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# TECHNOPOLICY AFRICA

The official newsletter of the African Technology Policy Studies Network (ATPS)

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## ATPS retains top Science & Technology Policy Think Tank

clinches 1st position in  
Africa and 10th globally



[www.atpsnet.org](http://www.atpsnet.org)

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### ATPS Vision:

To use Science, Technology and Innovation (STI) as a means for achieving sustainable development in Africa.

### ATPS Mission:

To improve the quality of science, technology and innovation (STI) systems research, policy and practice by strengthening capacity for STI knowledge generation, dissemination, and use for sustainable development in Africa.

### Overall Objective:

To build Africa's capabilities in science, technology and innovation for sustainable development.

### ATPS Motto:

Building Africa's capabilities in science, technology and innovation policy research, policymaking and policy implementation for sustainable development.

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## Chairman's message

It brings me pleasure to welcome you to the New Year 2019, which happens to mark 25 years since the establishment of the ATPS secretariat in Nairobi, Kenya. As we begin the year, we pick a new momentum recognizing that the advent of ATPS' Silver Jubilee anniversary is but an indication of not just how far we have come, but also how far we are going in our core business of influencing science, technology and innovation development in and across African countries.

As we enter the second year in the implementation of our Phase VIII Strategic Plan (2017-2022), ATPS continues to strive to build upon the numerous gains and achievements recorded during the previous years. The Plan identifies four thematic and five programmatic areas for our work during the period. The thematic areas include: Agriculture, food and nutrition; Energy; Climate change and environment; and Health Innovations. On the other hand, the Programmatic areas are comprised of STI policy research, policymaking and advocacy; Training, sensitization and capacity building; Youth and gender empowerment; Knowledge brokerage, management and commercialization; and Intra-Africa and global collaboration and partnerships.

I wish to commend ATPS Network for once more proving itself as the premier STI institution in Africa. This is in reference to the 2018 Think Tanks and Civil Societies Program (TTCSP) Report released in February 2019. The report shows that the African Technology Policy Studies Network (ATPS) has retained its position as the 1st Top Science and Technology Policy Think Tank in Africa (10th globally



**Prof. Crispus Kiamba**  
**Chair, ATPS Board of Directors**

ATPS ranked tops in 16 other categories assessed in the report making it the organization in Africa that received the highest number of ranking in different categories.

In November last year, ATPS emerged a winner in the Tekeleza Prize Award that saw us take home a Runners' up cash prize of USD 35,000. The award was in recognition of ATPS' efforts in the promotion and out-scaling of the LandPKS mobile app technology in Kenya under its project tagged "Improving Agricultural Productivity and Climate Change Resilience Using the LandPKS/LandInfo Mobile App Technology".

ATPS has now received 2 awards on the out-scaling of this technology in Kenya from the Climate Information Prize funded by the UKAid: WAZO Prize in 2016 and TEKELEZA Prize in 2018.

The LandPKS/LandInfo, a product of collaboration between ATPS, United States Department for Agriculture,

Agriculture Research Service (USDA-ARS) and other global partners, provides knowledge and information on soil and climate through a smart phone.

This then enables farmers to make informed decisions on their farm enterprise including production, processing, marketing and utilization among others.

We continue to call on development partners, donors, and like-minded institutions to support and fund ATPS' work on the continent considering the great impact we have made across Africa at the local, national, regional and continental levels.

We are very grateful to the many donors who have supported us thus far since the launching of the current ATPS Phase VIII Strategic Plan in 2018. Notable among them are: the International Development Research Centre (IDRC), Canada; the British Department for International Development (DFID); the National Research Foundation (NRF), South Africa; African Development Bank (AfDB); BioInnovate Africa Program; African Forum for Agricultural Advisory Service (AFAAS); Ford Foundation; and the National Research Fund, Kenya among others.

We continue to pledge and demonstrate effectiveness, efficiency and value for every money received to achieve overall sustainable development in Africa through science, technology and innovation research, policy and practice.

## Executive Director's message

I wish to welcome you to the New Year 2019 and with it the first newsletter in the year in ATPS' 25 years of promoting the generation, dissemination, use and mastery of science, technology and innovation for Africa's development, environmental sustainability and global inclusion.

We are proud to say that we have successfully retained the 1st position as the 1st Top Science and Technology Policy Think Tank in Africa (10th globally) in the category dedicated to the leading science and technology institutions within the global community according to the Think Tanks and Civil Societies Program (TTCSP) Report 2019. The Report further showed that ATPS ranked tops in 16 other categories assessed, making it the highest-ranked organization in Africa in the categories assessed. ATPS attained this notable feat from among a total of 8,162 Think Tanks that were catalogued and ranked in 2018 by expert panels comprising of members from diverse backgrounds and disciplines.

