchange period, Dr. Ngugi will be involved in teaching Kiswahili language, literature and culture to both undergraduate and Masters Students. She will also be supervising masters students working on their projects in Kiswahili language and literature as well as delivering a series of public lecture in relation to the language and culture.
Five faculty members specializing in the Creative Arts undertook a two-month academic and cultural sojourn in Poland within the framework of the esteemed Horizon Europe project entitled “Transcultural Perspectives of Art and Art Education (TPAAE)”. The delegation led by Prof. John Mugubi was hosted graciously by the Academy of Art in Szczecin (AAS), a leading partner in the TPAAE project. During their engagement in Poland, the team delivered lectures on various facets of African/Kenyan Art aesthetics, while also facilitating workshops, exhibitions, and film screenings. Their itinerary further included attendance at conferences and visits to renowned Film schools, Art and design Academies, and Film archives as integral components of their immersive experience in Poland.
Between the 12th and 19th of June 2023, with the guidance of Prof. Aneta Pawlowska, the delegation visited the University of Łódź Faculty of Philology and its Department of Film and Audio-visual Media. During this visit, Professor John Mugubi delivered a public lecture titled “African Art as Ontological Cultural-Political Proclamations: A Case of the Kenyan Film”.

The delegation also embarked on an enriching tour to the illustrious Łódź Film School, the city’s Museum of Cinematography, the Academy of Fine and Design, the Museum of the City of Łódz, the Museum of Art, the Central Museum of Textiles, and the Herbst Palace Museum among other sites in the picturesque village of Sokolowsko in Lower Silesia.

From 26th of June to the 1st of July 2023, an enlightening tour of Warsaw, the capital city of Poland and attendance of the 4th Congress of the Polish Film and Media Studies Association and visits to Academy of Fine Arts and the Warsaw School of Film.

On the 5th and 6th of July, in the city of Poznan, Professor Mugubi conducted screenings of “Unbroken Voices”, a Kenyan Documentary on Sexual Violence, a recent production by Kenyatta University in collaboration with the University of Birmingham in the United Kingdom, the Wangu Kanja Foundation, and the Sexual Violence Survivors’ Network of Kenya. These screenings served as a platform for Prof. Mugubi to collect valuable data from the audience, aiming to discern the documentary’s impact on their perspectives and emotions regarding the sensitive subject of Sexual Violence.

The delegation concluded their expedition by visiting the Film Festival and Art Exhibitions in Berlin, Germany, from the 29th to the 31st of July. Accruing out of the KU Team’s visit to Poland are potential collaborations with four institutions in Poland.

KU team with Dean and faculty members at the Academy of Art and Design in Lodz, Poland.

Prof. John Mugubi and Clinton Kihima of Kenyatta University at the Academy of Fine Art in Warsaw with the Dean, Fine Arts Prof. Grzegorz Niwinski (2nd Left) and Librarian Dr. Agnieszka Mwabasi.
Dr. Jane Gakenia Njoroge

Dr. Jane G. Njoroge, a lecturer at the Department of Public Policy and Administration had the privilege to visit South Korea in October 2023 where she participated in an invitational fellowship programme on driving financial inclusion through a policy framework for healthy and sustainable food systems in Kenya organized by Korea International Corporation Agency (KOICA) and Korea Rural Community Corporation (KRC). As a scholar and a researcher in Public Policy, she was invited to participate in training, analysis and development of an action plan for agricultural policies aimed at enhancing policy formulation around food security in both Kenya and South Korea.

In her presentation on: “Mitigating post-harvest loss” she reiterated that despite the significant loss, Kenya has no policies in place to mitigate post-harvest loss especially in productive counties. Key recommendations included the need for well-formulated and inclusive policies with a clear implementation path to guarantee a food secure country.
Dr. Dorcus Mbithe David-Kigaru, a senior lecturer at the Department of Food, Nutrition and Dietetics participated in an exchange programme in October 2023. This was an International Atomic Energy Agancy (IAEA) sponsored scientific visit to the Regional Designated Centre in Nutrition of Morocco (RDC -Nutrition of Morocco; Ibn Tofaïl University - CNESTEN) made possible through the national nutrition project titled: “KEN6025: Enhancing the use of isotope technique applications to assess the effects of nutrition-related interventions - tackling the burden of malnutrition and obesity” led by Kenyatta University.
Meetings and discussions on isotope techniques including their use in influencing nutrition programmes; complementing conventional nutrition assessments; human and laboratory capacity requirements; pros and cons or establishing own isotope capacitated lab versus sending biological samples elsewhere.

