



**EAST AFRICAN**  
YOUTH INNOVATION FORUM



**EAST AFRICAN SCIENCE &  
TECHNOLOGY COMMISSION**  
**EASTECO**

# 1ST EAST AFRICAN YOUTH INNOVATION FORUM 2022

## CONFERENCE REPORT

8 - 10 NOVEMBER 2022

[www.eayouthinnovationforum.com](http://www.eayouthinnovationforum.com)



# Preface

The First East Africa Youth Innovation Forum was organised by the following partners:

- The East African Science and Technology Commission (EASTEKO)
  - Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
  - RENU
  - Centre of Excellence for ICT In East Africa
  - EAC Youth Ambassadors Platform
  - East African Youth Network
  - Stockholm Environment Institute
  - UNESCO
  - UNCST
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## Acknowledgements

The partners would like to acknowledge all persons and organisations who participated in organising the conference including the following:

1. Ministries responsible for STI in the region
  2. National Councils/Commissions of Science and Technology
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## Authors

This report was produced with the assistance of the following rapporteurs:

1. Edgar Mutugisha - EAC Youth Ambassador, Republic of Uganda
  2. Kelly Cynthia Kaze – EAYN Coordinator - Burundi
  3. Sam Walusimbi, Systems Administrator, MEACA Uganda
  4. Evelyn Elliseus Rutazaha, Advisor German Development Cooperation (GIZ)
  5. Bruce Sakindi- EAYN Coordinator - Rwanda
  6. Paul Rukundo - East African Youth Network Coordinator, Republic of Uganda
  7. Wairimu Manyara, EAC Youth Ambassador, Kenya
  8. Pillar Mbabazi, Program Associate, Amity for Humanity Initiative Uganda
  9. Collins Tusiime - UNCST
  10. Sarah Mutagoma - EAC Youth Ambassador, Republic of Rwanda
  11. Bernadette Massawe - EAC Youth Ambassador, United Republic of Tanzania
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“Empowering young people to translate ideas into jobs” - Proceedings from the first East African Youth Innovation Forum ; 8 – 10 November 2022 organised by The East African Science and Technology Commission (EASTEKO) and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

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# PREFACE

EASTECO is proud to have hosted the first **East African Youth Innovation Forum** focused on youth engagement and innovation. The conference with its theme “**Unlocking EAC Youth Development potential through Innovations**” addressed the most pressing issues facing the youth in the innovation and entrepreneurship space. The aim of the forum is primarily to identify the support mechanisms and resources required to catalyse youth towards achieving meaningful economic participation mainly in the Science, Technology and Innovation sector. The forum is paving the way for a broader discussion on how the youth can contribute to sustainable development and greater societal impact for the region. This vision is in line with the SDGs 2030 and the East African Vision 2050 for growth and sustainable development.

The forum was attended in person by delegates from across the EAC and virtually using EASTECO’s FLOOR platform. The virtual platform enabled the youth to showcase their creations through exhibitions, host meetings with other delegates and the exchanging of information. The forum demonstrated how innovators, policy makers, academia and business leaders can work collaboratively to create new business prospects, jobs, and economic diversification.

We believe that the conference has opened opportunities for collaboration in the development of youth in eastern Africa through providing a greater platform to the many partner networks in the region to align their efforts. Cross cutting issues were identified and creative solutions for sustained change unearthed.

The work of the EASTECO and partners remains to create a fertile environment for youth businesses and their inventions to flourish and we intend to continue engaging stakeholders in across sectors to develop the recommended interventions into action.

Special appreciation to partners for the forum, who are The East African Science and Technology Commission (EASTECO), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, RENU, Centre of Excellence for ICT In East Africa, EAC Youth Ambassadors Platform, East African Youth Network, Stockholm Environment Institute, UNESCO and UNCST.

We would like to extend our warmest gratitude to the government of Uganda and its agencies for their support and hospitality in ensuring the success of the inaugural East African Youth Innovation Forum.

Dr. Sylvance Okoth  
Executive Secretary, The East African Science and Technology Commission

# EXECUTIVE SUMMARY

The first edition of the East Africa Youth Innovation Forum (EAYIF) and associated Presidential Innovation Awards in partnership with National Science Week 2022 (Uganda), brought together youth delegates from South Sudan, Burundi, Kenya, Rwanda, Tanzania and Uganda. The forum provided a platform to discuss ideas for meaningful youth participation in the region's Science, Technology and Innovation (STI) initiatives. Discussions included the expansion of equal opportunities to young people through the provision of infrastructure to drive and support youth businesses in the region. The event **aimed to catalyse the effective engagement of young people** in steering the course of future developments within the East African Community (EAC) through innovations.

The forum brought together young researchers, developers and innovators, entrepreneurs, finance actors, academia, and public policymakers to discuss issues around STI and the impact the youth can make if properly motivated and assisted to act. The forum also helped participants to understand the constraints that the youth in the region face in advancing their talent in technological development; the interventions necessary to overcome these challenges as well as the opportunities available for innovation in the regional marketplace and globally.

The **forum was divided in three parts** with each day having its own theme. The first day dealt with policies and overall support available for the **enablement of youth participation** under the following themes:

## Unlock EAC Youth Development potential through Innovations

### The Role of Innovation ecosystem and Technopreneurship actors in support and development of Youth Innovators in the EAC

### National Innovation Ecosystems and Intellectual Property applications

### Digital Transformation for Youth Employment

The second day, along with providing the youth a platform to share their own learnings and promote their creations the theme of **innovation ecosystem and technopreneurship development for youth** was explored. It dealt in more detail with development ecosystem actors the region and intellectual property ownership and initiatives, not least those organised and supported through the **Uganda Registration Service Bureau** that the rest of EAC can aim to replicate to ensure advancement in the space. The second day of the forum centred around on the following themes:



**Innovation ecosystem and Technopreneurship Development for Youth**



**Agriculture Innovations Crops**



**Agriculture Innovations Livestock**

**Health Innovations**



**Climate Change and Environment Innovations**



**Energy Innovations**



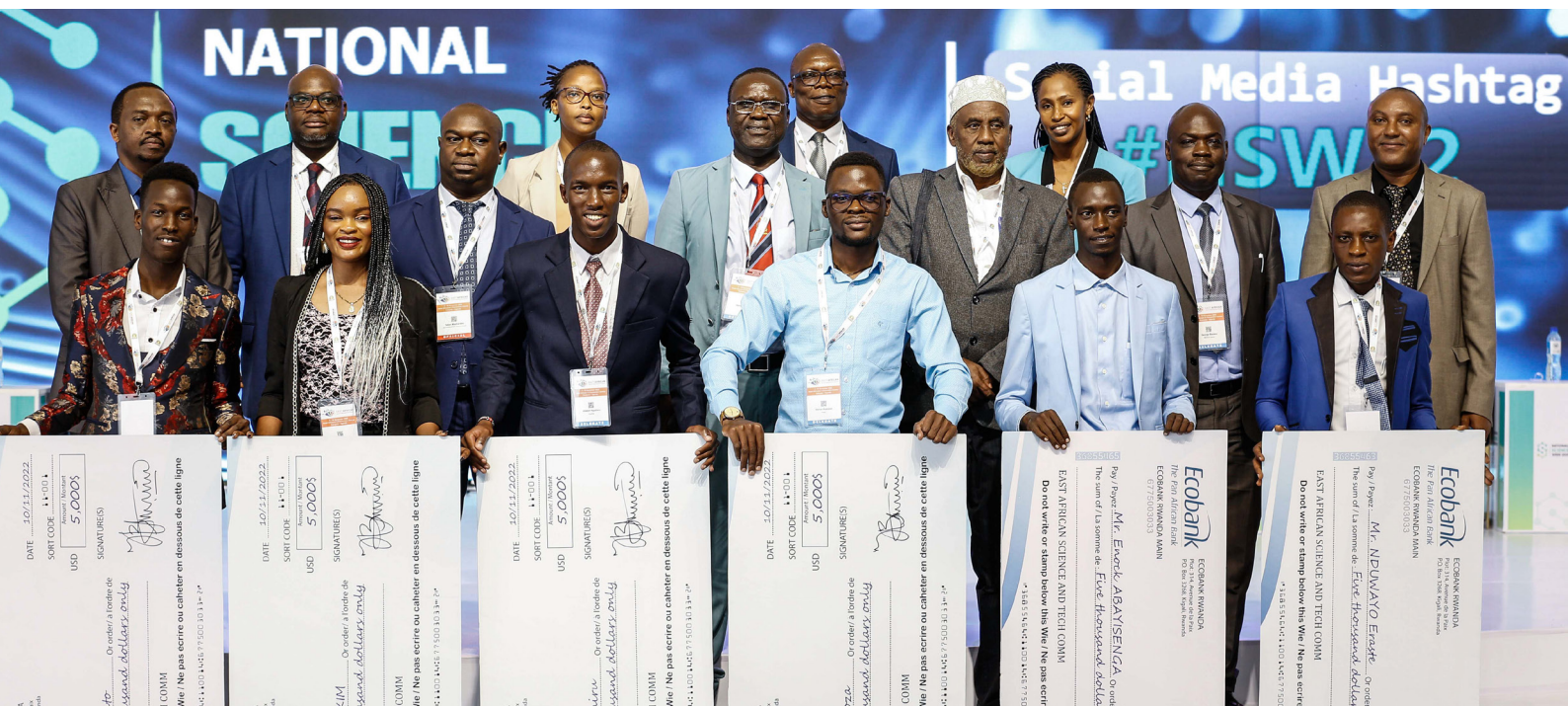
**ICT Mobile applications Innovations**



On the second day conference **resolutions were finalised with youth leaders** and shared with delegates. The objective is that the resolutions inform decision makers and other stakeholders of the support youth innovators need to excel and that resulting efforts target the challenges the youth have defined.

For the third and final day of the forum and keeping with the spirit of collaboration, EAYIF was invited to host its awards ceremony as part of Uganda's National Science Week. The week-long event was held at Kololo Independence Grounds, in Kampala, under the theme **Uganda 2040: The Future We Want Through STI**. Uganda's annual showcase of science, technology, and innovation shares the progress the nation has made toward technological advancement to steer development annually and this year served as the perfect opportunity for the region's youth to garner more inspiration in their innovation journeys.

In recognition of their outstanding achievements and capping off the months-long search, six innovators, one representing each participating Partner State, were chosen as winners of the **Presidential Innovator Awards**. The prizes were awarded at Kololo Independence Grounds closing off the three-day forum on a high with a clear understanding of engaging youth innovators in the region to spur economic growth, create jobs, and achieve sustainable development goals.



# INTRODUCTION

## Purpose of the forum

The East African Community (EAC) is a regional inter-governmental organisation comprising the Republics of Burundi, Kenya, and Rwanda, the Republic of South Sudan, the United Republic of Tanzania, the Republic of Uganda and most recently, the Democratic Republic of Congo. The main objective of the EAC is to develop policies and programs aimed at widening and deepening regional cooperation through political, economic, social, and cultural interventions. This also includes collaboration in the fields of research and technology, defence, security, and judicial affairs, for the region's benefit.

In the establishment of the EAC, the Partner States also sought to recognise the fundamental role that science and technology play in economic development. To this end, the East African Science and Technology Commission (EASTEKO) was established as a semi-autonomous institution of the EAC by the 5th Extra-ordinary Summit of the EAC Heads of State in 2007.

EASTEKO's main objective is to promote and coordinate the development, management, and application of Science and Technology in the Partner States.

Its other primary objectives include:

- The formulation of regional Science, Technology and Innovation (STI) policies;
- The joint development and application of science and technology;
- The promotion of regional research centres of excellence;
- The exchange and utilisation of scientific information;
- Promotion of public and private sector partnerships in the development and application of STI;
- Mobilisation of resources for STI in the community;
- Fostering scientific and technological innovation in the Partner States;
- Development, adoption, and utilisation of ICT and the adoption of new and emerging technologies; and
- Supporting the dissemination of research and development findings in the Partner States.

Today, more than 60% of Africa's population is under the age of 25. By 2030, young Africans are expected to constitute 42% of global youth. East Africa specifically has one of the youngest populations in the world. About 80% of the estimated 150 million East Africans are below the age of 35 years. When it comes to creating value, Africa's youth is anything but passive. The millennial generation has lived through the continent's meteoric rise in mobile and internet penetration rates. East Africa's youth, therefore, are socially and economically a significant majority and will determine and shape the region's future. With African youth increasingly taking an active role in shaping their



future by disrupting how we think about African agriculture, industry, IT and sustainability the youth must be appropriately engaged.

Recognising the importance of engaging this community, EASTECO has a critical role in ensuring that the region's talented youth are promoted and become performing actors and future leaders in developing technological innovation within the Partner States.

As per the Protocol establishing EASTECO, the overall objective of the Commission is to coordinate and promote the development, management, and application of Science and Technology. To attain the EAC and EASTECO objectives regarding enhancing the regional innovation capability, the Commission resolved to host a 'Youth Innovation Forum' annually to involve the youth population in developing and utilizing relevant technologies to significantly contribute to economic growth. The Youth Innovation Forum aims to provide a platform for the youth in Science, Technology, and Innovation in the East African Community and beyond to share their innovation experiences in generating scientific and technologically innovative solutions to social needs and market demand.

## **About the forum**

The first East Africa Youth Innovation Forum (EAYIF) was held in Kampala Uganda from the 8th to the 10th of November 2022. 207 delegates from various walks of life with an interest in youth innovation from across 6 EA member states attended the forum.

The conference was attended by ministers and other policymakers to highlight the significance of the occasion. The forum was organised in partnership with youth organisations to allow the youth an opportunity to participate effectively. During the forum, youth participants engaged with various members of government, the private sector, academia, development partners, and civil society concerning their roles in shaping and implementing the strategic framework for youth innovation and leadership in the EAC region.

The forum hosted both virtual and onsite exhibitions, the latter being reserved for the short-listed Youth Innovator finalists, partners, and sponsors. The virtual exhibitions featured FLOOR's 3D Live Booth that allowed exhibitors to conduct one-on-one meetings with potential business partners, vendors, and customers online similar to those at the conference venue in Kampala. With the ability to host meetings; share



details and marketing material with ease, FLOOR welcomed 482 delegates virtually over two days with the last day of the conference being live-streamed from Kololo on YouTube.

Over 35 speakers addressed the conference sharing critical lessons with youth innovators. Twelve impactful sessions were held with keynote speakers in each followed by plenaries.

Youth entrepreneurs shared their innovations in the fields of Agriculture, Health, ICT, and Energy during the first two days of the conference. On the third day, delegates were invited to take in Uganda's innovative progress in the fields of Science and Technology. The forum culminated in a prestigious presidential awards ceremony that recognised outstanding applications developed by East African youth.



# DAY ONE

The first day of forum proceedings saw immense support for the youth initiative pledged by government leaders across the region. Youth innovators also received commitment from various agency management and key information on the workings of the development ecosystem in the region. Panels discussed the path toward the unlocking of potential through the equitable provision of infrastructure particularly in education and ICT. Policy and engagement were highlighted as the critical tenets of progress for youth participation in the greater economy. Themes of the day included the exploration of Africa's economic development story, how audacious innovations must aim to solve societal issues to guarantee sustainability for businesses and inclusion of marginalised communities in the journey of regional growth.

# Opening Ceremony

## Master of Ceremonies: Fortunate Muyambi, Deputy Executive Secretary, EASTECO



made the first remarks of the forum welcoming the dignitaries representing leadership from the EAC region, partners and youth delegates. He noted the importance and commitment of governments taking part in the EAYIF and also thanked them for their support of EASTECO in the work of youth engagement and innovation. He shared the programme for the forum's three days and the industries that would be highlighted given the exciting innovations unearthed by EASTECO in the build-up to the forum. Agriculture, ICT, Health and Climate Change would form the focal discussion areas of the forum with the hope that the forum proceedings would lead to the establishment of collaborative projects and further initiatives that could be supported. He invited delegates to join in the singing of the anthems of Uganda and the EAC noting the strength afforded the region by its commitment to working together.