In 2019, the ATPS Network will be engaged in series of activities tailored towards the fulfillment of its mandate. We commit to the continued implementation of existing key programs and projects including:

1. Building partnerships and networks among science granting councils and other science system actors in sub-Saharan Africa. The project aims to achieve an increasingly coordinated and networked Councils/Commissions and other science system actors. More details about this project are available online at: <https://atpsnet.org/projects/building-partnerships/>
2. Bridging Climate Information Gaps to Strengthen Capacities for Climate Informed Decision-making. The project aims to strengthen the

capacities of African countries to collect, understand and deploy appropriate climate information and best practices to support decision-making and support development planning, reduce the vulnerability of the selected countries and foster a food-sure Africa. More details about the project is available on the project website at: <https://atpsnet.org/projects/bridging-climate-information-gaps/>

3. Developing an Innovation-led Bio-economy Strategy for Eastern Africa (BISEA). The project aims to develop, in close consultation with Science and Technology Councils and Commission and relevant ministries and stakeholders in all six BioInnovate countries, a regional innovation driven bioeconomy strategy shared by the countries in the eastern Africa region. A strategy that can inspire and catalyse the development of national bioeconomy strategies and subsequent policy development and interventions that is able to create new jobs and a sustainable biobased and inclusive economic growth in the region. More details available online on the project website at: <https://atpsnet.org/projects/developing-an-innovation-led-bioeconomy-strategy-for-eastern-africa-bisea/>

4. Recirculate: Driving Eco-Innovation in Africa: Capacity Building for a Safe Circular Water Economy. The project aims to support new partnership-based approaches to enable African researchers and research institutions to grow transformational impact through (i) working with, in and for their communities and (ii) developing robust, durable and equitable partnerships with UK researchers with special interest in circular water economy.



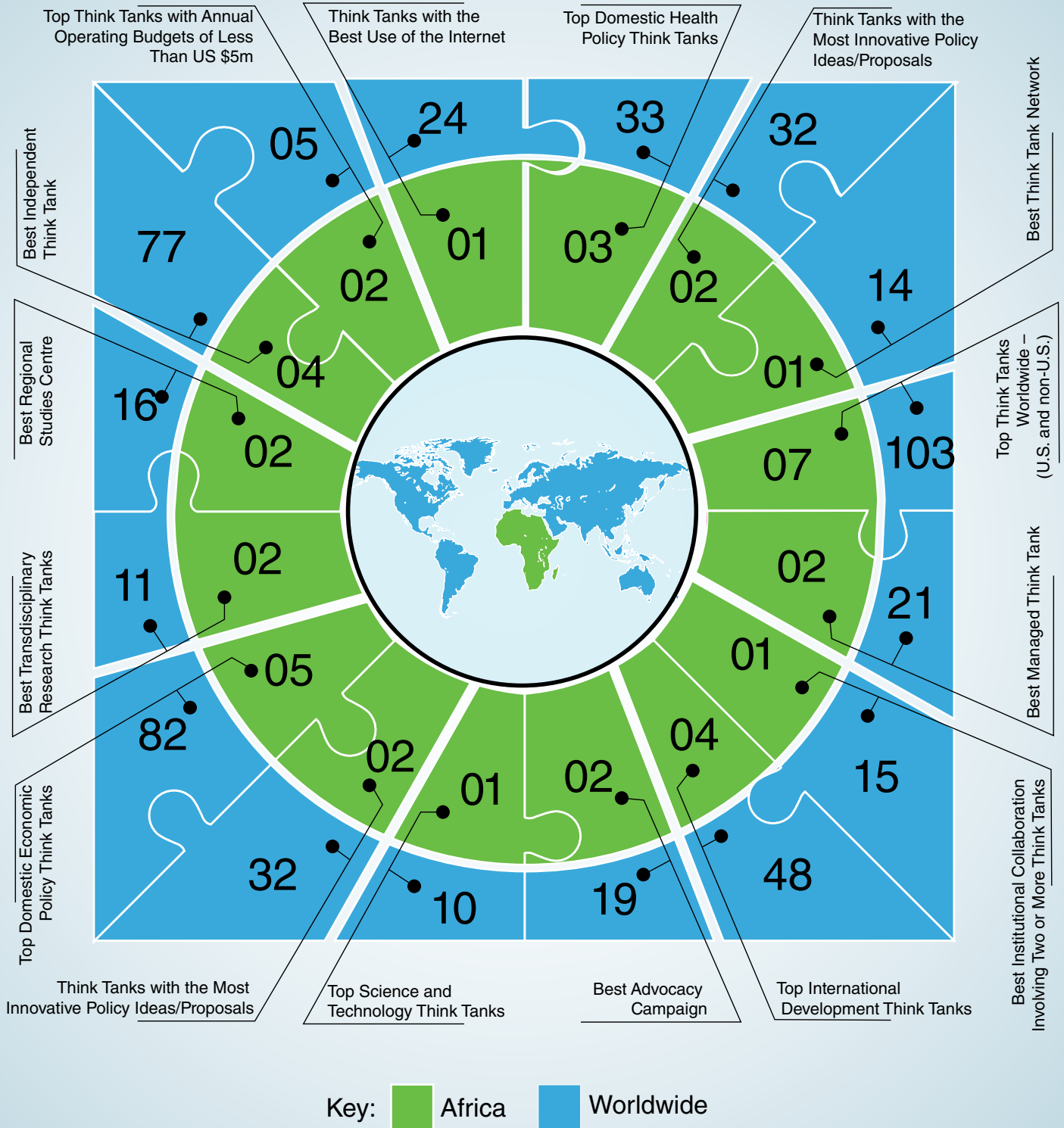
**Dr. Nicholas Ozor,**  
**Executive Director, ATPS**

More details about this project is available on the project website at: <https://atpsnet.org/projects/recirculate-driving-eco-innovation-in-africa-capacity-building-for-a-safe-circular-water-economy/>

We continue to solicit for funding supports from development partners, donors, governments and other like-minded organizations to enable us achieve our targets that are well captured in our current ATPS Phase VIII Strategic Plan 2017-2022. We appreciate our current sponsors who are satisfied with our continued impact driven and results-oriented approach to the implementation of all ATPS activities. We promise to do even better going forward.