Training on the use of different isotopes in nutrition at national country program level and influencing policy.

Visit to Ministry of Health, various Laboratories and Universities including:

- National Center for Nuclear Energy, Sciences and Techniques (CNESTEN) (Main Centre) and its Laboratories
- The ISO certified laboratories Le Multi laboratoire LC2A and Mohamedia laboratories
- The International University of Rabat and laboratories in the Departments, Faculty of Health.
- National Center for Scientific and Technical Research (CNRST)

“The opportunity to visit over 40 laboratories was highly valuable to me as scientist, my department, the university, and the country, as I influence national policies and guidelines at the Ministry of Health, Nutrition division. Discussions on future research collaborations are expected to be fruitful, especially those regarding the university’s master’s curriculum in human nutrition. Follow up meetings on areas of mutual interest are actively being pursued”.

Touring the labs at CNESTEN on Vitamin A and D assessment isotopes.
Dr. Eric Ndombi

Dr. Eric Ndombi of the Department of Medical Microbiology and Parasitology and a 2023 Towards Leadership Programme Fellow completed his 12-month fellowship that was culminated by a closing workshop in Johannesburg, South Africa in October 2023.

AREF Towards Leadership programme aims to empower talented, emerging scientists in Africa to compete successfully for major funding opportunities in global health research. The programme is directed at winning grant funding by empowering effective teams, collaborating internationally, influencing key stakeholders and building rewarding researcher careers.

Dr. Ndombi who is currently implementing a NIAID-NIH R01 Grant on anti-schistosome drug resistance and in establishing a novel platform for investigating pre-existing variations in the parasite’s susceptibility to current drugs as well to drugs under development has been keen on strengthening and establishing affiliation and collaboration between the Kenya Medical Research Institute’s Centre for Global Health Research in Kisumu, western Kenya and Texas Biomedical Research Institute, San Antonio, Texas, USA and Kenyatta University. The Programme has enhanced his research skills and empowered him to expand his network of research collaborators in infectious diseases.

Dr. Eric Ndombi 2nd last row in blue during a photo session together with other fellows at the programme’s final workshop held in Johannesburg.
The programme was structured in the following thematic areas:

**Researcher as a leader**
- Focusing on learning and leading in a complex world; raising self-awareness and mindfulness while building coaching, influencing and leadership capabilities.

**Effective Researcher**
- Improving one’s ability to visualize, plan, and execute career objectives and personal growth trajectory through personal development planning, time management, and guidance from mentors.

**Compelling Applicant**
- Understanding funders; proposal development and writing skills (including formulating a research question, justifying the proposal design and strategy, developing concept notes and full proposals); data sharing; understanding peer review; fellowship interviews.

**Researcher as a manager**
- Building a great team; effective collaboration; implementation planning; working with Research Support and Finance departments; managing a budget; managing intellectual property.

**Researcher as a Communicator**
- Enhancing leadership, authorship, and authority abilities by employing impactful presentations, compelling storytelling, and precise messaging, while simultaneously fostering a more meaningful connection with research stakeholders.

The final workshop in Johannesburg was facilitated by eminent personalities in research, corporate and policy landscape in Africa. Some of the activities and topics handled at the workshop included: Emotional Intelligence in Leadership, Self-Leadership, coaching through challenges, supervising to inspire doctoral researchers, stakeholder mapping and engagement, and funder engagements with emphasis with the UK Medical Research Council. Participants were awarded certificates of merit at a colourful ceremony presided over by Prof. Sir Tumani Corra, President, interim CEO and founder of AREF.
The aim was to explore the innovative and novel model where the students were expected to engage in academic activities as well as contribute immensely to international benchmarking on policy and best practices. The learning and benchmarking travel around Europe was facilitated through the Erasmus+ collaborating institutions and it included:

- Fostering international collaboration
- Boosting academic success
- Developing cross-cultural competences.