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## Jarc Tusiime, Regional Coordinator, East African Youth Network (Uganda)



welcomed delegates to Uganda and extended a warm welcome to colleagues from other parts of the region. He congratulated the government of Uganda on its latest technological feat having recently launched its very first satellite. He further recognised and highlighted EASTECO's work on intellectual property and stressed the importance of African innovations being protected and rightfully owned by Africans.

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## Ms Wairimu Manyara, EAC Youth Ambassador (Kenya)



called on the youth to use this platform and others available to them to make strides in their entrepreneurship and innovation instead of waiting on the goodwill of the government before acting. Expressing gratitude to all the Partner States and EASTECO for their dedication to the youth she further noted the importance of the youth as the growing demographic in the region. She also recognised the women in the innovation space in the region and encouraged them to work harder.

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## Simon Hochstein, Programme Director GIZ (Tanzania)



expressed GIZ's support of the forum in partnership with EASTECO. Noting the importance of employment and digital skills he outlined the Master's Program currently on offer through GIZ that promotes regional exchanges as well as collaboration with Germany. He invited youth delegates to apply for the 2023 program intake. It is hoped that these initiatives and others other like them can be change agents for the EAC.

## Dr Sylvance Okoth, Executive Secretary of EASTECO



sought to inspire the delegates by emphasising the need for collaboration across the region starting with the youth working and innovating together. The program of the forum was outlined while highlighting one of EASTECO's most key objectives which is the development of mechanisms, policies, frameworks, and strategies for the promotion of technological advancement in the region. He then linked this to the aims of the forum which are:

- the strengthening of entrepreneurial skills amongst the youth;
- the promotion of peer-to-peer learning in the region while leveraging partnerships in the development ecosystem in the region; and
- the facilitation of self-employment and job creation amongst the youth.

Dr Okoth further expressed gratitude to the state of Uganda for its hospitality in hosting the first edition of the forum. He encouraged youth delegates to immerse themselves in the opportunity presented by the forum and take learnings back with them.

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## The Hon. Minister of STI Dr Monica Musenero (Uganda)



addressed the forum calling for Africans to be introspective in their journey towards development and comparing themselves to advanced nations in a more nuanced manner. This will allow the region to properly take stock of its achievements and shortcomings, this honest approach is also sure to lead to more sustained change rather than the pursuit of ideals in Africa that are ill-suited to its own unique set of conditions. The minister further encouraged the youth of the EAC to be audacious in their ambitions and to never delegate their thinking. The Hon. Minister shared her ministry's work by outlining in detail the STI commercialisation roadmap for Uganda that can be leveraged by the continent of Africa. Lastly, she urged innovators to focus on products that lead to mass commercialisation that are purposeful and lead to societal impact.

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## Severin Mbarubukeye, Permanent Secretary, Ministry of EAC Affairs Youth, Sports & Culture (Burundi)



reinforced the importance of collaboration in the region towards industrial development. He reminded the forum about the objectives in the formation of EASTECO and congratulated its achievements thus far. He noted the importance of youth in the development of the region and noted that the youth currently have access to better education. He noted the efforts of Burundi's government to support the youth most importantly the establishment of investment banks for the youth. He challenged the youth to arrange themselves and take hold of the opportunities that these efforts afford them.

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## Andrea Aguer Ariik Malueth, Permanent Secretary Ministry of EAC Affairs (South Sudan)



called on the delegates to engage with the innovations on display at the forum. He affirmed that for science and technology to experience growth governments need to allocate more resources in their domestic budgets towards technological advancement. Only then will the appropriate infrastructure to make strides in the field be available. He further stressed that science and technology needed to be linked to industry to better the lives of the region's population.

## Joseph Mutawana, High Commissioner to Uganda (Rwanda)



shared that “innovation is seeing what everyone has seen and thinking differently” which today is the definition of success in innovating for the modern world. Sharing that innovation is enabling different modes of trade and access to markets, better health and education he acknowledged Rwanda’s continued commitment to innovation. He noted that innovation also has an impact on the quality and accessibility of government services. Going forward, noted the High Commissioner, technology should serve as an enabler of traditional economies and efforts should be invested in three key areas to sustain growth:

- investment in connectivity, devices and data infrastructure
- the youth must be adequately prepared for the future of work whilst encouraging innovation; and
- continued commitment to transformative government interventions.

# PLENARY SESSION 1

## Unlock EAC Youth Development potential through Innovations

This session focused on how youth can support economic growth in East Africa. Speakers highlighted the importance of sustainable efforts to support innovation in STI, not only as a growth area, but as the means to achieving the SDGs. Speakers also discussed the trends in global efforts to support online markets through regulation and highlighted the kind of policies required. The key questions dealt with during the session were:

- How can youth in the rural communities throughout EAC be engaged to innovate?
- How can infrastructure be made available and guaranteed to innovation?
- How can the state of education on the continent be improved to meet development imperatives?
- How can youth’s potential for innovation be unlocked in the region?

## Chair: Fortunate Muyambi, Deputy Executive Secretary, EASTECO



started the session by explaining that ICT is an enabler of youth innovation that can improve talent identification, socio-economic community integration, development pipelines, and idea-product scalability. He added that there is a need for solutions and interventions that unlock youth potential to be created by the region’s youth.

## Patrick Mugisha - Managing Partner, Innovent Labs Africa



Innovation should be cross-cutting as it is a key driver in every industry. He noted that ICT triggers innovation across the board. No business should be separate from ICT in the modern world and in supporting innovation governments should focus on the provision of stable ICT infrastructure. Youth should also educate themselves on their government’s agenda for youth businesses so that they can take advantage of opportunities available in their economies. He further called on delegates to align their business with sustainable development goals, diversity and inclusion as these are avenues for creating cross-border trade opportunities.

## Lys Esther Karikumutima - EAC Youth Ambassador, Republic of Burundi



in unlocking the youth the digital economy needs to be leveraged in the region. This rests on the ICT infrastructure in the region being able to support trade. Mentorship is also a vital part of helping the youth to create businesses that thrive.

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## Wairimu Manyara - EAC Youth Ambassador, Republic of Kenya



the region ought to take the example of the European Union and create a singular regulatory framework that enables eCommerce. This will give confidence to markets both local and abroad that online trade with the region is safe and reliable. In doing so the government will open opportunities for innovation and youth businesses to thrive.

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## Sarah Mutagoma - EAC Youth Ambassador, Republic of Rwanda



social media should be leveraged by the youth to market products. Governments and development partners should do more to share information with the youth to know more about business, opportunities for development and innovations.

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## Bernadette Massawe - EAC Youth Ambassador, United Republic of Tanzania



the youth need to empower themselves by using additional sources of education. The study of theory is no longer sufficient, there are online resources that can help the youth in bettering their skills in the digital and technology arena. The region also needs to do more to attract investment to the region through incentives, stability and competitiveness. There must be a political will to better economic environments in Africa.

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## Mabile Jöthdit - EAC Youth Ambassador, Republic of South Sudan



the current education system is not meeting the needs of the modern world. It is also highly theoretical and does not necessarily have practical real-world applications. To further unlock potential, media in the region needs to partner with development ecosystem actors and promote innovations emerging in the region. This will help to create access to markets in the region. Youth needs to be educated about the management of finances and be allowed to participate in funding opportunities from a younger age. Financial institutions and regulations need to be engaged to formulate ways for youth innovators to access funding.

## Edgar Mutugisha - EAC Youth Ambassador, Republic of Uganda



the youth must be taught to exploit the opportunities presented by ICT. There is a lot of informality in the way the youth conduct business and ICT can do a lot to combat this. Secondly, innovation must function with a focus on sustainable development goals (SDGs), this framework must be front and centre when innovating ways of doing things better. Thirdly, scalability is key to innovating. Products and services must seek to solve global issues so that they can thrive in different markets.

# KEY POINTS & EMERGING ISSUES

There is a lack of awareness amongst the youth in the region of available information and resources. More should be done to inform the youth. Education systems in the region are highly theoretical, ineffective, and at times irrelevant. There is a prevalent mentality that tends to depreciate made in African innovations in favour of European, Asian and American-made products. Government bureaucracy tends to limit access to opportunities by making business difficult to conduct in the region.

Youth is committed to regional integration and working together. Youth in rural areas need to be supported with access to ICT infrastructure.

Regional economies need to support eCommerce through regulation that promotes market confidence and is aligned with international standards.

Government leadership presence was appreciated at the forum and the hope is that the youth could directly engage with leadership going forward as this will provide an opportunity to engage on matters most targeted to youth innovator needs.

The economy of the East African Community (EAC) is characterized by low productivity and low competitiveness, leading to high unemployment, especially among youth. Innovation and the application of information and communication technologies (ICT) by businesses are drivers of socio-economic development and international competitiveness. With the COVID-19 pandemic, many businesses have been forced to adopt digital innovations, which played a significant role in their ability to survive throughout the disruption. To unlock the potential of ICT for the economy, the availability of digital skills and skilled workers with appropriate qualifications and innovation capacity is crucial.

# PLENARY SESSION 2

## The Role of Innovation ecosystem and Technopreneurship actors in support and development of Youth Innovators in the EAC

This session focused on how ecosystem actors available in the region that can aid in the development of entrepreneurship in the region. Constraints to innovation were discussed with practical steps towards sustainable growth shared by speakers. The key questions dealt with during the session were:

- How can collaboration between different stakeholders be improved?
- How can the problem of scaling up be addressed?
- What is the current work being done by academic partners in the region?

**Chair: Elisha Kenny - Innovation Consultant, StartHub Africa**

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**Dr Salome Guchu, Inter-University Council for East Africa (IUCEA)**



the council is a collaborative partner to EASTECO which runs scholarships in the field of science and technology. It also manages other initiatives with universities across the region. Dr Guchu pointed to actors within the innovation ecosystem working together and complementing each other as collaborators. In addition, they need to develop solutions and act in tandem as stakeholders within the innovation ecosystem.

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**Tong Atak, Head of Solutions Mapping, UNDP Accelerator Labs, South Sudan**



added that often the problem of why innovators from universities do not scale up their innovations is due to the lack of tools to support their ideation at university away from set curriculums. There is also the issue of a skills mismatch, courses at university need to be upgraded to create the right skills for innovation. A culture of innovation needs to be fostered university level. A research project is not necessarily an innovative project, the real need is to connect the university to industry to translate the innovations into real tangible solutions for the market.

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**Laura Althaus, Head of Programs, StartHub Africa**



touched on linking academia and industry as a key element to the promotion of innovation and that is the role StartHub Africa. Further to this, she pointed out that understanding both sides is important. Programs that value propositions for universities, innovators and the development ecosystem need to be designed. More industry leaders need to be invited into the lecture rooms, successful founders should share the reality of entrepreneurship from the founder's perspective.



## Steven Kakooza, CEO and Founder of Kawu



noted that African solutions are needed and are the key to solving African problems. On the challenges within the innovation ecosystem, he noted that despite his excitement with his first innovation during the first year of school there wasn't much support. He lamented the lack of a support system for innovations in universities to achieve the impact expected of them. The suggestion is for platforms like innovation fairs and hubs to be put in place to showcase innovations stemming from university students. He concluded his contribution by pointing out commitment is the most critical factor despite the missing links in support.

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## Professor Tatien Masharabu, Permanent Executive Secretary, CNSTI, Republic of Burundi



sharing his experience as former Research Development Lead at the University of Burundi, he highlighted ICT as being one of the key factors to poverty reduction and tackling global matters like climate change. He concurred that the needs of young people are in training, business modelling and an enabling environment. He further noted that young innovators need to have an opportunity to showcase their ideas.

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## Professor Michael Kisangiri, Associate Professor and Centre Leader, Centre of Excellence for ICT in East Africa (CENIT@EA)



noted that it is important for ecosystem actors to collaborate with the academia. He further provided an example of how that has been useful for the master's program at NM-AIST on embedded and mobile systems where the students at the CENIT@EA spend time with industry partners and are turning industry challenges into valuable digital opportunities. Once a solution is deemed viable, innovators are supported to develop prototypes which are also used as their master's thesis. Prof. Kisangiri noted that solutions provided by CENIT@EA students are implementable solutions and universities can inspire innovation with continued support from the industry.

# KEY POINTS & EMERGING ISSUES

Entrepreneurship plays a vital role in the East African region in line with the priorities outlined in the various policies of governments across the region.

The EAC continues to integrate entrepreneurship into its transformation and economic agenda and aims to support fledgling innovators and entrepreneurs.

There is a concerted effort to eliminate barriers that unnecessarily stifle innovations. Innovation increasingly requires combining different competencies and resources. Therefore, regional exchange in the EAC is crucial to nurture and promote an innovation ecosystem. This creates the opportunity to collate efforts amongst the innovation ecosystem actors to support the scaling up of local and national digital innovations.

There needs to be a regional mechanism between universities to support the ideals of innovation and youth engagement. Ideally, the program should serve as a link between academia and industry.

# PLENARY SESSION 3

## National Innovation Ecosystems and Intellectual Property applications

This session dealt with how stronger intellectual property protections can encourage innovation in the EAC. The different areas of support available to young innovators were shared for Burundi, Tanzania and Uganda. The session also dealt with when it is appropriate for innovators to patent their creations and the institutions that can be approached for guidance. The key questions dealt with during the session were:

- How research and development is being supported in the region?
- How innovators can appropriate a share of the benefits from their creative activities?

**Chair: Dr Sylvance Okoth, Executive Secretary of EASTECO**

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**Dr Amos Nungu, Director General, COSTECH, United Republic of Tanzania**



the commission is responsible for science and innovation in the country. The commission falls under the Ministry of Education, Science and Technology. In Tanzania, the number of intellectual property registrations is not high. The commission has assisted innovators with the application process for the last two years. The commission encourages innovators to test the viability of their ideas in the market. Innovators must also understand the difference between a patent and a copyright.

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**Prof. Tatien Masharabu, Permanent Executive Secretary, CNSTI, Republic of Burundi**



In the country the potential for intellectual property is supported through a science, technology and innovation policy there is high-level support for innovation. However, there are no industrial property or intellectual property offices at the institutional level at universities or research centres. Laws exist, however, the application is low. The gap needs to be breached with the implementation of management where innovation takes place. The policies need to coincide with national production systems. The involvement of the private sector can assist in this implementation taking place.

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**Dr Martin Ongol, Acting Executive Secretary, UNCST- Republic of Uganda**



The lead agency for intellectual property is the STI Secretariat under the office of the president, with key agencies by the Uganda National Council for Science and Technology and the Uganda Industrial Research Institute. There are also eight bureaus or industrial value chains supporting the work of the STI Secretariat. The work of the council supports innovators through the setup of two facilities to test innovations. Within the private sector, there are other stakeholders like GIZ, Stanbic, Mastercard Foundation and others that offer innovators support. The main agency that registers applications for intellectual property is Uganda Registrations

Services Bureau. The pool of registrations per year is very low and there is now a national agenda to register at least fifty applications per year that can be passed. Patent applications are based on the originality of products and innovators must critically assess the uniqueness of their inventions before applying.



## SUMMARY OF DISCUSSIONS

The main benefit claimed for strong intellectual property protection is that by allowing innovators to appropriate a share of the benefits of their creative activities, R&D is encouraged, which leads to innovation and higher long-run growth. The impact of intellectual property protection on domestic innovation is likely to vary with a country's level of development and its factor endowments. More generally, we may expect intellectual property to impact on domestic innovation differently in countries with significant innovative capacity as opposed to those with few resources available for domestic innovation. The evidence suggests that stronger IP protection can encourage domestic innovation in countries that have significant domestic capacity for innovation, but that it has little impact on innovation in countries with a small innovative capacity

Intellectual Property (IP) policies need to be spread across institutions such as universities and have offices that regulate them.

There is still a lot of bureaucracy in patent application procedures that must be resolved.

Information gaps still exist - innovators are not well informed on issues regarding IP. Education institutions need to have experts who can provide support to innovators on IP issues.

IP environment across the region is not well documented and understood.

# PLENARY SESSION 4

## Digital Transformation for Youth Employment

This session focused on the different avenues towards digital transformation. The discussion centred itself around the current efforts in the Partner States that are leading to marked improvements. The barriers to entry for entrepreneurs were shared as well as new innovative modes of overcoming them. The youth panel shared their own journey's and how digital technology is a fertile area for innovators and business minds. Sustainability was also highlighted as a key value driver for entrepreneurs looking for areas to add value.