# ATPS retains top Science and Technology Policy Think Tank clinching 1st position in Africa and 10th globally

By Dr. Nicholas Ozor



## African Technology Policy Studies Network (ATPS)

The 2018 Global Go To Think Tank Index Report has just been released marking 13 years of the Think Tanks and Civil Societies Program (TTCSP) that aims to acknowledge important contributions as well as emerging trends in think tanks worldwide. The report seeks to showcase the role played by think tanks in governments and civil societies with the sole aim of improving their capacity as well as performance. A total of 8,162 think tanks were catalogued and ranked in 2018 by expert panels comprising of members from diverse backgrounds and disciplines.

The report shows that the African Technology Policy Studies Network (ATPS) has retained its position as the 1st Top Science and Technology Policy Think Tank in Africa (10th globally). According to the report, this category is dedicated to the leading science and technology institutions within the global community.

The top think tanks in this category provide superior innovative research and strategic analyses

on topics ranging from innovation and telecommunications to energy, climate, and life sciences. These think tanks excel in research, analysis, and public engagement on a wide range of policy issues with the aim of advancing debate, facilitating cooperation between relevant actors, maintaining public support and funding, and improving the overall quality of life in the relevant countries that they cover. ATPS ranked tops in 16 other categories assessed in the report making it the organization in Africa that received the highest number of ranking in different categories.

ATPS remains the premier science and technology policy research think tank in Africa with over three decades of impact-oriented research policy on science, technology and innovation (STI) on the continent. We have facilitated the development and implementation of several STI policies in most African countries since the '80s. Currently, the ATPS is leading a major impact-oriented project on Networking Africa's Science Granting Councils in 15

sub-Saharan African countries under the Science Granting Councils Initiative (SGCI) being funded by the International Development Research Centre (IDRC), the British Department for International Development (DFID), the National Research Foundation (NRF) South Africa, and most recently the Swedish International Development Agency (SIDA). The initiative aims to promote social and economic development in the region through research and innovation. More details about this Initiative are available online at: <https://atpsnet.org/projects/building-partnerships/>

The ATPS also ranked top in many other categories that were used to assess Think Tanks across the world. Notable among these categories where the ATPS ranked tops are: Best Think Tank Network; Best Managed Think Tank; Think Tank with the Most Innovative Policy Ideas/Proposals; Think Tank with the Most Significant Impact on Public Policy; Best Transdisciplinary Research Think Tank; Best Advocacy Campaign Think Tank; Think Tank with the Best Use of the Internet; and Think Tank with the Best institutional collaboration involving two or more Think Tanks among many others. Details of the ranking can be found in the report at:

[https://repository.upenn.edu/cgi/viewcontent.cgi?article=1017&context=think\\_tanks](https://repository.upenn.edu/cgi/viewcontent.cgi?article=1017&context=think_tanks)



## ATPS wins the Tekeleza Climate Information Prize award



ATPS officials receiving the Tekeleza Prize award in Nairobi

### By Violet Nyabaro

The African Technology Policy Studies Network (ATPS) emerged a winner in the Tekeleza Prize Award that saw ATPS take home a Runners' up cash prize of USD 35, 000 among other prizes for promoting the adoption of the LandPKS/LandInfo mobile app technology in Kenya. The event took place in Nairobi at the Radisson Blu hotel in Upperhill on 29th November 2018. The Tekeleza Prize award is part of the Climate Information Prize (CIP) that awards cash prizes to entrepreneurs and innovators who come up with new solutions that use climate information in some ways to support vulnerable individuals, households and communities in Kenya. Winning solutions will enable vulnerable individuals and households to access products and services that make use of climate information, in order to better tackle climate uncertainty and risk. Such solutions must benefit wide

range of stakeholders including women, men, youth, disabled, and the vulnerable and enable them access climate information services for building their resilient capacities against the impacts of climate change.

The LandPKS/LandInfo app is a community-driven mobile technology that enables users to access climatic and soil information and be able to interpret them in the context of local conditions and values, including crop preferences for specific soils for optimal productivity under any prevailing climatic condition. Users are able to target investments on land for specific purposes. With knowledge on annual average rainfall and temperature distributions, average water retention capacity of soils, length of growing periods that any soil can sustain to support crop/plant life, elevations, aridity index and soil

types among others, farmers and pastoralists (for instance) are able to plan their farming enterprises (production, processing, marketing, management and utilization) adequately to avoid losses due to climate variability and hence improve agricultural productivity and climate change resilience. The LandPKS/LandInfo app was applauded for its benefits to a wide range of users ranging from crop producers, livestock keepers, extension officers, land use managers to policymakers in providing timely and location specific data and information for decision-making. The app enables users to make decisions based on aspects such as when to expect rains or droughts, when to plant crops and harvest, the type of crops that suit any specific soils for optimal productivity under prevailing climates, when to sun-dry harvested crop products and when to destock

African Technology Policy Studies Network (ATPS)

and restock livestock due to expected droughts and predicted availability of forage.

ATPS has also developed a crop-soil matrix on 75 staple crops in Africa and matched them with the suitable soils for maximum productivity under any prevailing climatic conditions. This has resulted in high crop yields from particular soils for LandPKS users. Already, an impact assessment on the use of the app by farmers and pastoralists funded by the Technical Centre for Agricultural and Rural Cooperation ACP-EU (CTA), The Netherlands confirms that over 80% of the users are satisfied with the app and agreed that it has impacted positively to increasing crop yields and building their resilience capacities.