KU Students Training Mobility under KA107

The Global Tourism Resilience and Crisis Management Centre - Eastern Africa (GTRCMC-EA) competitively selected Kenyatta University postgraduate and undergraduate students as well as researchers at the centre to participate in the training mobility within a scholarship in the framework of the European Union Exchange Programme Erasmus + KA-107, International Credit Mobility Project, for a maximum of three months also known as Semester Abroad Programme.
Our experience during the Semester Abroad programme

Peter Kibe Njuguna - Ph. D Hospitality Management and a researcher at the GTRCMC-EA

“I had the pleasure to visit Greece for the mobility hosted by the University of West Attica (UNIWA). This opportunity was an eye opener and helped me to establish research connections. Being at a leading tourist county greatly allowed me to conceptualize the industry that I work in from different perspectives.

I used the time in the country to develop my Ph.D. research proposal, synthesize literature and conceptualize the research gaps. I interacted with the research output of the University of West Attica (UNIWA) which helped immensely in conceptualizing international research. My research topic is “Workforce resilience in the hospitality Sector”. A topical issue especially with the constant threat of multiple human and natural disruptions. With the help of our supervisor, Prof. Katsoni, I managed to get access to the UNIWA library materials and subscribed to databases that will help a great deal in the course of writing my dissertation. I have so far put together a literature review article with the title “Building Resilient Hotel Workforce in The Era of Uncertainties: A Literature Approach” and hope to publish it in a peer-reviewed journal.

Professional networking in Greece

I attended the 2nd International ERASMUS Staff Week at the University of Piraeus. This was extremely eye-opening, especially the insights from the presentations by the partner networks. The theme was: “Internationalization through European Projects, research, and innovation”. We were exposed to various ways of seeking inter-university collaborations for impact-led research with live examples of what such collaborations have resulted to”.

Tutorial activities at the University of West Attica

I taught undergraduate students in the Department of Tourism Management. This allowed me to share my research interests, the differences and similarities between East Africa’s tourism industries and the tourism industry in Greece as well as mentor the young and upcoming professionals in the industry.

Adventure and tourism in Greece

From the mouth-watering Souvlaki a traditional Greek cuisine to the best kept historical site the Acropolis, the relaxing environment of the Islands as well as the Athens nightlife made my stay extremely memorable. I noted the importance with which tourism is marketed as a product and the stories behind them.

Greece has too much history and this has been preserved in the museums and archeological sites. I had a lot to learn from the destination that records an average of 25 million annual visitors.
Charity Chepkemein - MSc. Tourism Management

“I applied to participate in the competitive Erasmus+ student mobility and was awarded the grant to study for three months at the Universitat de Girona in Spain. Studying abroad was one of the most beneficial experiences I have had.

I had the opportunity to explore and take in the allure and culture of the land. Spain is rich in heritage and culture and the host university facilitated the visitation to different destination where we learnt about the culture especially the famous Dali Triangle which they take a lot of pride in as well as several museums and archaeological sites.

Networking opportunities
It was an amazing 3 months with the most exciting networking experience. I met students from seventeen different nationalities and interacting with them which enabled me to understand different cultures and embrace our ethnic diversity.

The programme provided a great opportunity to learn and enhance several skills such as teamwork, cultural awareness, adaptability and resilience, creativity and initiative, empathy and tolerance”.
"I was awarded a semester abroad programme within the Erasmus+ ICM mobility framework at the University of West Attica in Athens, Greece.

I had a life-changing experience where I got to network with professors and students with different professional backgrounds who had great ideas about the future and sustainability.

I met with Dr. Sisinio Muthengi (left) a lecturer and researcher at the GTRCMC-EA Kenyatta University and Ms. Efi Ntrouva (Center) the Head, Department of International Relations and European Union at Panteion University. I got the opportunity to benchmark with Panteion through Dr. Sisinio on sustainability issues surrounding tourism. I participated in different academic projects in and out of class on cultural tourism, smart cities, and IT.

My main takeaway was that systems can work with proper policies in place and that the journey to achieving a sustainable world requires a collaborative effort. I am grateful for such an eye-opening and transformational opportunity. I highly recommend this programme to anyone willing to leave their comfort zone, learn, and share ideas in a multicultural environment".

Diana Akisa - MSc. Tourism Management
Edwin Kipkoech Koskei - Bachelor of Science in Environmental Science

“I was privileged to be a beneficiary of the Erasmus+ International Credit Mobility Exchange Programme in the Republic of Greece for a period of six months at the University of Pireaus.