- How can governments play a larger role in ICT infrastructure ownership?
- How can lessons in digital transformation be shared across the EAC region?
- What are the constraints in achieving digital transformation?
- How can youth innovators overcome current challenges?

**Chair: Wairimu Manyara, Regional Coordinator, EAC Youth Ambassadors Platform & EAC Youth Ambassador, Kenya**

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### Hagimar von Ditfurth, Digital Ambassador, GIZ Uganda



using an analogy the constraints facing entrepreneurs in the region were outlined. Access to tertiary education in the region is limited. The use and understanding of basic technology such as cell phones and computers may be limited. Internet shutdowns prohibit the ease of doing business across the region. There is a lack of skilled candidates to capacitate growing businesses in the region. The power supply is intermittent in the region and reduces output. Data is expensive and prohibits usage. There are however opportunities in the digital economy presented by the EAC region. These include direct and indirect jobs that can be created by online and digital entrepreneurship. eLearning is increasing the quality of education in the region and the employment of teachers across the region. Access to new markets by offering services online.

**Violet Ayoub, East African Youth Network Coordinator, United Republic of Tanzania**



Digital spaces present the youth with platforms to better themselves. These include education and participation in government opportunities. These spaces are also creating markets online that the youth can target and create value for themselves.

## **Bruce Sakindi, East African Youth Network Coordinator, Republic of Rwanda**



Best practices that have been employed in the region are those that have embraced the fourth industrial revolution. Rwanda has created pipelines to encourage foundational engagement of digital systems. There has been a lot of sensitisation by the private sector to digital forums, for example, Rwanda currently is 50% a cashless economy. Government systems are also being brought online. These solutions need to be shared across the region to ascertain how these solutions can be contextualised to the rest of the region.

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## **Sam Mbiu Gichane, East African Youth Network Coordinator, Republic of Kenya**



Infrastructure is needed to connect urban centres with rural areas. The same interventions that are implemented in cities to enhance digital literacy need to be implemented across the board to experience critical mass impact.

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## **Augustino Deng Alier, East African Youth Network Coordinator, Republic of South Sudan**



In addressing the issue of the large cost of doing business for startups and using digital systems to combat these constraints the need for capacity was emphasised. In empowering the capacity of the youth, skills development is critical. Digital systems can be leveraged once the basics of starting a business are understood.

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## **Kelly Cynthia Kaze, East African Youth Network Coordinator, Republic of Burundi**



Before digital systems can be leveraged by youth in the informal sector there must first be reliable connectivity infrastructure and government investment in telecommunications. This is particularly key for rural areas where electrification is also a problem.

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## **Paul Rukundo - East African Youth Network Coordinator, Republic of Uganda**



noted that the region currently imports far more than it exports in the ICT sector. More should be done to develop domestic ICT products and services. The ICT sector in Uganda particularly is privately held and is not meeting national and regional imperatives. Governments have also sought to tax digital systems like the previous social media and mobile money taxes. Social media for example presents the youth with marketplaces where goods and services are bought and sold.

# SUMMARY OF DISCUSSIONS

The digital transformation can play a key role in youth employment in East Africa. Only 20% of the region's youth (aged 15-29) have full-time waged jobs, while most are in informal and agricultural work. Digital start-up companies in East Africa attract USD 1.2 billion a year in venture funds and create direct jobs in the digital economy. They also boost productivity growth, job creation and new business models in sectors such as financial technology (fintech), education, healthcare, consumer services and agriculture.

Governments should invest in telecommunication companies to meet development imperatives.

Lessons should be taken from fellow Partner States and used as the basis of regional integration.

Businesses should be based on originality to be able to successfully leverage the digital economy.



# DAY TWO

The program of the second day meant to highlight the work that youth innovators are already doing in the region. Parallel sessions allowed the innovators to collaborate and compare their learnings within the growth industries chosen to be highlighted at the forum. **Agriculture, ICT, Health, Energy and Climate Change and the Environment** were the key sectors of focus for the forum to glean learning across industries and areas in the region. Youth innovators were able to identify multi-level issues and opportunities for overcoming constraints. The discussion theme of the day was **innovation ecosystem and technopreneurship development for youth** addressed during the last plenary session. The session provided an opportunity for stakeholders in the development ecosystem and government institutions to share important information regarding how entrepreneurs can access resources to support their businesses. Presentations were broad covering multiple topics from across the region including managing business growth, how to scale and the requirements of applying for intellectual property rights across the region.

# PLENARY SESSION 5

## Innovation ecosystem and Technopreneurship

### Development for Youth – include photos of each presenter

This session focused on the EAC region and its place among the developing nations of the world. Speakers shared lessons learnt in other countries and regions while providing key ideas that can be implemented in the region to meet technological innovation targets, develop economies and support the youth appropriately. Speakers also shared the work within their organisations and invited the youth to use these platforms to access opportunities.

- What are the key criteria in successful entrepreneurship?
- What are some of the takeaway lessons in research across the region?
- How does the EAC compare to the more developed nations on the continent and how can the region compete?
- Which innovation lessons can be learnt from examples like India and Malaysia?
- How can the youth that does not form part of the formal education structures in the region be supported to innovate?

**Chair: Brenda Nakazibwe, Pathogen Economy Team Leader at Science, Technology and Innovation Secretariat, Office of the President**



noted that some of the largest incubators can be found in the EAC. However, more still needs to be done to provide sufficient support to emerging leaders in technology, innovation and business. She invited panellists to introduce themselves, share their work and their views on the current state of innovation in the region. The journey for the registration of patents and copyrights was shared by the Director General of the Uganda Registration Service Bureau which delegates from other regions could use to help prepare themselves for the process.

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**Yoslan Nur - Programme Specialist, UNESCO**



discussed the innovation ecosystem and youth technopreneurship. The general framework of innovation in developing nations is limited and can be supported by better collaboration among players. Research in these regions can be better targeted to user needs. Lack of support platforms and government initiatives also limits innovation. To resolve these issues there must be awareness of the need to support youth businesses. Science parks and technology business incubators should be created to increase the life expectancy of startup companies.

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**Mercy K. Kainobwiso, Director General, Uganda Registration Service Bureau**



discussed the innovation ecosystem and youth technopreneurship. The general framework of innovation in developing nations is limited and can be supported by better collaboration among players. Research in these regions can be better targeted to user needs. Lack of support platforms and government initiatives also limits innovation. To resolve these issues there must be awareness of the need to support youth businesses. Science parks and technology business incubators should be created to increase the life expectancy of startup companies.



## Dr Malcolm Parry - Director of Surrey Research Park, UK



explained the best starting points for entrepreneurs involving creating a minimum valuable product and building characteristics that will build the skillset to sustain a business. He further shared the innovation and entrepreneurial development journey of a startup. He also shared the reasons why companies fail with the delegates.

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## Nicholas Mbonimpa, Research and Education Network for Uganda



The region must have an appreciation for where it is in terms of technological innovation. Lessons can be learned from Asia as it has a high number of unicorn companies (\$1 billion + value). Collaboration has been key to the success of Asia. Access to capital is important for technological innovation. Asian companies receive substantial investment from their governments. They were also able to attract investment from other countries. Education is an important factor in technological advancement, so resources must be allocated.

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## Prof. Mohan Avvari, Deputy Head of the School of Business, Monash University



In Malaysia, the market size is very small. In the same way, countries in East Africa are small economies on their own but as a regional bloc, the market size is significant. This market should be targeted first before entrepreneurs aim to capture other markets. Collaborations at the country and firm-to-firm levels need to work together to support growth. Media in East Africa should motivate the youth to innovate by highlighting success stories in the region.

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## Matthias Möbius, Startup Hub



discussed how innovation culture can be fostered in the region as well as key lessons in the development of a business. In the region, universities are a core place where innovation takes place. Startup Hub has partnered with five universities to launch businesses. Most businesses started at the university stage are necessity-based businesses but not those that innovate or support technological innovations. It must be understood why that is. Universities must play a better role in developing the hard skills of their students to enable them to be able to build their products. Exposure to professional work (internships) allows students to develop the discipline to run their businesses. There is a lot of support in the ideation stage of startups however in the growth period the support and funding reduce dramatically. Innovators need to focus on building businesses that work and thrive, they will be able to attract this support and funding.

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## Suraj Shah, Lead, Government and Strategic Partnerships, Mastercard Foundation



began his address by asking the forum at which level hard and entrepreneurial skills should start. The average rate of transition from secondary school to tertiary level is 8% on average in Africa. Skills and development must be implemented earlier as not everyone studies up to the tertiary level. Innovation must be nurtured much earlier with the relevant skills.

# KEY POINTS & EMERGING ISSUES

Entrepreneurship plays a vital role in the East African region in line with the priorities outlined in the various economic blueprints the governments across the region are relying on. The EAC continues to integrate entrepreneurship into its transformation and economic development efforts by deploying necessary measures to support fledgling innovators and entrepreneurs as well as eliminate barriers that unnecessarily constrain them to stifle innovations.

There are inadequate innovation platforms in the region such as business incubation centres for purposes of space provision, mentoring and support.

Youth need to be kept abreast of the IP value chain including creation, protection, commercialisation and enforcement.

The establishment of strong and meaningful regional partnerships is important for the innovation ecosystem.

The region needs to establish meaningful partnerships with funders such as the EU and JICA to boost innovation

The region needs to create synergies between regulatory agencies and enforcement agencies such as Uganda Registration Services Bureau (URSB) vis-à-vis Uganda Revenue Authority (URA) to support innovation.

Regional leadership needs to address the challenge of corruption that is ubiquitous across the EAC.



# PARALLEL SESSIONS

## Parallel Session 1: Agriculture Innovations - Crops

Moderator: Mr. Gak Malek

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### Professor Tatien Masharabu, Permanent Executive Secretary, CNSTI, the Republic of Burundi



Presented on crops as medicine. Prof. Tatien presented the audience with an overview of a Burundian project where a particular plant species, catnip (*Nepeta cataria* L., Lamiaceae) is effective as a repellent against mosquitos. Malaria (*Plasmodium falciparum*) is currently the most severe infectious disease worldwide, and a critical public health issue in tropical countries. Ninety per cent (90%) of the population affected worldwide lives in Sub- Sahara Africa. This has undermined East Africa's progress. This innovation is an example of the work that can be done within academia to solve real-world issues whilst creating viable and marketable solutions for communities.

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### Edwin Arunga

#### Design of Integrated locally led aquaculture innovations towards achieving food security, social change and climate resilience

\*ARUNGA E

Freshwaters Ventures, P. O. Box 987-50100, Kakamega Kenya

\*Corresponding Author: [edwinarunga2019@gmail.com](mailto:edwinarunga2019@gmail.com)

Food security is a key aspect towards achieving sustainable development in Africa. However, there have been little successes towards achieving this because our indigenous local people are still trapped in a vicious circle of malnutrition and lack of proper diet. Post-harvest losses, poor storage of food and lack of proper knowledge about the effects of climate change on agricultural production are some of the reasons why food security has not been fully attained in Africa. It is from these problems that we have come up with an integrated aquaculture farming approach that involves use of locally available resources to achieve full production of fish, proper value addition and storage to reduce post-harvest losses. The main objectives of our project are: Ensure sufficient fish production using locally available resources, ensure inclusion of youth and women in fish production, ensure the rural farmers receive trainings and awareness on effects of climate change on agricultural production. Using registered youth and women groups in our county, we aim to plant groundnuts, pumpkins and sunflower as raw materials for cottage fish feed formulation. Once the plants are harvested and dried, they will be milled into flour and pelletized to feed our pond fish. This is a strategy towards reduction of feeding costs to our fish. We shall construct an improvised traditional smoking kiln that uses sawdust instead of firewood. Sawdust is a waste product of timber and using it for fish smoking we shall be moving towards circular economy and zero waste emissions. With a capacity to smoke over 1000 fish per day our smoking kiln will reduce post-harvest losses of fish in our community by over 90 percent. The ready smoked fish is to be sold by our youth and women on market days in our local towns. We shall set up model fish stands for exhibition. To solve the problem of food security integrated farming methods are highly required. More educated youth should be put in front to educate others about food production and climate resilience for a sustainable Africa.

**Keywords: Food Security; Aquaculture; Social change**



## Lynet Mutesi

**Production of BioMix®; a non-cereal grain feed resource as a substitute for maize bran for smallholder poultry production**

\*MUTESI L

\* Corresponding Author: [mutesilynet1@gmail.com](mailto:mutesilynet1@gmail.com)

The use of cereal grain based feeds in poultry production is on the rise in Uganda and will increase drastically as the number of farmers escalate. However, persistent crop failure due to climate change effects is a challenge to millions of smallholder poultry farmers who depend entirely on cereal-based grain feed resources. We have developed a sugarcane-based product -Bio-Mix® as an alternative or a supplement to maize bran. It is more cost-effective, nutritious and widely available and with demonstrable capacity for poultry production improvement. Our solution complements the national and global climate change mitigation effort. The objective is to produce and distribute 3 ton of Biomix pellets in 6 months of commencement. We have developed two formulations of Bio-Mix-solution and pellets. The prototypes have been produced and packed in sizes for every smallholder to afford. It has a long half-life and once developed, it can be sold beyond the borders. Sugarcane contains carbohydrates (Sucrose Fructose and Glucose) in solution form. Using non-conventional approaches, we have been able to turn this solution into pellets by thickening and adsorbing it on several surfaces to become palatable to the birds. The feed industry is a highly competitive landscape. However, we predict that Bio-Mix production and marketing is commercial viability in comparison to Maize bran because it is cheap, the raw material is in abundance and not often affected significantly by weather changes. Our distribution is likely going to be broad as it can also be used as a supplement to poor quality baize bran. **Keywords: BioMix®; green feed resource; maize bran**



## Mutumba Livingston

**Production of flour based on Tenebrio molitor worms: a valuable source of nutritional value, able to feed the whole planet**

\*MUTUMBA L

\* Corresponding Author: [mutumbalivingston4321@gmail.com](mailto:mutumbalivingston4321@gmail.com)

Overpopulation, depletion of natural resources and a dramatic reduction in food availability entail an outbreak of the food crisis and outbreaks of non-communicable diseases. The combination of wars globally, climate change and COVID-19 pandemic breeds greater food insecurity and creates the conditions for social uprisings and migratory flows. With a mission to help address the agri-food challenges of the future, the start-up Food for Thought expands the world's dietary options and proposes the production of a unique highly nutritional product: the flour from the larvae of the flour worm (*Tenebrio molitor*). In the future, insects are expected to have a leading role in nutrition. It's cheap and easy production, with low environmental footprint renders "Wormflour" the product of the future, capable of nourishing the entire planet. Our flour is considered to be a "Novel Food". The production lasts three months for every *Tenebrio molitor* generation. The larvae are collected and dehydrated, are baked at a special temperature and are ground. The flour is being sold wholesale as a final product to produce biscuits, bread, pasta, sweets, cereal bars, burgers etc. The sale price is low, and free dispensation of a part of our production to malnourished populations in Africa is expected. At a time when the need of 7-value food is growing, the company we propose is a pioneer. Our idea offers a promising solution to the sustainability challenges that the global food industry is facing. It serves the 12th UN Goal for sustainable production, reducing economic, social and environmental costs, helping to reduce hunger and increasing social welfare gains. The production is undertaken by 4 students from Uganda, in collaboration with a student from Greece. The necessary know-how will be provided by the University of Thessaly, from Greece.