ATPS has currently trained over 4500 users and sensitized an additional 5000 in Kenya on the use of the LandPKS mobile app specifically in Baringo, Kisumu, Meru, Migori, Nakuru and Nairobi Counties.

There are plans to extend the technology to the other counties in Kenya once support is received. The Kenyan Government has already shown support through the Agriculture and Food Authority (AFA) of the Ministry of Agriculture. Additional support for the out-scaling of LandPKS has also been received from the African Development Bank, the African Forum for Agricultural Advisory Services (AFAAS) and the National Research Fund (NRF), Kenya. More support from development partners and governments is being solicited to enable ATPS and partners reach

out to other counties in Kenya and across the African continent.

There is also need for deliberate efforts to fund the up-scaling and out-scaling of the LandPKS mobile app technology by development partners, national government and regional bodies so as to realize massive adoption of the technology, which consequently through the services it provides, will improve agricultural productivity and climate



from development partners and governments which resulted in the achievement of great impact in Kenya leading to the winning of the Tekeleza Prize.

Receiving the Tekeleza Climate Information Prize Award, the Executive Director of ATPS, Dr Nicholas Ozor commended the organizers of the Prize Award for the great initiative to spur innovations and build the resilience capacity of communities and vulnerable groups against the impact of climate change using technologies and innovative tools. He promised to continue working together with development partners, agencies and governments to out-scale the LandPKS mobile app as a technology for improving agricultural productivity and climate change resilience in Africa. The Tekeleza Prize is organized by the Kenya Meteorological Department (KMD), Ideas to Impact, CARDNO and CAMCO and funded by the UKaid's Department for International Development (DFID).

resilience especially among vulnerable communities. Recall that in 2016 the LandPKS app also won the Wazo Climate Information Prize in Kenya that supported innovations with a business idea using climate information to develop a solution that will help the vulnerable adapt to climate variability and change. It was during the award ceremony of the Wazo Prize, that the Tekeleza Prize was launched. ATPS was motivated by the Wazo Prize it received to promote the LandPKS technology in Kenya and with seed funds received

For more information about the Tekeleza Prize Award, kindly visit the website at: <http://www.climateinformationprize.org/tekeleza-winners/>

For more information about the LandPKS mobile app technology being promoted at the ATPS, kindly contact:

Dr. Nicholas Ozor, Executive Director, African Technology Policy Studies Network (ATPS).  
 Email: [executivedirector@atpsnet.org](mailto:executivedirector@atpsnet.org)  
 Tel: +254 20 2714092



## Improving wide dissemination of climate change information using the online Interactive Collaborative Environment (ICE):



By Mathew Imulia

The ATPS will use its cost effective and efficient information and knowledge system, an online platform, the Interactive Collaborative Environment (ICE) to promote wide dissemination. The platform will also enable stakeholders to interact and share information and knowledge amongst each other on issues of climate change adaptation and mitigation. It is a web repository and contains varied information on climate change issues for its valued users. The virtual ICE platform will offer opportunities for all stakeholders in the climate sector to participate in information sharing aimed at strengthening the capacities of African countries to understand, develop and deploy appropriate scientific knowledge on climate information access, use and management on the continent. The ICE comprises of a social media platform, a wiki (knowledge repository), a virtual market place, and enhanced search functionality

on adaptation plans, technologies, policies and different projects. The ICE social media platform brings together people to exchange ideas and experiences on climate change, create networks and engage stakeholders in discussions about the issue.

This, together with the virtual market place and streams from other mainstream media connects stakeholders to selected experts on climate change from whom they can share ideas on the subject for free. The virtual market place also aggregates information on available donor funded projects to the stakeholders, as well as provide a chance for stakeholders to list their proposals for prospective funders to explore. The Knowledge repository is a wiki that promotes file sharing on projects, programs, and adaptation plans and policies on climate change, hence providing a one-stop shop for persons seeking information on climate change.

The content on the wiki is uploaded freely by users of the site and verified by selected experts before being made publicly available to site users. This ensures that the information available on the wiki is accurate and can be used for decision-making ([http://www.atpsnet.org/Files/Terms\\_of\\_Reference\\_ICE.pdf](http://www.atpsnet.org/Files/Terms_of_Reference_ICE.pdf) and <http://www.atpsnet.org/projects/treccafrica/index.php>). We recognize that the continued functioning of the virtual hub requires personnel to man the platform hence the ATPS team will continue to liaise with the climate community to maintain the operations and functionality of the virtual hub. This way, individuals and organizations including those who participated in our entire climate change projects and those who did not participate will have the opportunity to access the climate information and outputs using the ICE online platform.

## Air quality: Shining light on Africa's silent killer



By Dr. Kingsley Ukoba

Air pollution continues to take advantage of human ignorance to cause health risk and death. It thus comes as no surprise that the World Health Organization (WHO) lists it among top 5 global silent killers. It is estimated that nine out of ten people breathe contaminated air. Air Pollution is also responsible for 7 million premature deaths annually. Air pollution affects everyone irrespective of colour, gender, age, race and other affiliation. However, it affects some population more than others with low and middle-income countries suffering most from it. More countries, especially developed countries, are taking action through increased awareness and inclusion in the WHO's ambient air quality database.