Greece is without doubt a hospitality country clearly justified by the hotel industry, working around the Greek cities and different suburbs you will find a hotel in radii of 50 to 100 meters but less than 20 meters in cities. The country has capitalized and invested a lot in this sector and their services and professionalism are much sophisticated. I learnt a lot notably about the Tent Hotel Technique an area with a lot of potential and one that our hotel industry should exploit.

I had the opportunity to visit Greeks treasured historical sites together with other students from Kenyatta University. I had a great fulfilling experience in Athens Greece from education, cultural exchange, training and largely the significance of tourism and hospitality components for economic growth”.

Left to Right (Ms. Dorice Morong, Mr. Peter Kibe and myself).
Kelvin Mbinda Mutisya - Bachelor of Science in Tourism Management

“I had a transformative experience at the University of Piraeus, I carried out my mobility programme in the Tourism Department at the University of Piraeus. This provided a fantastic chance for international exposure, academic advancement, and cultural enrichment.

Learning outcomes

My internship experience yielded numerous significant learning outcomes, including:

• **Enhanced research skills** - through active involvement in research projects, I improved on my research methodology, data analysis, and academic writing abilities.

• **Cross-cultural competence** - immersing myself in the Greek academic and cultural milieu allowed me to develop a deeper appreciation for intercultural dynamics.

• **Opportunities for networking** - making relationships with accomplished academics, fellow interns, industry professionals expanded my professional network significantly.

• **Holistic understanding** - my involvement with the tourist Department provided me with a comprehensive understanding of the tourism industry, encompassing its challenges and opportunities.

Major highlights and achievements

One of the most remarkable highlights of my internship was actively contributing to a research project on volunteer tourism. This project not only expanded my knowledge but also reinforced the importance of innovative responsible tourism in preserving and promoting natural and cultural heritage.

As a member of the Erasmus+ Students Network (ESN), I got the opportunity to be a panelist at the 5th International Staff Week at the University of Piraeus where we shared our experiences abroad

The Erasmus Mundus-sponsored internship at the University of Piraeus was an enriching and transformative experience that has left an unforgettable imprint on my academic and professional journey. I am profoundly grateful to Kenyatta University’s partnership with the University of Piraeus and the Erasmus Mundus programme for affording me this invaluable opportunity. I am excited about the potential impact of the knowledge and skills I have gained during this internship on my future career in the tourism industry”.

www.ku.ac.ke
Dorice Ronoh Morong’ - a Ph.D student pursuing Tourism Management and a researcher at the GTRCMC-EA

“The mobility programme enabled me to interact with many foreign students and share our academic journey from different continents. This enriched my research journey and added new knowledge through the cross-cultural experience which has since strengthened both my academic and professional profiles significantly.

Activities and career growth

I taught undergraduate students on different tourism topics and together with the students related them to the different multicultural environments. Together with other Ph.D. Erasmus students we were guided by our host through various research skills from which I was able to review and prepare a paper on “Economic Resilience Strategies and Tourism Sustainability during the COVID-19 recovery Period in Kenya”. It is my desire to present it at the International Conference of the International Association of Cultural and Digital Tourism. IACuDiT Conference to maximize the use of the university library and electronic access to research materials.

Cultural and social experiences

I enjoyed the multicultural interactions, the Greek cuisines, and discussions with the students. I learned a lot during our visits to various tourist attractions and activities in Greece through the locals, students, and online platforms. I also had the opportunity to visit some tourist attractions in the various parts of the country and enjoy the unique experience. This mobility opportunity has exposed me to the world’s most visited destinations. Greece is a very exceptional tourist destination rich of culture and heritage.”
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Students Corner
Enhancing food security through management of parasitic nematodes on Taro “Nduma”

Taro (Colocasia esculenta (L.) Schott.), locally called Nduma, is a promising solution for food security as it thrives in conditions that other crops struggle to survive in and grows in between main crop seasons. However, the potential of this crop is yet to be exploited yet its productivity can help improve food security, generate additional income through both local markets and exports, and enhance the livelihoods of rural communities.
Ms. Lucy Muchiri, a Master of Science student in Crop Protection (Plant Pathology option) at the Department of Agricultural Science and Technology is keen on contributing in unearthing the potential of “Nduma”. Her research is focused on screening resistance of selected edible taro cultivars to root-knot nematode pests in order to recommend to farmers and breeders a variety that is tolerant or resistant to root-knot nematodes.