**Keywords: World hunger; Tenebrio molitor; flour; start-up; Uganda; Greece**



## Nkingiyurugo Honore

### Electronic irrigation system with solar energy

\*NKINGIYURUGO H

\*Corresponding Author: [nkingiyurugo@gmail.com](mailto:nkingiyurugo@gmail.com)

Around 38 percent of the total land area of the planet is categorized as cultivable land or Agricultural land. Due to this, a large fraction of people earns their living through farming and take agriculture as their primary source of income. But the produce from this land depends mainly on proper irrigation which is suitable to the ambient climatic and atmospheric conditions. Irrigation can be defined as artificially supplying water to the land which is to be cultivated. Lack of proper Irrigation system can result in significant deterioration of the yield. Electronic solar irrigation system with solar energy can be used to automate the irrigation process based on the surrounding conditions. This project uses Arduino to control the motor. The Arduino Board is programmed using the Arduino IDE software. Two moisture sensors measure the level of moisture in the soil and calculate the average moisture value and send the signal to the arduino if watering is required. The water pump supplies water to the plants until the desired moisture level is reached. The rechargeable battery that supplies required power source is recharged via Solar panel. A moisture sensor is used for sensing the soil condition –to know whether the soil is wet or dry, and the input signals are then sent to the microcontroller, which controls the whole. **Keywords: Arduino; irrigation system; moisture sensor; solar energy; atmospheric condition; micro-controller**



## David Kazuguri

### An Innovative Approach for Commercial production of semi-refined and refined carrageenan from red seaweed

1,4DANFORD D., 1,4, \*KAZUGURI D., 1,3KATUA N., 2,4RWEHUMBIZA V

1Kijani Biotech, Dar es Salaam, Tanzania

2Yebi Health Limited, Dar es Salaam, Tanzania

3School of Economics, University of Dar es Salaam, Tanzania

4Department of Molecular Biology and Biotechnology, College of Natural and Applied Sciences, University of Dar es Salaam,

\* Corresponding Author: [davidkazuguriworkmail@gmail.com](mailto:davidkazuguriworkmail@gmail.com)

Carrageenan is a polysaccharide from red seaweed, abundantly farmed along the Tanzanian coastal marine waters, amongst others in the world. The polysaccharide forms transparent thickeners, stabilizers and gelling agents with applications in food, feed and pharmaceutical industries. Recently Carrageenan has shown potential to be used in drug delivery, tissue engineering, biomaterialistic applications, implying that it has applications in diverse sectors, from food, medical, research, as well as cross cutting issues in modern biotechnology, such as plant tissue culture technology. Carrageenan is a healthier, halal, kosher and vegan substitute to gelatin. Specifically, carrageenan can be used as an emulsifier in dairy products, stabilizer in soft drinks, agent in beer and wine clarification and as a thickener and stabilizer in bakery, toothpastes and cosmetics. The main objective of the research is to develop an eco-friendly and effective approach in the production of food/chemical grade carrageenan. Our approach utilizes specialized endogenous microorganisms in the production of carrageenan via degradation of non-carragenan polymers making up seaweed. A 25% yield was obtained for refined carrageenan and 30% yield for semi refined carrageenan. Our approach has been proven scaled for industrial scale application in the production of semi-refined and refined carrageenan. The process has 60% reduction of chemical usage in production, contrary to conventional approaches that entirely use chemicals. Hence we have developed an ecofriendly process to extract semi-refined and refined carrageenan from *Kappaphycus alvarezii* and are looking to pilot then scale-up production to support the local and international demand of the global market size valued at 780.5 m USD and expected to expand at a compound annual growth rate (CAGR) of 6.0% from 2020 to 2028.

**Keywords: carrageenan; polysaccharide; red seaweed; gelling agent; refining; commercial production**



## Xavier Imanayarakoze

### Implementation of bird repelling technology in Rwandan rice farms

\* IMANAYARAKOZE X

\* Corresponding Author: [rakoze.krimx@gmail.com](mailto:rakoze.krimx@gmail.com)

As technology in Rwandan agricultural sector is growing immensely in recent years, certain recognized improvisations and improvements needs to be made. People are tired of using the old system, where women and kids are used as a primary and essential mean around rice farms to repel birds manually using jerrycans. It's a wastage of time and energy. We got something better for them. We are developing a reliable, trusted and most secure electronic device, that will detect the presence of birds and automatically chase them away without human intervention. We are using Arduino programming language as the heart of implementation of our project. Arduino code is basically a framework build on top of C++. Using Arduino UNO, a low cost, flexible and easy-to-use microcontroller board that is integrated in various electronic projects, we will be able to control DC power distribution, sound sensors, relays, LEDs, servos motors, camera sensors, speakers and resistors which are basic materials we are using to prototype our project. In this new technology for rice farms, we will be using live feed coming from the camera sensor to detect birds. This will be achieved by a continuous 360 degrees rotation using a servo motor to scan the whole surrounding. After bird detection, the speakers will generate a scary sound in a variant and controlled system to chase the birds away. The whole system will be powered by solar energy. The cover of our device is designed in such a way that it will be coated with shiny colors that normally scares birds at sight. We plan to monetize by selling our devices to rice co-operatives. We will also add improved random features that makes device reliable and accurate in bird repelling. **Keywords: Bird repelling; rice farms; Rwanda**

## KEY POINTS & EMERGING ISSUES

There is an urgent need in the region to promote the use of organic fertilisers to reduce the negative effects of chemicals.

Agricultural practices need to be improved with the use of mechanisation and ICT.

Collaboration is critical at national, regional and international levels to involve the private sector to translate agricultural research into industrial application and practice.

# PARALLEL SESSIONS

## Parallel Session 2: Agriculture Innovations - Livestock

Moderator: Mr. Gak Malek

### Alex Kyabarongo, Field Scientist, Bioeconomy Initiatives for Youth Development



explained the field of bioeconomy which is the production, use and conservation of biological resources, including science, technology and innovation to create products and services to all economic sectors towards sustainable economies. He also explained the status of the bioeconomy in Africa. Efforts need to be implemented at different government levels to realise the benefits of having drafted a regional strategy. There is a strategy in East Africa, this presents opportunities in the field for innovation. He shared current initiatives that the youth can contact to become a part of opportunities in the sector including Bio Initiative Africa, Bioeconomy coalition of Uganda, IACGB -Bioeconomy youth champions and Synbio Africa.



### Rubagumya Aimable Smart poultry farming “the best way to treat hens”

1 \* RUBAGUMYA A

\* Corresponding Author: [aimablerubagumya@gmail.com](mailto:aimablerubagumya@gmail.com)

The main purpose of this project is to develop computerized “SMART POULTRY FARMING” that can be used to revolutionize the traditional way of monitoring poultry. The existing system they have problems were identified: were hard to monitoring environmental conditions like temperature, humidity, gas level of ammonia and carbon dioxide, dust level and Air pressure are available in poultry. Thus, this computerized of “SMART POULTRY FARMING” was designed to facilitate farmer monitoring poultry remotely and get daily data from chicken room (Temperature, Humidity, carbon dioxide, Ammonia and Dust) and get real time notification when hens conditions worsen. The chosen methodology for this project was Water fall modal whereas, documentation, observation and interview contributed to data gathering and development for this system. Problems; High humidity: cause diseases in chicken. High temperatures: cause Dehydration in hens. High level of air pressure: hatchability of chicken eggs Uncontrollable carbon dioxide levels. Body weight of chicken is decreased. Uncontrollable ammonia levels: harm to birds with respiratory diseases. Uncontrollable dust levels: Cause inflammation of the airways and eyes membranes. From the identified problems, I’m developed solution which will help in the following aspects: Daily monitoring of room temperature and level. Daily monitoring of ammonia and carbon dioxide in poultry. Daily monitoring of dust in poultry. Daily monitoring of air pressure. Turn on/off light when darkness is occurred. When the above problem controlled the hens will be in good condition that’s will cause it to increase, they yield (eggs) and weight of hens. Our action plan currently we are on the step of prototyping already not yet finished we waiting to test our solution and seek the way of how we can implement the solution.

**Keywords: Poultry farming**



## Patrick Isirabahenda

### Design and development of smart egg incubator

1 \* ISIRABAHENDA P

\* Corresponding Author: 078894pa@gmail.com

The purpose of this project is to design and develop smart egg incubator system for highly giving ability to poor people more egg and meat in order to fight against poor and mental health. The status condition in smart egg incubator will appear on the LCD screen display. The entire element will be controlled using Arduino UNO and real time clock. The Arduino UNO is a type of microcontroller that can process a data from sensor and will execute the control system to change the condition of SEI S. the average temperature and humidity is 36 oc and 32 %. This project will be friendly product to the SEI S portable. Temperature, Humidity, Ventilation, egg turning, egg incubator box and poor people as the main consumer for mental health canceller. The micro controller plays a vital role, which controls virtually all the devices and sensors of the incubator for providing the right conditions at a right time for incubator of poultry egg. The incubating machine designs physical nature and economic in material usage. The heat was generated by heating rod and filament lamps in the heating chamber, which was controlled by the micro controller and finely distributed throughout the incubator chamber by the flow of forced convective air using centrifugal fans installed in areas inside the machine, the relative humidity of the air, as well as balanced temperature conditions, were maintained inside the incubator chamber by the micro controller for the whole period of incubator of the poultry eggs. The products should be sold at low price to the poor people as the system of fighting against mental health problem caused by poor condition. The result of the eggs incubation which revealed the following average result, 95fertil e eggs, 85 hatched eggs and 89. 47% hatchability, So the number of poor people will have the service as written above.

**Keywords:** *Arduino Uno; Embryonic development; Candling system; GSM module; period of incubator*



## A Arnold

### Use of mobile App for increased maggot production

1 \* ARNOLD A

\* Corresponding Author: magoproteinfeedsltd@gmail.com

Magoprotein feeds ltd is a fly company producing maggot , a constituent feed for poultry , fish and also feeding other animal via maggot meal .The study shows that maggot are composed of about 40-60% of protein twice than a fish meal likely this play as advantage to venture into this business and build a sustainable brand .Magoprotein feeds ltd is intended to maximize farmer's income in term of feeding ,As the study shows that feeding alone accounts for 70% of the total cost of the animal production.Hence this can be reduced via maggot production. The project is intended to create a mobile app as a tool aiming to manage our fly farms, helping small fly farms for farmers but also selling to other commercial fly farms. The mobile app showing to have a great impact as the knowledge concerning the Black Soldier Fly, breeding management and control all is under a mobile app called MY MAGGOT. MY MAGGOT as a mobile app will incubate this knowledge and skills to farmers so that they can produce maggot on their own which in turn will reduce cost of production furthermore, magoprotein feeds ltd will reduce bio-wastes in town and cities as they will be recycled and used in feeding maggot hence keeping town and cities clean. Finally, to ensure that magoprotein feeds ltd intensifies and fulfills its requirements in the society a fund is needed so I ask for a fund to develop this project.

**Keywords:** *Magot; Mobile app*



## Aijuka Damascus, Integrated Aquaponic and Livestock farming for improved food security & incomes

Aquaponics is a food production system that is not yet common in the region that presents opportunities. Aquaponics is a cooperation between plants and fish. The term originates from the two words aquaculture - the growing of fish in a closed environment and hydroponics - the growing of plants usually in a soil-less environment. Aquaponic systems come in various sizes from small indoor units to large commercial units. Food production through this system is organic, does not use chemicals and is environmentally friendly. The system also reduces waste by reusing all outputs from each stage of production.

## KEY POINTS & EMERGING ISSUES

There is a need to encourage the youth to take interest in opportunities in agriculture which offer economic returns and societal impact.

Government recruits government officers in agriculture that are not educated in matters of agriculture which affects the growth of the sector in the EAC region.

There is a need to recruit agriculture officers at regional and district levels that are knowledgeable about agriculture to be able to highlight the positive impact that agriculture can have in these communities.

## PARALLEL SESSIONS

### Parallel Session 3: Health Innovations

Moderator: Sam Mbiu Gichane, EAYN Coordinator, Kenya



### Frank Mugisha

**Creating Affordable and Accessible New Innovative Solutions for Regular Health Checkup and Medication for All regardless of One's Status Tectreat**

\* MUGISHA F

\* Corresponding Author: [mugishafrankharleson@gmail.com](mailto:mugishafrankharleson@gmail.com)

To strive and ease access to healthcare services for people regardless of their financial status or geographical location using new innovations, (ii) To create sustainable, accessible, and affordable solutions for diagnosing, and treating chlamydia, syphilis, gonorrhoea, malaria, pregnancy, and cancer in Africa and the world at large, and (iii) To create equitable and comfortable health care service systems for all. A doctrinal, desktop research methodology is used to fulfil the objectives raised above. The data collected is analysed through scientific methods of inductive and deductive to ascertain the exact health challenges people face. It is advisable by doctors for us all to have regular health checkups, unfortunately, the majority of the population cannot afford it, and yet if we do not do it, we get bigger challenges/ problems. Our research shows that the majority of people do not notice that they are infected with diseases because 75% of them have no symptoms or signs at an early stage and yet if not diagnosed and treated as early as possible they can lead to death or gross damage to body organs. For example, according to the WHO report 2020, over 500m people worldwide got infected with STDs like chlamydia, syphilis, gonorrhea, and HIV AIDs claiming 210m lives, at least

241m cases of malaria were recorded resulting to the death of 627000 people, also, an estimate of 19.3 million cancer cases were recorded and claimed 10 million lives and among others. Also, the available solutions are not favorable to people because they're expensive, embarrassing, painful, time consuming, and highly involve an invasion of personal privacy. D'tectreat is a combination of a chip and an App used to test and diagnose chlamydia, syphilis, gonorrhea, HIV/AIDs, malaria, pregnancy, and cancer. People know their health status by simply inserting a "D'Tec-chip" in their mouth and get results from the "D'Tectreat App" on phone. On the App, users get 97% accurate results (the index goal standard), the doctor's recommendations based on the test results, location to nearby clinics/hospitals, access to our online drug shop/store and delivery services, and access to educational information about

**Keywords:** *Fordable, Accessible, HealthCare, Check-up, Medication, Diseases, innovation*



## **Raymond Tumwesigye**

**Modified Early Warning Score Mobile based application (MEWS APP) and its ability to solve delays in response to vital signs**

*1\* TUMWESIGYE R., 2KIGONGO E., 3MUSINGUZI M., 4KABUNGA*

*1Raymond Tumwesigye, PhD Fellow, Lecturer Lira University, Department of Emmergency Nursing and Critical Care, Faculty of Nursing and Midwifery.*

*2Eustes Kigongo, Teaching Assistant, Lira University, Department of Environmental Health and Disease Control, Faculty of Public Health, Lira University.*

*3Marvin Musinguzi, Teaching Assistant, Lira University, Department of Environmental Health and Disease control, Faculty of Public Health, Lira University*

*3Amir Kabunga (PhD), Senior Lecturer, Lira University, Head of department Community Psychology and Counselling,*

*\* Corresponding Author: tumwesigyeray@gmail.com*

Modified Early Warning Scores Application (MEWS App) is both a web-based and mobile platform that will be built with an artificial intelligence to capture, compute total scores from the vital signs and thereafter display appropriate interventions to the nurse. This study will develop both a web and mobile based technological innovation with an inbuilt artificial intelligence to capture vital signs, grade the severity of illness and will be able to notify clinicians and nurses to respond appropriately. The study will adopt a multi-center cluster randomized clinical to test the functionality and accuracy of the MEWS App. The users will be the nurses and doctors who will register online then login in using their usernames and passwords. After a successful login, a nurse will be presented with a form where he/she can fill the patients' bio-data and vital signs. The nurse will then submit this data and the application will be able to process it, calculate the total score, display interventions under categories of stable, Urgent, Critical/emergency and will then send a notification to the physician on duty. This will solve delays in response to vital signs in an emergency health care clinical setting. We believe that MEWS App will address the current delays associated with recording, interpretation, grading of patients' severity of illness and displaying interventions. The Nurses will deliver timely care to patients and this will improve health care service delivery across healthcare centers in Uganda and even across Africa.