This action has resulted in a drastic reduction of the same in such countries. However, little is known about air pollution in Africa and other low-income countries. Air pollution data is only available for 8 countries of the 47 countries

in Sub-Sahara Africa. This article focuses on ways in which Africa can raise awareness on how to tackle air pollution using its diverse resources to reduce health complications and in extreme cases death.

**What is Air Pollution?** Air pollutants are substances released into the air that are capable of causing injury to the health of people and the Earth in general.

### Types of Air Pollution

Africans are familiar with the dangerous type of air pollution - smoke. It is emitted as incomplete combustion of solid fuels or kerosene for cooking, heating and lighting and causes serious health risks.

There are six major types of air pollutants capable of causing great harm to the planet and human health. These include: carbon monoxide, sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>2</sub>), ozone, particulate matter and lead. Others are pollen, mold, smog and soot.

Mold is formed and grows in a damp environment/homes and is capable of causing an asthma and produces allergenic airborne pollutants.

Soot is a broad classification of particulate matter and is made up of tiny particles of chemicals, soil, smoke, dust, or allergens, in the form of gas or solids, that are carried in the air.

Smog is said to occur when emissions from burning fossil fuels react with sunlight. Air pollutants also include building materials, home products, volatile organic compounds (VOCs) and naturally occurring gases like radon. These also pose serious health risks, and poor ventilation can exacerbate the health risks posed by all indoor pollutants.

Air pollutants are classified as either outdoor air pollutants or indoor air pollutants.

### Sources of Air Pollution

The bulk of air pollution emanates from domestic and commercial use as well as production of energy. The burning of fossil fuels releases gases and chemicals into the atmosphere. The main sources of outdoor air pollution include industry, traffic and agriculture. Similarly, the main sources of indoor air pollution are mostly cooking and heating using solid fuels (including wood and charcoal).

### Statistics (Global and Africa)

Annually, over 1 million seabirds and 100,000 sea mammals' death caused are by air and plastic pollution respectively [2]. People who live in places with high levels of air pollutants have a 20% higher risk of death from lung cancer than people who live in less-polluted areas [3]. According to WHO, about 91% of the world's population lives in places, including Africa, where air quality exceeds WHO guideline limits. The WHO recommendation is reduction of air pollution to an annual mean values of 20  $\mu\text{g}/\text{m}^3$  (for PM<sub>10</sub>) and 10  $\mu\text{g}/\text{m}^3$  (for PM<sub>2.5</sub>) [4]. Pollutants, such as sulfate, nitrates and black carbon, which pose the greatest risks to human health are classified under PM<sub>2.5</sub>. In 2016, household air pollution was responsible for 3.8 million deaths, and 7.7% of the global mortality [3]. This is due to household exposure to smoke from dirty cook stoves and fuels, with Africa having the highest of 120 mortality rate per 100,000 followed by South-East Asia at 100 with Europe having the lowest below 10 mortality rate per 100,000.

### Challenges

- i. Lack of Knowledge: The "Ignorance is bliss" saying in this case has resulted in health damages such as mental and death which could have easily been averted with proper knowledge of air pollution and the prevention.
- ii. Traditional and religious belief: Certain traditional and religious belief and practices in Africa continues to encourage air pollution.

Burning of incense, smoking of marijuana, delayed and group cooking by the Shembe of South Africa, to mention but a few are some of the activities to encourage air pollution. The Shembe sect delay their cooking and cook in group with fossil fuel after returning from their worship. This result in the communities where they dwell having large concentration of air pollution.

iii. Educational curriculum: Air pollution as a topic is missing in the Africa educational curriculum. The educated elite seem to know little about this dreaded silent killer. Inclusion air pollution related aspects in the curriculum and encouraging more research at higher degree level will help reduce the challenge of air pollution.

### Africa's window of opportunity

Raising awareness on air pollution through cultural and community-centered approach can be used as a way to curb the menace in the continent.

Use of the approach whereby the community and their culture is used to solve the problem of air pollution. The community is giving ownership of ending air pollution through the infusion of air pollution solution into their daily activities.

Air pollution can be promoted in the community through the use of the cultural instrument and community-related tools. Infusion of air pollution into the songs, dance, and other ways of life in Africa will help.

### Conclusion

Pollutants with the strongest evidence for public health concern include particulate matter (PM), carbon monoxide (CO), ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>) and Sulphur dioxide (SO<sub>2</sub>). Health problems can occur as a result of both short- and long-term exposure to these various pollutants. For some pollutants (fine particles, PM<sub>2.5</sub>), there are no thresholds below which adverse effects do not occur. Fine particles are an especially strong indicator of health risks, as they can penetrate

deep into the lungs, enter the bloodstream, and travel to organs. In some poorly ventilated dwellings, concentrations of particulate matter can exceed WHO-recommended levels by a factor of 100. Reducing Air pollution in Africa starts with raising awareness and equipping the populace with the right amount of information on the silent killer. A participatory approach that is inclusive of the private sector and public organizations should be taken both at the national and regional levels. Behavioral change efforts such as walking, riding bicycles, reduction of cars powered by fossil fuels, driving cars with better miles per gallon of fuel can go a long way. Encouraging the use of renewable energy sources and lending your voice to the campaign for cleaner air in your locality can save our planet and reduce instance of health complications and death caused by air pollution. African governments should commit to fund and partner with more agencies to monitor and model air quality and formulate policies that encourage clean energy usage and production especially household energy.