Plant parasitic nematodes, particularly root-knot nematodes, are the “hidden enemies” of crops due to the nonspecific nature of the symptoms they cause. They are the most economically damaging as they alter the root architecture, which in turn reduces the uptake of nutrients and water by the plant, leading to wilting, stunting, yellowing, and reduced crop yields. Their presence makes the mature taro plants more susceptible to bacterial and fungal infections, which can result in post-harvest decay.
The Department of Internal Medicine and Therapeutics at KU was privileged to welcome and host three fourth-year medical students: Wambui Kimani, Benjamin Smuts, and Gogontle Sape from Stellenbosch University, South Africa
The students described their stay as enriching, with valuable knowledge exchange between them and the Kenyatta University students, whom they observed to have a strong foundation in understanding diseases.

Wambui commented on her experience, saying, “This elective broadened my perspectives, a crucial step towards my ambition of becoming a well-rounded Stellenbosch doctor. If I were to summarize my feelings about this elective, I would choose the words: grateful, lively, and nostalgic. I deeply appreciate the experiences and the connections I made”.

The department of Internal Medicine and Therapeutics aims to enhance its international collaborations by fostering regular exchanges of students and staff with universities worldwide. They were pleased to host the promising future doctors.
Regional Value Chains: A Solution to Economic Growth

Erastus Chokera Kainga - A postgraduate student pursuing Masters of Regional Integration - Department of Economic Theory under the COMESA scholarship funded by the EU explores solutions to the regions overdependence on trading externally and the impediments to zealous trade within the region.

East Africa Community (EAC) being among the fastest growing regional economic block in Africa prompted my research titled ‘Do regional economic disparities promote regional value chains?’ which seeks to find out how the economies in the block are performing in trade and value addition of foods and beverages.

After a world changing COVID-19 experience where movement was limited, and the regions with internal dependence thrived. I was curious to interrogate why trade in value added goods between EAC and countries outside the region were higher than within the region; more so in this age where technological growth is rampant and industrialization seems to be a driving force to participate in global value chains. My research seeks to provide possible solutions to the high costs for locally value-added goods (one of the main causes for limited trade) and the little intra-regional trade in EAC and other African economic blocks with the overall objective being reshaping regional trade, value addition and competition.
Dr. Daniel Munyambu Mutonga wins the Taiwan Family Medicine Award

Dr. Daniel Munyambu Mutonga, a postgraduate registrar in Family Medicine at Kenyatta University was invited to present a scientific paper at the World Organisation of National Colleges, Academies and Academic Associations (WONCA) 2023 Conference held in Sydney, Australia from 26th – 29th October where he was further awarded the Taiwan Family Medicine Research Award (TFMRA) by the Chinese Taipei Association of Family Medicine.

The TFMRA is a prize award of USD 1,500 given to young family physicians for the excellence of their research and to further encourage junior family physicians to conduct research in the specialty field of family medicine.
His achievement of the award was facilitated by his impressive educational background, which included a BSc. in Medical Physiology with honors, an MBChB, and a MSc. in Tropical and Infectious Diseases. His research endeavours which include several co-authored papers in refereed journals including Pediatric Critical Care Medicine, Violence and Victims, Globalization and Health, BMC Research Notes among others. His small grant award by the International Society of Travel Medicine 2017/18 and his current study on Travellers’ diarrhoea in partnership with Kenya Aids Vaccine Initiative-Institute of Clinical Research (KAVI-ICR) (UoN) and Tourism Research Institute (Kenya).

Daniel was also part of the inaugural Kenya-Cuban exchange programme that sent a team of doctors to Havana Medical University to train in Comprehensive General Medicine. His interest in elderly care was spurred by his then tutor, Dra. Yaima Álvarez Rodríguez - a Cuban Family Physician at Policlinico Antonio Maceo - where he conducted a descriptive study among 128 older adults and reported a lower prevalence of frailty (5.1%) compared to previous studies. Daniel has also recently received the KNH 2023/24 Research Award to continue this work on Ageing for his Thesis at KU. He will study the frailty status and associated factors among older adults with type 2 diabetes mellitus at the hospital’s Diabetes and Endocrinology Clinic.

Daniel is currently deployed by the Ministry of Health to Mathari National Teaching and Referral Hospital as a general practitioner. He is also volunteering in the Research Department as part of a Technical Working Group assisting in the establishment of a Research Centre as the facility transitions to a State Corporation.
Research and Innovation News

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