**Keywords:** *MEWS App, Vital signs, Clinicians*



## **Hillary Nahurira**

**Development and commercialization of herbal aftershave from lemon fruits, Aloe vera, essential oils and vegetable oils**

*1\* NAHURIRA H*

*\* Corresponding Author: nahurirahillary@gmail.com*

Currently, shaving has become the most common practice in men, for professional reasons and also psychosocial impact. It has been observed that the general trend towards plant based ingredients for use as aftershaves such as lemon fruits in beauty salons has greatly increased showing a shift from the synthetic ones. Thus the development of an herbal aftershave will have a profound impact

in cosmetic world as natural skincare instead of synthetic products available in the market. The herbal aftershave was formulated using lemon fruit juice and Aloe vera. It was then tested for PH, phytochemical constituents, microbiological contamination, color and viscosity changes. Fifty (50) volunteers who are salon operators were given the aftershave to assess its efficacy. Quality analysis shows that pH of 7.0, light green color and smell were maintained throughout the period of study. The viscosity was also consistent. No microorganism or molds were found in the aftershave. The phytochemical constituents of the aftershave were similar to that of the individual ingredients. All the selected users (volunteers) reported no side effects and complains. The results obtained from this study showed that the herbal aftershave is effective and can be used as an alternative for chemically based after shaves in the market.

**Keywords: Aftershave; lemon fruits; Aloe vera; phytochemicals**



## Brenda Katushabe

**The own your future campus initiative on sexual reproductive health**

1\* KATUSHABE B

\* Corresponding Author: [brendankatushabe@gmail.com](mailto:brendankatushabe@gmail.com)

New HIV/AIDS infections in Uganda are most common among young people aged between 18-26 years. This age group is basically in universities and other institutions of higher learning. Infections are happening despite a myriad of preventive services that are available for use. The problem is therefore no longer about availability but rather accessibility of services. Own Your Future Campus Initiative has an objective of creating awareness and promoting accessibility of sexual reproductive health rights and comprehensive information to students in institutions of higher learning to enable them make informed choices. We do this by linking students to service providers in real time. The initiative utilises technology and online platforms like WhatsApp, Discord, Slack, Facebook, Tiktok, Twitter and Zoom to create awareness on Sexual Reproductive Health in higher institutions, mobilising stakeholders and the youths through debate and public speech tournaments about sexual health rights and currently, an OYF software application is being developed, one that will enable the effective implementation of Sexual Reproductive Health policies and services by connecting students to service providers like Ministry Of Health, Reproductive Health Uganda, UNAIDS and Aids Information Centre and others in real time. Whereas the Uganda AIDS commission estimates that new HIV infections are mostly found among youths aged between 18-26, this problem is due to inaccessibility of sexual reproductive health services as opposed to unavailability. In essence the services are relatively available but not accessible especially to the youths yet they are sexually active. Therefore, we need to solve the problem of access and this is what Own Your Future campus initiative is doing by linking those who need the services to the service providers in real time while guaranteeing privacy of users. This is what our app is geared to do. **Keywords: Sexual Reproductive Health.; HIV/AIDS; Technology; Privacy; Accessibility**



## Steven Nshizirungu

**Girls Hub Congo Reusable sanitary pads**

1\* NSHIZIRUNGU S

\* Corresponding Author: [stevenos2020@gmail.com](mailto:stevenos2020@gmail.com)

Girls Hub Congo was created with the idea that says “overcoming sexual and reproductive issues and access to sanitary pads to vulnerable girls, is where gender equality must be achieved”. With the usage of the consensus mapping business method, below is the executive summary of our business plan based on the findings. Limited access to sexual and reproductive knowledge as well as the high cost of sanitary pads remain critical problems for displaced girls in Mugunga and Mweso refugee camps. 60% of girls marry before the age of 18. Access to sanitary pads remains a headache for displaced girls in their community. 83% of the respondents considered the high cost of sanitary pads and lack of knowledge about sexual and reproductive as the main challenge of early pregnancies and marriage according to OCHA,2022. Tackling challenges that vulnerable women and girls face in relation to access to affordable menstrual products. Girls Hub Congo shall provide sanitary pads made locally

which are washable and reusable that can last for a year as well as access to comprehensive sexual and reproductive education through the use of technology where there will be a software application that will easily teach young girls to track their ovulation period and menstrual management. Girls Hub Congo's business model has 3 essential unique selling 3 points. Firstly, the sanitary pads will be made locally and shall be able to last for a year which is different from the existing ones which are used only at once. Secondly, the cost of our pads is very lower compared to existing ones because it will be costing only 1000Congolesse Francs and respondents considered our price to be fair. Thirdly, we plan to not only provide sanitary pads but also sexual and reproductive education which will lead young girls to achieve undesirable pregnancies. Our reusable menstrual kits are cost-effective, wester-reducing, high quality, and offer complete protection for a minimum of a year. Thus, investing in Girls Hub Congo is to invest in a better future for young girls. **Keywords: Reusable pads; Girls**



## Hellen Birungi

**A study to determine rate of immune boosting and body detoxification in mice using a purely natural product**

1\* BIRUNGI H

\* Corresponding Author: [hbirungi99@gmail.com](mailto:hbirungi99@gmail.com)

My team aims to produce a purely natural product that will detoxify the body of substances consumed in cosmetics, processed foods, drugs, oils alcohol and cigarettes. It will boost the body defense system, maintain body weight and improve brain, heart and blood health. It contains Hibiscus, lemon, Centela and avocado seed powder. It is equipped to open the blood vessels and prevent clogging, high blood pressure, obesity, and other blood related illnesses. The product is aimed at clearing the blood vessels, removing free radicals improve blood quality and boost the body defense system. Centela is equipped to maintain brain health and proper memory. Lemon extract is equipped with anti-viral properties, vitamins, strengthening the immune system and preventing obesity. It is equipped to break down fats and oils and clear the blood vessels. Hibiscus is an anti-oxidant that removes free radicles, kills cancerous cells and prevents formation of tumors and outgrowing tissues. The product is in form of tea leaves in tea bags affordable to the low and middle class people. Objectives to produce a purely natural product that boosts the body defense system. To produce a product that detoxifies the body, maintains weight and improves brain health. we are to carryout preclinical studies which involve phytochemical screening, use of animal models and clinical studies. A community that has a strong immune system able to fight any invaders, opened blood vessels, free from high blood pressure, heart disease, tumors, forgetting syndrome and with normal body weight

**Keywords: Immune booster; detoxification**

## KEY POINTS & EMERGING ISSUES

The youth are keen to be more informed about their options relating to sexual health. OYF will share their work with delegates that want to know more.

# PARALLEL SESSIONS

## Parallel Session 4: Climate Change and Environment Innovations

Mr. Mabile Jothdit, EAC Youth Ambassador, South Sudan

Dr Anderson Kehbila, Programme Leader for Natural Resources and Ecosystems, SEI Africa



informed delegates of the work of Stockholm Environment Institute which is a non-profit research and policy organisation that aims to resolve environmental and development challenges. The institute carries out its work through research, policy engagement and capacity development. In Africa, there are three main programs of SEI - Energy and Climate Change, Sustainable Urbanisation and Natural Resources and Ecosystems. The institute recognises the importance of youth as change agents in governance and the impact they can have if assisted to act. He then shared with the delegates a roadmap towards strategic innovations and the key steps to follow when bringing an idea to market.



**Simone Philbert**

**Production of briquettes and fabrication of improved cooking stoves as strategy to convince community to shift from charcoal to briquette**

1 \* SIMONE P

\* Corresponding Author: [saimoniphilbet4@gmail.com](mailto:saimoniphilbet4@gmail.com)

This study is concerned with the designing and fabrication of improved cooking stoves for briquette utilization to be supplied in rural areas across Tanzania. A survey was done in Msangani, Chahua, and Kazimzumbwi villages in Tanzania, and it was observed that 97.3% of the 112 families surveyed utilized simple “three stone” fires for cooking. The overall pattern shows that the population in the three villages spent about 76.8% of their time indoors, and about 22,000 Tanzanians die annually for respiratory diseases associated with firewood smoke. In our study, we are developing, fabricating, and promoting various improved bioenergy technologies such as stoves and briquette production. The methods used in this study were household surveys, scientific measurement, and observation. Various stove tests were carried out that included water boiling tests and performance tests. From these tests, it was possible to determine the firepower, thermal efficiency, and fuel consumption of both cooking stoves. Results show the designed stove lies within class 1 biomass stoves with a cooking efficiency of 55.84%, specific fuel consumption of 45g/liters, and fire power of 4.5KW. High efficiency is attributed to good design for heat transfer, increased surface area for heat exchange, high efficiency of the combustion chamber and reduction of heat energy loss by the application of a ceramic fiber blanket. Also, we produce quality briquette from waste with a calorific value of 25Mj/kg, an ash content of 27%, and fixed carbon of not less than 44% which meets TBS standards for carbonized briquette. Generally, there is no food security without clean cooking; cooking is an integral part of the food system—most obviously impacting consumption and nutrition—but as a major driver of climate change. Our fabricated stove will be sold at Tsh35000/= per stove and also at Tsh1000/= per 1kg of briquette.

**Keywords: Briquette; Cooking stove**



## Neema Walter

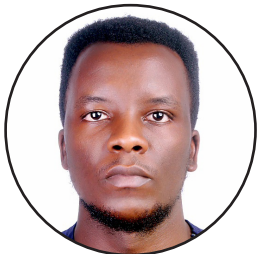
### Conversation of organic waste into electricity and clean cooking gas to combat climate change

1 \* NEEMA W

\* Corresponding Author: [neemawalter001@gmail.com](mailto:neemawalter001@gmail.com)

We cannot under-estimate the power methane and carbon dioxide holds to the drastic climate change. They each contribute to approximately 25% of global warming. Methane is produced by the decomposing wastes, 174 million tons per year in Africa; and Carbon dioxide is produced from the use of polluting fuels, such as charcoal, firewood, coal and kerosene, used by 82% of Africans. Nishati-Mix esteemed team perpetuate a greater ambition to cut those emissions. Our main objective is to reduce the users of polluting fuels in a period of five years by 50%, using organic wastes as a solution. We are in the quest to accomplish this by providing more reliable, affordable and environmentally friendly sources of energy which are electricity and gas, by biotechnologically utilizing organic wastes. With this project we will be able to reduce the rate of global warming and risks of heart diseases, stroke lung cancer, and pneumonia which approximately accounts for 500,000 pre-mature deaths and more than 26 million disability adjusted life-loss in Africa due to polluting fuels. We properly manage wastes to reduce methane emissions, disease outbreaks, water, air, soil, and land contamination, proliferation of pests and maintenance of aesthetic beauty. Nishati-Mix collect organic wastes and convert them into chemical energy by using bacteria. The chemical energy runs generators, for electricity production and provide clean cooking gas. To increase the efficiency of the energy produced we have developed waste capsules which are packed in cylinders of 30, 60 or 90 capsules. For the case of clean cooking gas 1 capsule provides 12Kwh energy output capable of cooking 4-6 hours and in electricity's case, 1 capsule provides 3Kwh meaning that, with 90 capsules one has a clean-energy source for three months. The energy source is health-friendly, environmentally-friendly, cheaper and not affected by seasonality.

**Keywords:** *Briquette; Cooking stove*



## Olivier Nihimbazwe

### Producing Chlorine Locally: Towards A Sustainable Water Treatment Service Delivery and Diarrhea Control in Rural Burundi

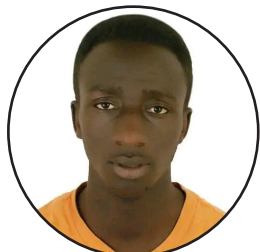
1,4, \*NIHIMBAZWE O, 2NDAYISHIMIYEA, 4IRADUKUNDAA L I., 4CISHAHAYOA P

\* Corresponding Author: [o.nihimbazwe@water4dev.org](mailto:o.nihimbazwe@water4dev.org)

Diarrhea remains a huge public health problem in Burundi where it ranks the third leading cause of mortality among children under 5 years after malaria and pneumonia, accounting for 15% of the overall child mortality. Burundi has the highest childhood diarrhea rate (22.84%) in East Africa. Rural communities are disproportionately affected whereby one in three (32.6%) rural under-five children suffer from diarrhea with cholera outbreaks still prevalent in the north-western part of the country. The main objective to ascertain the major causes of diarrheal diseases in rural Burundi in order to inform the development of an innovative social business to contribute to addressing this challenge.

A review of recent literature from demographic health surveys (DHS) and studies that documented waterborne diseases and their risk factors in Burundi. In addition, semi-structured interviews with key informants from relevant institutions were conducted to document existing initiatives and gaps to address diarrheal diseases. Lastly, a field test of the solution to the identified root causes of the issue was conducted. Existing evidence revealed varying predictors of child diarrhea depending on regions. Overall, contaminated water was the most reported cause of diarrhea in Burundi. The latest study by GIZ revealed that a quarter (25%) of water sources in the Imbo region are contaminated with bacteria, while water stored in households showed contamination in 75% of cases. This is as such while the recent DHS discovered that 96% of rural population do not treat drinking water prior to consumption. It should be noted that, unlike urban households that are supplied with treated piped water, most rural water sources (76%) are not treated, justifying the high prevalence of diarrheal diseases in rural communities. Indeed, a previous study in rural Burundi showed that treating water before consumption could reduce diarrhea by 61% among under-fives while the sole use of improved water sources had no

impact on reduced diarrhea rate. Key informants confirmed that past interventions have been focusing on providing water infrastructure with limited efforts on ensuring the quality of water supplied. The main challenge that hinders water treatment service provision is difficult access to chlorine products associated with importation costs as there are no local producers of chlorine products. Based on these findings, the local production of chlorine was identified as the key business focus of Water for Development, a youth-led startup social enterprise operating in rural Burundi. The use of electrochlorinators was chosen as the most cost-effective technology in producing chlorine in the rural context. Using a solar powered prototype, the business produced active Sodium Hypochlorite (NaClO) using just locally available common table salt and water through the process of electrolysis. The titration analysis of samples of this locally produced solution revealed that the concentration is  $6 \pm 0.5$  g/l. **Keywords: Diarrhea, chlorine, local innovation, water disinfection**



## **Fabrice Ishimwe**

**Production of coal and fertilizer using wastes from landfill will eradicate greenhouse effects there by making world green**

*\*ISHIMWE F*

*\* Corresponding Author: ishfabzele2@gmail.com*

World wide we are facing a problem of insufficient landfills for wastes we use in our daily life. Wastes are causing environment degradation, which leads to climate change, which is affecting our world. Currently there is more carbon emission due to use wood fire for cooking; there is also reduction of alkalinity in soil. After evaluating all those problems, we as green home project we come with the idea of production of coal and fertilizer from wastes and those fertilizers are compost, which are packable and free from chemicals. You may wonder how coal is formed. We take biodegradable wastes like banana peels, potato peels, food residue, we let them dry and burn them free from carbon for carbonizing and after being carbonized we crush them and mix with clay flour or cassava flour to help them to be compacted after compacting them we give our coal form regard to customer preference. While for fertilizer, we use process of production natural compost and later fertilizers are packed in plastic bags. We don't produce fertilizer and coal only but also portable cooking stove, this stove uses our coal or any other coal available and it has technology of using steam which help avoiding direct contact of fire with food and it is very efficient to human being as nutrient in food are not damaged. All in all, our project will help to reduce quantity of carbon emitted in atmosphere by 40%, help in development of sector of agriculture which is mostly done in our community and also to help people consume fresh food with all nutrients which is healthy to all population around the world, there for when my home is green and yours is green whole world would be green.

**Keywords: Fertilizers, Landfill**



## **Edmond Ngwalago**

**Converting organic wastes to two-in-one low cost organic pesticides & fertilizer using complex natural enzymatic process, microbes and nano technology**

*\* NGWALAGO E*

*\* Corresponding Author: engwalago@gmail.com*

Chemical exposure of pesticides and fertilizer causes 385 million cases of acute poisonings annually with approximately 200,000 deaths (UNEP, 2020). This means that 60% of the global population working on the farms are poisoned every year. (FAO, 2021). Not only causes death but also water and land pollution when enters water sources. Protect human being and other living organisms from chemical exposure of pesticides by manufacturing environment friendly organic pesticides and fertilizer Increase soil fertility, plant & soil capacity to retain water Increase climate sequestration through absorption of greenhouse gases. Increase crop production from 1.5 tons to 3 tons per hectare. Support 90% reduction of land and water pollution cases caused by chemical exposure of farm chemicals. Worked with Upendo and Organic farmers group as sample size testing our Two-in-one organic pesticides & fertilizer (Ngwala Organics). Surveyed and interviewed with smallholder farmers after testing Ngwala Organics. Converted organic wastes to Two-in-one organic pesticides and fertilizer using complex natural enzymatic process, microbes and Nano technology. The product

is environment friendly with more than 2 years' shelf life and very high concentration. It supports good health, soil fertility, increasing plant & soil capacity to retain water resulting in good health of human beings, high yields and climate sequestration.