# Science Shared Campus: An Innovative Approach to Science Technology Engineering and Mathematics (STEM) education

By **Wondwossen Belete**

Enhancing a country's competitiveness in the global economy requires building up a critical mass of scientists, researchers and engineers through education. Highly skilled capacity in science and technology fields contributes to economic growth through technological learning and innovation. Their role also extends to maintaining society's store of knowledge and transmitting it to future generations.

However, a serious skills shortage in science and technology fields is hampering the social and economic development of many developing countries, especially African countries. Although a growing number of jobs require scientists and engineers, African countries are not training enough manpower in these disciplines. This failure to meet the dynamic manpower needs

and demands of the economies is forcing the countries to depend on foreign experts.

In order to address the shortage of science and technology manpower, a number of countries have launched initiatives and reforms that focus on increasing the number of students pursuing Science Technology Engineering and Mathematics (STEM) subjects. These efforts aimed at advancing STEM education in Africa focus on tertiary level education, which has led to a growing emphasis on science, technology and engineering fields in many universities and colleges.

The endeavor to produce science and technology manpower that will contribute to the development of science and technology can be effective if work starts at

secondary school level. Students make decisions influencing their participation in STEM related careers and take their first steps towards specialization during the secondary years of schooling. Therefore, the foundation of scientific knowledge and methods of inquiry have to be laid at this level. The breadth of secondary education should allow for interdisciplinary inquiry that applies scientific knowledge and to pressing social and environmental issues and their relationship to local and global forces.

However, science and technology education at secondary schools in African countries is constrained by a multiplicity of factors including shortage of qualified teachers, large class sizes, mixed level pupil in single class rooms and issues related to curriculum design. Resource constraint is also a major





9th Grade students of Kotebe Shared Science Campus students, panel discussion of National Conference on STEM in High Schools, 2016  
**SOURCE:** [www.stemsynergy.org/](http://www.stemsynergy.org/)

problem forcing teachers to rely on theoretical explanations rather than practical applications and teacher-centered content delivery. In Ethiopia “STEM Synergy”, a non-profit organization has introduced many STEM initiatives in the country. One of the programs managed by STEM Synergy in the country is science shared campus. Science shared campus addresses many of the widespread challenges in the take up and attainment of STEM subjects at secondary school level. The program is designed to build students’ knowledge of the inter-related nature of science and mathematics, in order to allow them to develop their understanding of engineering and technology.

A science-shared campus offers high achieving secondary school students a superior teaching staff and an advanced class room environment, over what is typically found in Ethiopian secondary schools. The problems relating to shortage of qualified teachers in STEM subjects is dealt with by involving university staff in the

teaching process. In science shared campuses students learn biology, physics, chemistry, mathematics and Information Technology (IT) under close supervision of highly qualified university lecturers. Students of science-shared campus also have access to ample lab equipment and computer facilities. They are given opportunities to gain experience in university laboratories for educational purposes. STEM synergy provides chemicals and materials to science-shared campuses which are used for teaching the students in university laboratories. The science curriculum is also deeper and broader and theory is accompanied by student experiments, reference to research materials, and visits to relevant sections in universities to do practical lessons.

The first Ethiopian science shared campus was established in 2014 at Kotebe University College (now Kotebe Metropolitan University) in Addis Ababa. There were twenty secondary schools within the vicinity of the University, which were

highly constrained by the shortage of education facilities. Five of the highest achieving students were selected from each of these schools to participate in the program. Since then, each year the University’s science shared campus has been accepting a new entering group of 9th graders. Since women are under-represented in science-related careers, the program gives more opportunity to girls.

This STEM learning approach helped to improve the achievement of the students and an encouraging progress is observed in their proficiency level in science and mathematics subjects. The success of the program in Kotebe Metropolitan University prompted other universities in the country to embrace the idea of science shared campus. The program is now operational in Axum, Bahir Dar, Hawassa, Mekele and Kotebe universities. This increase in the number of universities which take up the idea of a science shared campus could be a viable approach to overcome some of the challenges

African Technology Policy Studies Network (ATPS)

## ATPS National chapter Coordinator Uganda enlisted among experts appointed to lead Uganda into 4th Industrial Revolution

By Nita Karume

The ATPS National Chapter Coordinator for Uganda Dr. John Okuongzi has been enlisted among experts appointed by President Museveni to lead Uganda into industrial revolution.

This is in line with Uganda's vision 2040 in which the government made a pledge to encourage innovation for purposes of harnessing the full potential of the digital economy.

As such, the Minister of ICT and National Guidance, Hon. Frank Tumwebaze, committed to set up a national taskforce to advise Government on the appropriate policy framework to enable block chain and other emerging technologies support Uganda's agenda for national transformation.

The taskforce will report to the Office of the Prime Minister, and the Ministry of ICT&NG will serve as Secretariat to the Taskforce.

Dr Okuongzi is the Founder and the brains behind the e-kampus; a University Student Management Information Systems which is being phased out to AMIS in Kyambogo.

e-campus is the first system that Kyambogo University started with way back in 2012 where students could apply online, and pay their dues through this system by using a Reference Number(s), and lecturers could manage student results on the same portal.

Later, in 2018 e-campus was succeeded by the current popular

Academic Information Management System (AIMS), which has been adopted by all public Universities through Ministry of Education and Sports, and some of the private institutions to manage students' records online.

The successor "AMIS" is now a comprehensive system with advanced features like online applications, fees payment, results management, programs manager to mention but a few.

Dr John Okuongzi has actively been part of the masterminds of ICT advancements in Kyambogo University and his efforts have really changed the way the Universities can now conduct their day-to-day work operations.



President Museveni with Dr. John Okuongzi after the inauguration of the taskforce

SOURCE: [www.cyclonetimes.com](http://www.cyclonetimes.com)

### The Fourth Industrial Revolution

According to the terms of reference document from the Ministry of ICT and National Guidance, the now Fourth Industrial Revolution is characterized by a series of technologies that are blurring the lines between the physical, digital

and biological spheres. As such, the Taskforce will consider emerging technologies in the context of the Fourth Industrial Revolution covering wide-ranging fields such as Artificial Intelligence (AI), Big Data, Block chain Technologies, Robotics, the Internet of Things (IoT), Cloud Computing, nanotechnology, biotechnology, genetic engineering, quantum computing, autonomous vehicles and 3D/4D printing.

The Taskforce will also consider global trends, with a focus on developments and aspirations for Uganda and the East African region.

### Duties and Projected outcomes

The Taskforce will mainly be responsible for the reviewing of policies, and regulatory environment and standards for the adoption of Fourth Industrial Revolution (4IR) technologies.

Other Objectives include; To recommend a comprehensive ecosystem/strategy for the adoption and promotion of 4IR including human capital development; employment opportunities; infrastructure and technological environment; cyber security, privacy and ethics; environmental impact; market for digital products; and funding options; To identify challenges and risks for the adoption of 4IR; To advise on a comprehensive 4IR strategy for Uganda; To advise on a framework for research, development and innovation; To recommend incentives for the adoption of 4IR technologies; and To prepare requisite terms of reference and technical specifications.

From these, they will be expected to come up with recommendations from the policy reviews, terms of reference for the development of a comprehensive Fourth Industrial Revolution Strategy, guidance notes on research, development and innovation of the same, terms of reference and technical specifications developed and a media strategy to engage the public on the issues developed.

The Task Force will have representatives from the public sector, private sector, innovation hubs, civil society, academia and development partners who have the necessary expertise to advise Government on the appropriate policy framework.

## ATPS co-hosts The African Annual Science Granting Councils 2018 Meetings



By Ruth Oriama

The ATPS co-hosted the 2018 Science Granting Councils Initiative's (SGCI) Annual Forum from 5-9 November in Abidjan, Cote d'Ivoire. The African science granting councils, intermediaries in the science-policy nexus, disburse public financing, or funding for research and innovation, and are called to develop and sustain partnerships to advance the internationalisation of the knowledge enterprise at the national, regional, continental and international level. During the Forum, other series of meetings took place. These series of meetings were hosted by the Programme d'Appui Stratégique à la Recherche Scientifique en Cote d'Ivoire (PASRES), with the support of the National Research Foundation-South Africa (NRF), the Scinnovent Centre, the South African Research and Innovation Management Association (SARIMA), together with the ATPS.

Details of the meetings include:

- 1) The Science Granting Councils Initiative in Sub-Saharan Africa Annual Forum,
- 2) Global Research Council Africa Regional Meeting,
- 3) Partnership for Impact Dialogue: Investing in Research and

Innovation in Africa,

- 4) Southern African Research & Innovation Management Association (SARIMA)
  - 5) Training on Research Management,
  - 6) PASRES Academic Symposium on Photovoltaic Solar Energy, and
  - 7) PASRES Forum on Science, Research and Gender.
- The Science Granting Councils Initiative Annual Forum focused on discussions on the Masterclass paper themed "New Approaches to Funding Research and Innovation in Africa." Research leading into the masterclass was led by Dr Julius Mugwagwa of the University College London and Dr Geoffrey Banda of the University of Edinburgh and explored the following key axes:
- 1) The importance of funding research and innovation,
  - 2) New and innovative funding approaches (schemes, models and mechanisms) that have been applied across the world and lessons for African countries,
  - 3) Factors facilitating or constraining the implementation of the funding approaches and how the gains can be sustained,
  - 4) The institutional reforms required

to sustain the new approaches and how Africa can re-position its own institutional architecture for enhanced research and innovation funding, and

- 5) The broader issues pertinent to research and innovation broadly being taken into consideration towards more efficient and effective funding for research and innovation.

The Southern African Research & Innovation Management Association workshop on Research Management demonstrated the need for the councils to have a robust communication strategy and increasing their online presence while remaining aware of active vs. passive dissemination. This relates to the need to understand the kind of data needed, and developing internal databases to strengthen their communication. The Partnerships for Impact meeting demonstrated the need for impactful partnerships, as a tool in driving science, technology and innovation investment in the region, achieved through Africans for Africa kind of partnerships together with international partnerships. Additionally, it was found important to create an enabling environment for young African scientist, support



higher education, use technological innovations to solve challenges faced by young scientist and create opportunities for scientist to act as an incentive for young Africans to be involved in the continent's development agenda through science, technology and innovation. Platforms such as the SGCI allow for science granting councils and stakeholders in the science space to develop evidence for key issues through targeted research. The Monitoring, Evaluation and Learning Workshop not only gave insight into the progress of the project but also influenced research trajectories of studies commissioned by the initiative. The Science, Research and Gender Conference provided a platform for sharing of experiences of accomplished scientists present in the meetings while acknowledging the efforts of young female scientists. Lastly, the Energy