**Keywords:** *Microbes; nanotechnology*



## **Ajok Lynn Jolly**

**An irrigation system powered by solar energy for farms in Omoro District for the young women aged 20 to 35 years of age**

*\* AJOK L J*

*\* Corresponding Author: [ajoklynnjolly@gmail.com](mailto:ajoklynnjolly@gmail.com)*

Irrigation is the artificial application of water to the soil through a system of pumps, channels, tubes, and sprinklers. The water supply is mainly applied in areas that have irregular or rainfall supply. Since the Ugandan economy is dominated by agriculture, with statistics from the financial year 2021/22 that accounted for 24.1% of GDP and 33% of export earnings. Acet town council, Odek subcounty in the district of Omoro located in the northern part of Uganda has fertile soils that is famed by thousands of hardworking young farmers that major in crops like; soya, sunflower, maize, cotton, to mention but a few. The weather in the area is not stable and at times, this leads to great losses, due to the drying up of crops in the garden, and reducing productivity. In a solar powered irrigation system, the power from solar panels pumps the water through the motor-powered system; the water pumped from wells and rivers is then stored in a water tank that is located either a few meters from the garden or in the middle of the garden. An inverter is also used to convert direct current output to indirect current. The water from the water tank is then channeled to the different parts of the garden through the water tubes to the water taps that have sprinklers that spread the water. The flow rate and time when the water is released is coordinated by monitor system. The irrigation system powered by solar energy will benefit many people. The project is affordable in terms of power, that is got from solar panels. The power supply in Omoro district is not very reliable, hence opting for a stable source of energy. Aside from cutting down the costs, the solar panels are ecofriendly and pollution free. Lastly, this project increases production and later increases revenue for the government; in addition, it also provides employment opportunities which improves on the standard of living.

**Keywords:** *Irrigation system; Solar panels; Inverter; Water pump; Monitor system; Solar energy*

## **KEY POINTS & EMERGING ISSUES**

The East Africa region has experienced problems caused by climate change, and youth innovators who care about the future need to engage in climate-sensitive projects.

The future is following the trend of green markets and youth innovators need to find solutions in the sector to create societal impact.

There is a negative cultural mindset amongst the youth that limits green progress.



# PARALLEL SESSIONS

## Parallel Session 5: ICT Mobile applications Innovations

**Ms. Bernadette Massawe, EAC Youth Ambassador, URT**

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**Bey Faith, Chief of Staff, Irembo**



shared that Irembo is a technology firm that aims to improve people's lives by simplifying access to government services online. It addresses accessibility gaps and facilitates over 100 government services such as passports, National IDs, court services and others. The company employs over 80 young people and over 4000 service providers. The company has made strides because of regulators in the country that have created policies that allow such services to function, connectivity to ICT infrastructure and internally, their "user obsession" that is continually focused on identifying user needs and gaps. The company aims to scale the service to other countries.



**Michael Ebong**  
**Smart ride technologies Ltd**

\* *EBONG M*

\* *Corresponding Author: [admin@smartrideug.com](mailto:admin@smartrideug.com)*

Smart Ride is an App-powered transportation service that was founded in 2019 with its headquarters in Gulu City, Northern Uganda. At its core, it is just a platform that connects regular people who have cars, motorcycle and tricycle and people who need a ride. But it does it on a massive scale using the internet and smartphone technology as a tool. By doing this we intend to create an experience that is totally new and is a much better solution in comparison with the solutions that were available previously. In real life, transport is one of the essential needs; it is a basic need therefore. Our major purpose of existence is providing essential or effective services to the residents of the big cities or their customers who highly demand their services. Smart Ride Technologies Ltd is typically the most profitable organization to invest in; due to high demand for modern and easy transportation in today's growing population. People move from one place to another trying to make ends meet. In today's modern life style, people need easily accessible means of transportation such as vehicles motorcycles, Trucks, Tricycle and even tractors. Transportation services are then highly demanded in Northern Uganda now than ever. Smart Ride Technologies Ltd Through the Smart ride mobile app, users can easily submit a trip request that is automatically sent to a Smart Ride driver nearby, alerting the driver to a user's location. The accepting Smart Ride driver will then come and pick a user up and drive the user to his /her requested destination. The Smart Ride app automatically figures out the navigational route for the driver, making it easy and quick for the driver to reach a destination. Smart Ride's app can be downloaded from Apple's App Store or Google's Play Store. The app enables a user to submit a trip request, shop, sell on the app, even rent a car. In a few clicks and swipes. Security for both the customer and driver or rider is our top priority. Thanks to our verification capabilities that verify users at registration before using our App.

**Keywords: Smart ride' vehicles motorcycles, Trucks, Tricycle**



## Elisha Eustadius

### IoT based smart energy meter LUKU-CHAP

\* ELISHA E

\* Corresponding Author: [ellykato9@gmail.com](mailto:ellykato9@gmail.com)

Power wastage, power theft and high electricity bills are challenges that contribute to energy crisis and thus affect the national economy by hindering production. LUKU-CHAP gives the promising solution by enabling energy users to access data concerning their real-time consumptions and hence being able to control consumptions by using their mobile phones or computers to eliminate unnoticed wasteful routines. Ensuring access to clean, reliable and affordable energy to all consumers by eliminating wasteful routines and inefficient appliances hence increasing efficiency in power distribution and consumption. LUKU-CHAP applies Internet of Things (IoT) technology to track real-time power consumptions, automate electricity bill payments and offer automated SMS and Email notifications to users on their power usage status through their mobile phones. The market for smart energy meters were tested and analyzed through interviews whereby large power users including industries, warehouses, hospitals, malls as well as the utility company in Tanzania (TANESCO) revealed highest demand for smart meters. 37.7% of households and 78.4% of total population in Tanzania have access to electricity. Smart energy meters eliminate unnoticed wasteful routines amongst energy consumers hence making power more reliable and affordable. Through automated SMS and Email notifications, users have been capable of detecting inefficient appliances, improving their power saving behavior and paying bills in the right time. LUKU-CHAP is thus estimated to serve the 78.4% of the total Tanzanian population and expand to other African countries by year 2025 hence facilitating the SDG 7, that is, affordable and clean energy throughout Africa. This will increase the efficiency in production processes and growth of African economy.

**Keywords:** *Power wastage; Internet of Things (IoT); Real-time tracking; Power consumption; Mobile phones; Reliable and affordable energy*



## Ochudang Thomas Amake

### A remote-controlled mortuary robot

\* AMAKE T O

The purpose of this Innovation is to design a remote-controlled mortuary robot to assist the health personnels in the mortuary and in the general hospital works cleaning of the mortuary and autopsy rooms, cleaning of the infectious dead bodies, disinfection of conterminous areas in the hospital, performing embalming in the mortuaries, food deliveries to wards with deadly diseases like TB, Ebola, Covid-19. Objective of this project is to reduce direct contact of the health Practioners and the deadly infectious areas and bodies in the hospital. This Project is implemented with the revolutionary technologies machine learning, artificial Intelligence and Internet of Things and embedded systems. We created a Technological Robotic system prototype basing on the tasks mortuary attendants perform and align it with revolutionary technologies which include machine learning, Artificial Intelligence and Internet of Things to aid mortuary attendants in executing their daily tasks in the hospitals while trying to avoid direct contact between the health persons with the infectious bodies. The research was carried out and tested, and the system was Being able to carry out cleaning, being able to move inside the mortuary, being able to do delivery to dangerous wards in the hospital, being able do disinfection in contaminated areas. The infection risk health personnel face while performing their tasks is attributed to luck of protective gear, poor ventilations of mortuaries, carelessness while using sharp tools used in the hospital. Therefore, a Remote controlled-mortuary robot is highly recommended for hospital work to assist the health personnel.

**Keywords:** *Infection risks, health personnel, protective gear, mortuary*



## Moses Mugerwa

**BULAMU ID: using data encryption technologies digitalize the health system of Uganda**

\* MUGERWA M

\* Corresponding Author: [Moses256mugerwa@gmail.com](mailto:Moses256mugerwa@gmail.com)

According to World Health Organization, 2.6 million deaths occur each year in low-and-middle-income countries like Uganda as a result of medical errors, such as patient misdiagnosis and misidentification due to a lack of vital data like patient blood groups and allergic history. A greater percentage of these deaths are avoidable because they are the result of preventable medical errors that occur as a result of a lack of a good medical record system, such as delivering a drug to which a patient is known to be allergic. BULAMU ID is an innovation developed at Lira University to solve this and many other problems in the health system of Uganda such as epidemic detection and control. We created a digital ecosystem based on data encryption technologies such as QR code encoding and biometric authentication to store and access health data for all Ugandans at any hospital or health facility in the country. This includes the use of a QR code embedded smart card, an Android/iOS mobile application for patient access, and a Windows/MacOS desktop application for health workers to access and edit data. BULAMU ID has the potential to aid in disease surveillance and detection, patient tracking, medication tracking, health promotion, among other aspects, and is now being evaluated at Lira University Teaching Hospital in Lira District.

**Keywords: Data encryption, disease surveillance, tracking, Health promotion**



## Steven Kakooza

**KAWU SMART CARD**

\* KAKOOZA S

\* Corresponding Author: [nzekekooza@gmail.com](mailto:nzekakooza@gmail.com)

Money transfer from one person to another has tremendously changed, most innovations however only cater for individuals with access to digital devices which leaves out most people especially school-going youths financially excluded since these don't have access to DFS because they are not allowed to have phones in school. According to AfterAccess, over 51% of Ugandans don't have phones and 71% of the 49% (those that have) have basic phones. Lira University with support from the Ministry of Science, Technology & Innovation under the Kawu Project led by Steven Kakooza with the aim of extending financial inclusion and literacy to students (Youth) in Africa conducted a research, designed, produced and distributed Kawu Smart Cards to enable youths especially students to have access to DFS easily, affordably & conveniently. Leveraging technology, we designed an easy-to-use, affordable, secure, reliable and Uganda-produced 'Visa/MasterCard' that does not require an ATM or special tools to operate and brings millions of youths in schools onto the transaction space - Kawu Smart Card. With this card, students can receive, save & access upkeep and also make cashless payments in school with no need for them to have any digital devices. With the Kawu App, parents can directly send and manage upkeep for their children in school, fostering the parent-student financial interaction and raising financially literate children. For the six months we've been operational, we've generated \$5,000 in revenue, powered 10K+ transactions for 1.5K+ students in 20+ schools with 20+ agents, and over 2.5K+ parents have used Kawu to send and manage upkeep for their children.

**Keywords: DFS; Financial Inclusion; Upkeep; Digital Devices; Access**



## Thomas Onen

### Machine real time voice translation from one language to another

\* ONEN T

\* Corresponding Author: [onthomas1@gmail.com](mailto:onthomas1@gmail.com)

Worldwide demand of translation services has dramatically accelerated in the last decades, as an effect of the market globalization and the growth of the Information and Communication Society. In today's information society, the main carrier of intercultural communication is language; therefore, translation between different languages becomes the key in the process of cultural communication. Currently Human translation provides a good quality of communication but it's challenged by time consuming, communication interferences, translators' interests, corruption, rareness of the translator, and wrong interpretation of some words. Google Translate (GT) is a multilingual neural machine translation service developed by Google to translate text, documents, and websites from one language into another but doesn't provide real time voice translation. The purpose of this research is to find out how to embed real time voice translation in a system where linguistic system utilized for both languages and the cultural understanding of the two languages should be considered. The Machine Language Translation (MLT) project leveraged the growing interest towards the integration of human and machine language translation by developing new research directions for machine translation technology, aiming at enhancing the productivity. MLT can be widely used by language learners and those who need help with translation. This majorly emphasizes on the quality of abstracts translated from the user 's first language to English, the target language, Machine Language Translation goal is to develop a set of tools for translating languages between multiple languages in real time with high quality. Prototypes covering a majority of the official languages will be built typically targeting up to ten languages but MLT will scale this up in terms of productivity and applicability.

**Keywords:** *translation services, language barriers, MLT, prototypes, and google translate abstract translation, Human translation*

# PARALLEL SESSIONS

## Parallel Session 6: Energy

**Moderator: Ms. Wairimu Manyara, EAC Youth Ambassador, Kenya**

### **Simon Peter Ssekitoleko, Ass. Commissioner, Ministry of Energy & Mineral Development, Uganda**



The energy sector in Uganda is still dominated by biomass fuel sources - wood and coal. Alternative sources of energy are needed. The country is committed to the use of cleaner energy. Innovation can have an impact on the energy sector and can address multiple societal issues such as food prices and financial security. The strong nexus between energy and other sectors like water, environment and climate change means that energy innovation can have a variety of benefits across the board. Uganda and other countries in the region are well endowed with a variety of renewable resources. There are also opportunities to convert waste products in the region to energy.



### **Emily Namwaya**

#### **Mini press for every house hold as a way of easing cooking and conserving the environment**

\* **NAMWAYA E**

\* *Corresponding Author: [namwayaemilly@gmail.com](mailto:namwayaemilly@gmail.com)*

Using the mini press to promote the usage of briquettes from both agro wastes and charcoal dust in every house hold in rural communities of Uganda hence reducing on the challenges associated with cooking fuels such as walking long distances in search for firewood which can lead to rape, snake bites and even delays in doing other chores which can lead to domestic violence in households with its associated evils. After carrying out an assessment, we found out that 80% of the households in rural areas in Uganda either use firewood or charcoal which greatly affects the environment and takes time to get these fuels. The trees are depleted which made us think of a way on how to overcome this. We train women and men to make mini presses using locally available materials like hollow section 50\*50 metal, the 16\*16 hollow section, 12\*1 and 4\*4 timber for sustainability purposes. We equip them with the skill of wood working and metal cutting and after that we provide the materials with instructions and they make their own. Once the mini press is made we carry out carbonization of agro wastes using a carbonization drum. We grind the carbonized agro wastes to form dust which is then mixed with a binder either cassava flour or clay soil because of their glue like nature. Mixing is done in such a way that it's not too soft. The mixture is placed in the mini press cap and hit using a piston and hammer to compress. The hard compressed briquette is taken out and placed in the sun for drying for a period of 2 - 4 days. The harder the briquette is compressed the better. The mini press helps one to achieve this. The briquette takes longer when using to cook compared to charcoal and firewood. Unlike the charcoal which becomes ash, clay briquettes don't easily become ash. The Mini press is easy to make thus making it more affordable for every house hold to acquire one and also reduce on the risks that come with using other cooking fuels in rural areas. You can both use it to produce briquettes for oneself or for sale thus promoting livelihoods. We hope that our project can be expanded for everyone in Uganda to use the mini press.

**Keywords: Binder; Carbonization; Briquettes; Agro wastes**



## Gordon Victor Akejo

### Production of Fuel Briquettes from Shea Nut Shells and Millet Stalk in Northern Alebtong District, Northern Uganda

\* AKEJO G V1ANYIII E.,2CHUI, P. K, 3ADONGO S., 4OBBO C J

1Gordon's Agricultural Organization-Uganda Limited P.O Box 83, Lira, Uganda

2Egerton University, Department of Naural Resource Management,

P.O Box 536-2115, Njoro, Nakuru, Kenya.

3Gulu University, Department of Food Science and post-Harvest Technology, P. O Box 166 Gulu, Uganda.

4Kyambogo University, Department of Biological Science, Box 1, Kampala, Uganda.

\* Corresponding Author: [akejogordonvictor@gmail.com](mailto:akejogordonvictor@gmail.com)

There is a need to provide affordable alternative sources of cooking fuel for the expanding population in rural and urban settings in Uganda. Using renewable vegetable materials, a simple study was designed to test biomass briquette firepower of shea nut waste and millet stalk for use in households. The proximate analysis of the raw materials and briquette biomass was pre-determined. Briefly, the raw materials were collected and sun-dried for four days. The dry matter was crushed using a local grinder and sieved to uniform particle size. The powdered materials were combined and thoroughly mixed. Shea nut waste, millet stalk powder, and cassava flour were put in a ratio of 3:2:1. A little water was added to hold particles together, forming a thick slurry. The slurry was scooped into a perforated cylindrical briquette mould with a piston at one end and pressed to squeeze out the water. The mould was inverted and the briquette extruded. The briquettes were air-dried on a cemented surface for three days. The dry combustible briquettes were put in a local stove lined with clay to test the firepower in comparison to a modern kerosene stove. A two-liter volume of water was put in two saucepans of the same make and size and the time taken to boil the water was recorded. The combustive ability of 150 grams of the briquettes in the clay stove compared to the combustive ability of kerosene in a metallic stove showed that the briquette could cause 2 liters of water to boil in nineteen minutes as compared to 22 minutes on the kerosene. This heating ability was 1: 4.2 times as strong as a standard British electric coil in a kettle, translating to 25% efficiency as compared to a standard electric kettle.

**Keywords: Alternative energy, briquettes, available vegetable materials, heating**



## Annitah Atuheirwe

### Production of cook stoves from Agricultural waste to reduce emissions and environmental degradation

\* ATUHEIRWE A

\* Corresponding Author: [atuheirweannitah123@gmail.com](mailto:atuheirweannitah123@gmail.com)

According to the World Health Organization, smoke and gases from cooking fires in the world's poorest countries contribute to nearly two million deaths a year and about 50,000 deaths in Uganda a year. It also increases greenhouse gas emission into the atmosphere. Magezi Energy is a unique business model, which enables people who live below the poverty line to buy, and use improved cook stoves and briquettes in their homes. We largely focus on affordability and environmental conservation. Magezi Energy is an integrated approach to combat all the problems by providing a low priced, almost Smoke free, clean, time saving and long lasting alternative source of energy. The solution is implemented by using an innovative business model that raises awareness among people, trains them and creates job opportunities for the lower income group, offers cash discounts and instalment payment on stove purchase. It has centered its focus on affordability, sustainability and engagement of rural people in the business model. The reasons why Magezi Energy Company was created are to: (1) Reduce indoor air pollution "IAP", which in turn will reduce the health risks caused by IAP and increase the life expectancy of the entire population. (2) Create job opportunities, decrease the unemployment rate, and generate an improved standard of living for the entire population. (3) Give the female population the opportunity of working at MEC and thus give growth to women empowerment; (4) Lessen overall carbon emission by using improved cook stoves, briquettes and creating a cleaner, healthier atmosphere. Therefore, Magezi Energy thought to reduce smoke and gases from cooking fires by producing briquettes from

agricultural wastes and sale them at low price to contribute to efficient household cooking solution.  
**Keywords: Agricultural wastes, Briquettes, Carbon emission, Energy**



## **Jeremiah Daniel Muhangi**

**Creating an affordable and clean energy source by eliminating organic city waste whilst adding value to biogas through biogas cylinders**

\* *MUHANGI J D*

\* *Corresponding Author: jdmuhangi@gmail.com*

According to Komakech et al., 2014, about 28,000Mt of waste is collected every month by Kampala City Council Authority (KCCA); this represents approximately 40% of the waste generated in the city. Over 90% of the waste generated in the city is organic. The remaining uncollected waste is normally dumped in unauthorized sites posing health and environmental hazards. Each year, nearly 3% of Uganda's forests are cut down for domestic fuel since over 90% of households in Uganda use firewood and charcoal. At the current rate of deforestation in Uganda, the country is likely to lose all its forests in the next 25 years according to the National Environmental Management Authority (NEMA). We seek to establish Bio-digesters with compressor units which will target to eliminate the 90% organic waste generated in the city. The gas generated will be compressed for packaging into refillable gas cylinders thus providing a clean and cheaper energy source for domestic application that will mitigate deforestation caused by high demand for charcoal and wood. The resultant digest matter will be dried and packaged for use as manure at farm and domestic levels. The gas generated will be treated to eliminate carbon dioxide, moisture and hydrogen sulphide thus achieving 96-98% purity of methane unlike traditional biogas production which produces biogas with these impurities. There are currently no biogas cylinders on the market thus making our idea innovative. Currently, bio-digesters are constructed at people's homes and this takes up space and are expensive to construct but with the biogas cylinders, there's no need to construct a digester thus saving space and money whilst accessing affordable biogas. We plan to earn money by selling gas cylinders directly to customers and packaging & selling the digested matter as an organic fertilizer. We plan to start with 10 tanks (10,000 litres capacity each) which will generate 10950Kg of methane per year which translates into 2190 gas cylinders. Initial purchase for each cylinder will be Shs. 85,000 with all accessories while refilling the cylinders will be at shs. 35,000 and this translates in an annual revenue of Shs. 646,050,000. The initial cost of investment will be Shs. 100,000,000. We will target to increase the bio-digesters from 10 in the initial year to 20 the following year. This will double the revenue and the profit margin will be higher.

**Keywords: Bio-digester, Biogas, organic waste, biogas cylinders**



## **Moses Ocen**

**Recycling agricultural waste (Rice husk, Groundnut husk and Maize comb) as a sustainable cooking fuel (Charcoal briquettes)**

\* *OCEN M*

\* *Corresponding Author: agricycleganda@gmail.com*

The major objective of this Position Paper is to provide targeted recommendations for consideration on Renewable Energy technology which major focus on Biomass production from agricultural waste such as the rice husk, groundnut husk and maize comb into briquettes to be presented to the EAC Regional Youth Innovation Forum in Kampala. The energy sector is one of the key sectors in Uganda's economy with various energy resources including; biomass, geothermal, biomass-based cogeneration, small hydro wind, and biogas. The sector is dominated by biomass that contributes nearly 90% of the total primary energy consumed. This includes firewood and charcoal supplying about 78.6% and 5.6% respectively (MEMD, 2012). The compilation of this innovation included review of relevant documents on renewable energy such as the MEMD, 2002; MEMD 2007; NPA, 2007 & 2015. A gap analysis tool was used to review these policies and it involved comparison of the desired situation with the current situation with clear analysis of the underlying gaps/ limitations towards achievement of the desired situation. The review process further engaged key stakeholders from CSOs and networks in the Renewable Energy Sub-Sector who provided views and input during the validation meeting at National

level. Limited information on utilization of RETs renewable energy technologies/alternatives to make by population. Weak Institutional framework to support effective extension support and guidance for sustainable utilization of renewable energy resources among beneficiaries at household and community levels. Legal framework for renewable energy i.e. current policy and legislation may not effectively address the emerging issues in the subsector. Government of Uganda has made domestic and international commitments to increase access to modern energy services to all Ugandans. However, government efforts have largely focused on increasing energy access by increasing supply through investing in hydro-electricity and grid extensions.

**Keywords: Renewable Energy Technology, Innovation, Policy and Legislation, Biomass Production and Energy Resources**

## KEY POINTS & EMERGING ISSUES

Rural communities need to be engaged in the fight against climate change and the implementation of cleaner energy strategies.



# CONFERENCE RESOLUTIONS

The EAYIF commits itself to long-term change, engagement and appropriately addressing challenges faced by youth innovators in the EAC. To this end, each forum will conclude with resolutions that will guide the objective and activities of the forum annually as well as in between conferences. EASTECO and its partners will share in the implementation of these resolutions together with affected stakeholders. The resolutions are generally intended to provide long-standing guidance over periods of many years.

Deliberations concluded seven conference resolutions were presented to the delegates for referral. Three critical areas of development were identified as being:

- Ease of doing business across the region
- Education
- Youth Leadership

All valid resolutions of the 1st East African Youth Innovation Forum are available below:

1. That wider implementation of “Free for Youth ” initiatives across the region is prioritized. Lessons must be drawn from Rwanda’s current incentive system for youth startups
2. Establishment of a ”stamp of approval” or mark and accompanying processes. This will identify products made in the EAC of high quality that consumers in the region and the world can confidently purchase
3. That a policy framework in the region to support ICT infrastructure capacity is formulated with a particular focus on connectivity, affordability, and regulation
4. The implementation of already existing trade agreements in the region that foster cross-border trade to provide youth innovators access to an already present consumer market in the region
5. That Smarts Hubs whether virtual or physical be created across the region that will ensure:
  - the provision of eLearning facilities in both urban and rural areas with online resources to upskill the youth;
  - the sharing of critical information related to STI and the management of startups;
  - a marked increase in educational programmes that focus on STI; and the coordination of initiatives between academia, industry and other business development service (BDS) organizations to drive impactful interventions for innovative youth businesses.
6. That the education system in the region is completely restructured to
7. That a Youth Steering Committee is established to participate in the implementation of these resolutions and other initiatives. The Steering Committee shall have the following abilities amongst others:
  - contribution to youth development strategy across the region; and
  - the independence to draft its own guiding policies, to be agreed upon with the relevant authorities, that define its role and responsibilities.

# DAY THREE

Delegates converged at Kololo Independence Grounds for the third and final day of the EAYIF, this coincided with the final day of Uganda's National Science Week. Youth were invited to engage with national scientific creations on display and take the opportunity to share their own inventions with Uganda's scientific community. The forum concluded its program at the national platform and in recognition of the outstanding innovations unearthed by EASTECO across the region. The inaugural Youth Innovator Awards were handed over by H.E. Vice President of Uganda, Ms Jessica Alupo during the ceremony.

# Youth Innovation Awards



Moderators: Fortunate Muyambi, Deputy Executive Secretary, EASTECO  
Brenda Nakazibwe, Ministry of Science, Technology & Innovation, Uganda

The East African Youth Innovators were selected from Burundi, Uganda, Kenya, Tanzania, Rwanda, and South Sudan. The National Steering Committee chaired by Ministries responsible for Science and Technology in each partner state then appointed a national panel of experts to evaluate the best innovators in their respective countries.

The selection was based and rated on the following criteria:

1. Originality: The uniqueness of the product and its superiority in comparison with similar or alternative products in the market. This includes incremental and radical innovations.
2. Marketability: The extent to which the innovation sufficiently addresses the problem it seeks to solve at a cost or model that is accessible to the target market and can generate profits or is self-sustainable
3. Scalability: The extent to which the solution can be easily applied to other similar markets beyond the applicant's immediate or local environment
4. Social impact: The ability of the innovation to create or effect positive and desirable benefits beyond profit within the target community and other stakeholders
5. Scientific/technical aspects: For tangible technical/scientific products; the extent to which the technical/scientific specifications of the innovation are grounded on established science and sufficiently address anticipated product risks.

After an extensive months-long search and adjudication process the top innovators were each awarded a 5000 USD prize each. The forum intends to provide these top achievers with additional support going forward to enable them to take their innovations even further.

Honoured for their innovations at the first edition of the East Africa Youth Innovation Forum for each country were:

# Burundi - Eraste Nduwayo



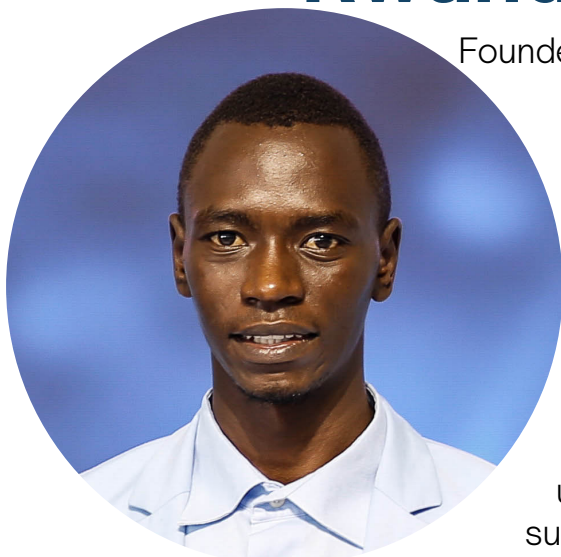
With a keen interest in the Internet of Things, the 25-year-old IT professional has designed an innovation that combines smart lighting, energy saving, and comfort. This has entailed the development of a prototype house made with electronic components that are able to simulate a house with all the desired features. At present, such solutions must be imported from abroad, something that Smart Life Company and Nduwayo hope to change. Electronic components will be used to manufacture smart devices locally to suit the customised desires of customers.

# Tanzania - Elisha Mujuni Kato

Co-Founder of LUKU-CHAP Company, the firm has applied the Internet of Things technology to come up with smart energy metres that track real-time power consumption, with automated electricity bill payments as well as SMS and email notifications to users on their power usage status through their mobile phones. LUKU-CHAP seeks to serve 78.4 per cent of the Tanzanian population with access to electricity and expand to other African countries by 2025. The innovation by the electrical engineering student at the University of Dar es Salaam supports the United Nations Sustainable Development Goal Number 7 “Ensuring access to affordable, reliable, sustainable and modern energy for all” by helping to eliminate unnoticed wasteful habits among energy consumers.

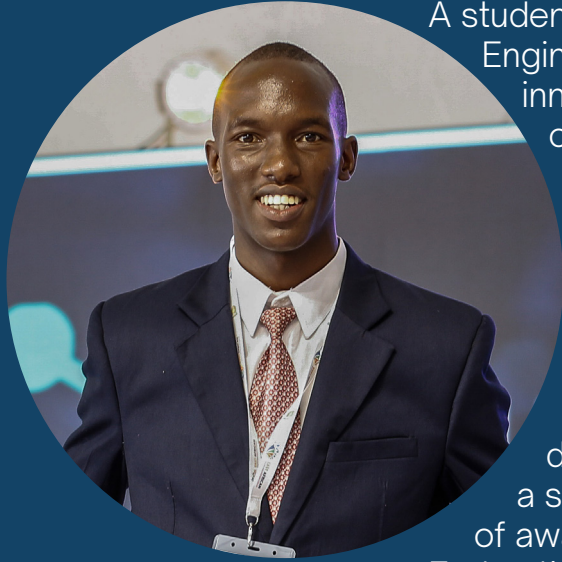


# Rwanda - Enock Abayinsenga



Founder of the Beyi Group, which makes rice-planting machines. With his background in general mechanical engineering, Abayinsenga’s invention is a machine that can be used to plant rice on 1.5 hectares of land in 10 hours. With a manufacturing cost of \$2,000, the machine retails at \$3,000. Planting services can also be hired at a cost of \$70 per hectare, or for a rental fee of \$50 per day. The machine is configured to use either electrical or solar energy, which makes it environmentally friendly. The innovation reduces the time taken in planting and the workers required by up to 80 per cent. It can easily be used by pregnant women and the elderly, two groups that suffer the most from harmful ergonomics in manual planting.

# Kenya - Joseph Nguthiru



A student in the Department of Civil and Environmental Engineering at Egerton University. Nguthiru, 24, is an innovator who works on sustainable solutions to climate change. His current project is a startup named HyaPak, where he and his team are working on creating biodegradable alternatives to single-use plastic products from water hyacinths — such as wrappers and consumables like straws, tubers, and plastic plates. These biodegrade within three to six months. HyaPak was developed as a school project after Nguthiru and his classmates got stuck in Lake Naivasha due to the water hyacinth surrounding their boat during a school trip. For this innovation, Nguthiru has won a string of awards internationally from IGAD, UNESCO, and the World Federation of Engineering Organizations (WFEO), among others.

# Uganda - Steven Kakooza

His innovation, the Kawu card, enables student cardholders to receive, withdraw, or spend money without the need to have a mobile phone, tablet or other gadgets. A parent only needs to download the Kawu app for parents onto their own mobile gadget, and then use it to load funds onto their child's Kawu card. The parent can track the child's spending on the app, while the child can go to a Kawu agent and check the balance loaded into their cards as well as withdraw the cash he or she needs.



UGANDA  
Paix

# South Sudan - Rachel Hakim



Her innovation, GoGo Play, is a digital entertainment platform aimed at growing the entertainment industry in South Sudan through the promotion, exposure, and marketing of high-quality content. Ms Hakim, 25, is the CEO of the Juba-based company and the only female winner of a Presidential Award in the East African Community. GoGo Play is the first monetized platform for content creators in South Sudan. The firm has partnered with m-GURUSH, South Sudan's pioneer mobile money platform, to provide a payment gateway using South Sudanese pounds and US dollars.



**EAST AFRICAN**  
YOUTH INNOVATION FORUM

# 1<sup>st</sup> EAST AFRICAN YOUTH INNOVATION FORUM PROGRAMME

8<sup>th</sup> - 10<sup>th</sup> November 2022

**THEME: *Unlocking EAC Youth Development potential through Innovations***

The EAC Regional Youth Innovation Forum is being organized by EASTECO with support and in collaboration with stakeholders of STI in the region and globally, including GIZ, Ministries responsible for STI, National Councils/Commissions of Science and Technology.

The Forum aims to provide a platform for the youth in Science, Technology and Innovation in the East African Community and beyond to share their innovation experiences in generating scientific and technologically innovative solutions to social needs and market demand.

## Day One: Tuesday, November 8th 2022

09:00 – 10:30 EAT

### Opening Session

Uganda National Anthem EAC Anthem

Entertainment – Traditional Performance

**Jarc Tusiime** - Regional Coordinator, East African Youth Network

**Wairimu Manyara** - Regional Coordinator, EAC Youth Ambassadors Platform & EAC Youth Ambassador, Kenya

**Simon Hochstein** - Programm Director, GIZ EAC Cluster

**Dr. Sylvance Okoth** - Executive Secretary, EASTECO

**Hon Dr. Peter Mathuki** - Secretary General, East African Community

**Hon. Andrea Aguer Ariik Malueth** - Undersecretary, Ministry of East African Community Affairs, South Sudan

**Hon. Minister of National Education & Scientific Research, Burundi, represented by Severin Mbarubukeye** -

Permanent Secretary, Ministry of EAC Affairs Youth, Sports & Culture

**Amb. Joseph Rutabana**, representing the Minister of Education, Science and Technology - Rwanda

**Hon. Dr. Aziz Ponary Mlima**, representing the Minister of Education, Science and Technology - United Republic of Tanzania

### Official Opening by Guest of Honour: **Hon. Rebecca Kadaga**

Second Deputy Prime Minister/Minister of East African Community Affairs, Uganda

**Keynote Speaker - Hon. Dr. Monica Musenero** - Minister of Science, Technology and Innovation, Uganda

### Plenary Discussion

**Moderator: Fortunate Muyambi** - Deputy Executive Secretary, EASTECO

10:30 - 11:00 EAT

Break, Exhibition and Poster session

11:00 – 12:30 EAT

### Plenary Session 1: Panel Discussion

Theme: Unlock EAC Youth Development potential through Innovations

*The economy of the East African Community (EAC) is characterized by low productivity and low competitiveness, leading to high unemployment, especially among youth. Innovation and the application of information and communication technologies (ICT) by businesses are drivers of socio-economic development and international competitiveness. With the COVID-19 pandemic, many businesses have been forced to adopt digital innovations, which played a significant role in their ability to survive throughout the disruption. To unlock the potential of ICT for the economy, the availability of digital skills and skilled workers with appropriate qualifications and innovation capacity is crucial.*

**Keynote Speaker: Patrick Mugisha** - Managing Partner, Innovent Labs Africa

**Panelists: Ms. Lys Esther Karikumutima** - EAC Youth Ambassador, Republic of Burundi

**Ms. Wairimu Manyara** - EAC Youth Ambassador, Republic of Kenya

**Ms. Sarah Mutagoma** - EAC Youth Ambassador, Republic of Rwanda

**Mr. Mabile Jöthdit** - EAC Youth Ambassador, Republic of South Sudan

**Ms. Bernadette Massawe** - EAC Youth Ambassador, United Republic of Tanzania

**Mr. Edgar Mutugisha** - EAC Youth Ambassador, Republic of Uganda

#### Discussion

Moderator: **Brenda Nakazibwe**

Rapporteur: **Bruce Sakindi**

12:30 – 13:30 EAT

### Plenary Session 2: Panel Discussion

Theme: The Role of Innovation ecosystem and Technopreneurship actors in support and development of Youth Innovators in the EAC

*Entrepreneurship plays a vital role in the East African region in line with the priorities outlined in the various economic blueprints the governments across the region are relying on. The EAC continues to integrate entrepreneurship into its transformation and economic development efforts by deploying necessary measures to support fledgling innovators and entrepreneurs as well as eliminate barriers that unnecessarily constrain them to stifle innovations. Innovation increasingly requires combining different competencies and resources and therefore, regional exchange in the EAC is crucial to nurture and promote an innovation ecosystem and it creates the opportunity to join up efforts amongst the innovation ecosystem actors to support the scale up local and national digital innovations.*

**Keynote Speaker: Dr Salome Guchu** - Principal Officer Research, Innovation and Outreach, Inter-University Council for East Africa (IUCEA)

**Tong Atak** - Head of Solutions Mapping, UNDP Accelerator Labs, South Sudan

**Laura Althaus** - Head of Programs, StartHub Africa

**Steven Kakooza** - CEO and Founder of Kawu

**Prof. Tatien Masharabu** - Permanent Executive Secretary, CNSTI, Republic of Burundi

**Prof. Kisangiri Michael** - Associate Professor and Centre Leader, Centre of Excellence for ICT in East Africa (CENIT@EA)

**Libere Gatare** - CEO & Founder, ACLIS

#### Discussion

Moderator: **Elisha Kenny** - Innovation Consultant, StartHub Africa

Rapporteur: **Evelyn Elliseus Rutazaha**, Advisor German Development Cooperation (GIZ)

13:30 - 14:30 EAT

Lunch Break, Exhibition and Poster session

14:30 - 16:00 EAT

### Plenary Session 3: Panel Discussion

Theme: National Innovation Ecosystems and Intellectual Property applications

*The main benefit claimed for strong intellectual property protection is that by allowing innovators to appropriate a share of the benefits of their creative activities, R&D is encouraged, which leads to innovation and higher long-run growth. The impact of intellectual property protection on domestic innovation is likely to vary with a country's level of development and its factor endowments. More generally, we may expect intellectual property to impact on domestic innovation differently in countries with significant innovative capacity as opposed to those with few resources available for domestic innovation. The evidence suggests that stronger IP protection can encourage domestic innovation in countries that have significant domestic capacity for innovation, but that it has little impact on innovation in countries with a small innovative capacity.*

**Keynote Speaker: Ms. Mercy K. Kainobwiso** - Director General, Uganda Registration Service Bureau

**Presenters: Dr. Martin Ongol** - Ag. Executive Secretary, UNCST- Republic of Uganda

**Dr. Amos Nungu** - Director General, COSTECH, United Republic of Tanzania

**Prof. Walter Oyawa** - Director General, NACOSTI, Republic of Kenya

**Dr. Eugene Mutimura** - Executive Secretary, NCST, Republic of Rwanda

**Prof. Tatien Masharabu** - Permanent Executive Secretary, CNSTI, Republic of Burundi

**Dr Cecilia Apaya** - Director of Science, Technology and Innovation, MoHEST, Republic of South Sudan

#### Discussion

Moderator: **Prof. Joseph Obua**

Rapporteur: **Princess Inshuti**

16:00 – 17:30 EAT

### Plenary Session 4: Panel Discussion

Digital Transformation for Youth Employment

*The digital transformation can play a key role in youth employment in East Africa. Only 20% of the region's youth (aged 15-29) have full-time waged jobs, while most are in informal and agricultural work. Digital start-up companies in East Africa attract USD 1.2 billion a year in venture funds and create direct jobs in the digital economy. They also boost productivity growth, job creation and new business models in sectors such as financial technology (fintech), education, healthcare, consumer services and agriculture.*

**Keynote Speaker: Hagimar von Ditfurth** - Digital Ambassador, GIZ Uganda

**Panelists: Kelly Cynthia Kaze** – East African Youth Network Coordinator, Republic of Burundi

**Sam Mbiu Gichane** - East African Youth Network Coordinator, Republic of Kenya

**Bruce Sakindi** - East African Youth Network Coordinator, Republic of Rwanda

**Augustino Deng Alier** - East African Youth Network Coordinator, Republic of South Sudan

**Paul Rukundo** - East African Youth Network Coordinator, Republic of Uganda

**Violet Ayoub** - East African Youth Network Coordinator, United Republic of Tanzania

#### Discussion

Moderator: **Wairimu Manyara**

Rapporteur: **Olive Katoke**

Cocktail & Traditional Entertainment

End of Day One



## Day Two: Wednesday, November 9th 2022

09:00 - 10:30 EAT

### Plenary Session 5

Theme: Innovation Ecosystem and Technopreneurship Development for Youth

*Entrepreneurship plays a vital role in the East African region in line with the priorities outlined in the various economic blueprints the governments across the region are relying on. The EAC continues to integrate entrepreneurship into its transformation and economic development efforts by deploying necessary measures to support fledgling innovators and entrepreneurs as well as eliminate barriers that unnecessarily constrain them to stifle innovations.*

**Keynote Speaker: Yoslan Nur** - Programme Specialist, UNESCO

**Presenter: Ms. Mercy K. Kainobwiso** - Director General, Uganda Registration Service Bureau

**Panelists: Nicholas Mbonimpa** - Research and Education Network for Uganda

**Matthias Möbius** - StartHub Africa

**Suraj Shah** - Lead, Government and Strategic Partnerships, Mastercard Foundation

**Dr. Malcolm Parry** - Director of Surrey Research Park, UK

**Prof. Mohan Avvari** - Deputy Head of School of Business, Monash University

### Discussion

Moderator: **Brenda Nakazibwe** - MoSTI | Rapporteur: **Collins Tusiime** - UNCST

10:30 - 11:00 EAT

Break, Exhibition and Poster session

11:00 – 13:00 EAT

### Innovations Parallel Session

#### Parallel session 1: Agriculture Innovations - Crops

**Keynote Address: Prof. Tatién Masharabu** -

Permanent Executive Secretary, CNSTI, Republic of Burundi

**Speaker 1: Edwin Arunga** - Design of Integrated locally led aquaculture innovations towards achieving food security, social change and climate resilience

**Speaker 2: Nkingiyurugo Honore** - Electronic irrigation system with solar energy

**Speaker 3: Lynet Mutesi** - Production of BioMix®; a non-cereal grain feed resource as a substitute for maize bran for smallholder poultry production

**Speaker 4: Mutumba Livingston** - Production of flour based on Tenebrio molitor worms: a valuable source of nutritional value, able to feed the whole planet

**Speaker 5: David Kazuguri** - An Innovative Approach for Commercial production of semi-refined and refined carrageenan from red seaweed

**Speaker 6: Xavier Imanyarakoze** - Implementation of bird repelling technology in Rwandan rice farms.

**Speaker 7: Komfort Magnus Shayo** - Manufacturing of small scale dryers for fruits and vegetables

Moderator: **Mr. Gak Malek** | Rapporteur: **Mr. Edgar Mutugisha**, EAC Youth Ambassador, Uganda

#### Parallel session 2: Agriculture Innovations - Livestock

**Keynote Address: Alex Kyabarongo** - Field Scientist

Bioeconomy Initiatives for Youth Development

**Speaker 1: Aimable Rubagumya** - Smart Poultry Farming “The Best Way To Treat Hens”

**Speaker 2: Patrick Isirabahenda** - Design and development of smart egg incubator

**Speaker 3: Magoprotein Feeds Ltd** - Use of mobile App for increased maggot production

**Speaker 4: Aijuka Damascus** - Integrated Aquaponic and Livestock farming for improved food security, incomes

**Speaker 5: Sandra Ankunda** - Organic Floral Honey

Moderator: **Ms. Lys Esther Karikumtima**, EAC Youth Ambassador, Burundi

Rapporteur: **Ms. Mutagoma Sarah** EAC Youth Ambassador – Rwanda

**Parallel session 3:  
Health Innovations**

**Keynote Address: Dr. Stanley Sonoiya,  
Health Expert**

**Speaker 1: Frank Mugisha** - Creating Affordable and Accessible New Innovative Solutions for Regular Health Checkup and Medication for All regardless of One's Status Tectreat

**Speaker 2: Raymond Tumwesigye** - Modified Early Warning Score Mobile based application (MEWS APP) and its ability to solve delays in response to vital signs

**Speaker 3: Hillary Nahurira** - Development and commercialization of herbal aftershave from lemon fruits, Aloe vera, essential oils and vegetable oils.

**Speaker 4: Brendan Katushabe** - The own your future campus initiative on sexual reproductive health

**Speaker 5: Steven Nshizirungu** - Girls Hub Congo Reuseable sanitary pads

**Speaker 6: Hellen Birungi** - A study to determine rate of immune boosting and body detoxification in mice using a purely natural product abstract

**Moderator: Sam Mbiu Gichane, EAYN  
Coordinator, Kenya**

**Rapporteur: Kelly Cynthia Kaze – EAYN  
Coordinator - Burundi**

**Parallel session 4:  
Climate Change and Environment Innovations**

**Keynote Address: Dr. Anderson Kehbila,  
Programme Leader for Natural Resources and  
Ecosystems, SEI Africa**

**Speaker 1: Simone Philbert** - Production of briquettes and fabrication of improved cooking stoves as strategy to convince the community to shift from charcoal to briquette

**Speaker 2: Neema Walter** - Conversion of organic waste into electricity and clean cooking gas to combat climate change

**Speaker 3: Olivier Nihimbazwe** - Producing Chlorine Locally: Towards A Sustainable Water Treatment Service Delivery and Diarrhoea Control in Rural Burundi

**Speaker 4: Ishimwe Fabrice** - Production of coal and fertilizer using wastes from landfill will eradicate greenhouse effects there by making world green

**Speaker 5: Edmond Ngwalago** - Converting organic wastes to two-in-one low cost organic pesticides & fertilizer using complex natural enzymatic process, microbes and nano technology

**Speaker 6: Ajok Lynn Jolly** - An irrigation system powered by solar energy for farms in Omoro district for the young women aged 20 to 35 years of age

**Moderator: Mr. Mabile Jothdit, EAC Youth  
Ambassador, South Sudan**

**Rapporteur: Bruce Sakindi- EAYN Coordinator -  
Rwanda**

**Parallel session 5:  
ICT Mobile applications Innovations**

**Keynote Address: Bey Faith, Chief of Staff, Irembo** - How Irembo digital products have delivered world-class online services and payments

**Speaker 1: Michael Ebong** - Smart Ride Technologies Ltd

**Speaker 2: Elisha Eustadius** - Luku - Chap

**Speaker 3: Ochudang Thomas Amake** - A remote-controlled mortuary robot

**Speaker 4: Moses Mugerwa** - Bulamu id: using data encryption technologies digitalize the health system of Uganda

**Speaker 5: Steven Kakooza** - Kawu smart card

**Speaker 6: Thomas Onen** - Machine real time voice translation from one language to another

**Moderator: Ms. Bernadette Massawe, EAC Youth Ambassador, URT**

**Rapporteur: Sam Walusimbi, Systems Administrator, MEACA Uganda**

**Parallel session 6:  
Energy Innovations**

**Keynote Address: John Tumuhimbise  
Ag. Assistant Commissioner BioEnergy**

**Speaker 1: Emily Namwaya** - Mini press for every house hold as a way of easing cooking and conserving the environment

**Speaker 2: G. V Akejo** - Production of Fuel Briquettes from Shea Nut Shells and Millet Stalk in Northern Alebtong District, Northern Uganda

**Speaker 3: Annitah Atuheirwe** - Production of cook stoves from Agricultural waste to reduce emissions and environmental degradation

**Speaker 4: Jeremiah Daniel Muhangi** - Creating an affordable and clean energy source by eliminating organic city waste whilst adding value to biogas through biogas cylinders

**Speaker 5: Moses Ocen** - Recycling agricultural waste (Rice husk, Groundnut husk and Maize comb) as a sustainable cooking fuel (Charcoal briquettes)

**Speaker 6: Isaac Byarugaba** - Synthesis of biodegradable plastic bags using wasted cassava

**Moderator: Ms. Wairimu Manyara, EAC Youth Ambassador, Kenya**

**Rapporteur: Paul Rukundo** - Coordinator, East African Youth Network, Uganda

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