Symposium discussed on new solar technologies and how these can be leveraged for the African population. .Storage remains to be a key concern as much as technologies are rapidly improving. Legislation and funding still seem to be a major impediment for the uptake of these technologies in Cote d'Ivoire. Deliberations during this week-long meetings, led to the development of a number of priority areas that can be used to strengthen the advancement of science, technology and innovation in the region. These include demonstrating value and impact of research and innovation, open science and open data, the institutionalisation of research outputs, ethics in research and innovation, and gender and inclusivity. Sufficiency, consistency and relevance of research and innovation funding can only be guaranteed by demonstrating value

and impact, "DVI," as Dr Julius Mugwagwa so well summarised deliberations on the masterclass paper. To achieve this, instruments such as open science and open data are needed to support the African researchers. The contribution of African research and innovation, even as supported by global partners, can be better felt with increased access to data and increased visibility of researchers' contributions. The science granting councils are challenged to come up with robust strategies to institutionalise research findings and recommendations. Finally, gender representation in research and innovation still remains an important concern for the continent. Role models were challenged to continue to influence positively and individuals and institutions alike were called to continue supporting the efforts made by women at all levels for our improved societies.

# Interview with Dr. Vinet Coetzee

By Nita Karume



**Dr. Vinet Coetzee**

## What would you say inspired you to pursue scientific research in the field of genetics?

A career in science was the logical choice for me, since I enjoyed finding the answers to questions. I decided on genetics specifically because genetics is the basis of life. That said, my work is very transdisciplinary, incorporating various different fields of study.

## What would you say is the highlight of your career thus far?

There have been many highlights, but selection as a Next Einstein Forum fellow and a World Economic Forum Young Scientist probably ranks highest.

**What is your take on South Africa's Personal Information Act Policy in reference to your research? And how has its implementation affected your work?** Although the POPI act is an important piece of legislation, its implementation will have an adverse effect on some important human research activities in the country, such as the establishment of Biobanks and Data repositories. Scientific journals also frequently

*'Children with Down syndrome are often diagnosed late in South Africa, partly because the facial features associated with Down syndrome are not as easily detectable in African infants.'*

require researchers to make their data freely available post-publication, which could be especially problematic in terms of genetic data. We have been working on bringing our own consent procedures in line with the POPI act in my research group, so its implementation should hopefully not affect us too much.

## Tell us more about the technological innovation your team came up with to use to identify the specific facial features associated with Down syndrome in African infants.

There are around 700 disorders with characteristic facial features and doctors often use these facial features in their initial diagnosis of these conditions. 3D imaging is the most accurate method to accurately capture and assess the facial characteristics associated with these conditions, but suitable 3D imaging systems are costly.

One needs an imaging system that can instantaneously capture facial features, especially in kids who generally don't sit still for very long.

That is why we developed an affordable 3D imaging system that works instantaneously, taking multiple images at the same time. The system costs around one tenth of the price of comparable commercial systems. We are currently collecting facial images of people with and without Down syndrome to train the computer model to predict the risk for Down syndrome in new cases. We have also expanded our research to other genetic conditions, such as Noonan syndrome.

## How was the reception of the 3D camera by doctors in South Africa?

The system has not been made commercially available yet.

**Down Syndrome is reportedly the most common genetic cause of intellectual disability. Evidence also suggests that live-birth prevalence of DS is high in South Africa. As such, how**



**would you say your research has impacted the early detection and prevention of the condition in infants across South Africa?**

Children with Down syndrome are often diagnosed late in South Africa, partly because the facial features associated with Down syndrome are not as easily detectable in African infants.

The main aim of this project is to facilitate earlier and more accurate detection of Down syndrome (and other birth defects) in South Africa and Africa as a whole. Early and accurate detection is key, because it enables patients to get crucial (in some cases life-saving) interventions when they need it. Ultimately it allows people living with these conditions to live a happier, healthier life.

**From your research, what would you say is the primary cause of Down syndrome in newborns?**

Down syndrome is a genetic condition that occurs when a mistake in cell division means that there is an extra copy of a specific chromosome, chromosome 21. Older women have a higher risk of having a child with Down syndrome.

**Are there any preventive measures for Down syndrome?**

You can reduce your chances of having a child with Down syndrome

by having children at a younger age, preferably before the age of 35.

This does not mean that you should have children at a very young age, as there are other difficulties if you have your children too young.

**Does the advent of prenatal screening for pregnant mothers guarantee success in detection of Down syndrome? If not, why?**

Prenatal screening is an accurate way to screen for Down syndrome. The main problem is that few mothers can afford prenatal screening, so many cases go undetected. That is why we are developing an alternative low-cost method to detect these conditions.

**The bulk of your published work on human mate choice research has aspects of psychology incorporated in it. Would it then be safe to assume that it has had some amount of impact in the field of psychology and culture as a whole?**

Due to the transdisciplinary nature of my work it impacts on many fields, including the fields you mention.

**What have been the role of the government and especially the Ministry of health in your research both in terms of support and implementation?**

This research is partly funded by the National Research Foundation in South Africa, but I haven't worked directly with the Department of Health.

**Congratulations for being selected as a fellow for the renown Next Einstein Forum 2017-2019 in recognition of your work on Non-invasive measures of health. What do you hope to achieve in your fellowship with regards to your research?**

Thank you, this has been an amazing journey. I hope to use this opportunity to build a sustainable network of research collaborators in other African countries.

**You are currently the principal investigator of the Facial Morphology Research group and the African Longitudinal Facial**

**Appearance and Health (ALFAH) study. What are the aims of these organizations?**

The Facial Morphology Research group is my research group at the University of Pretoria, which aims to develop affordable, non-invasive measures of health.

**What are some of the challenges you have faced in the course of research over the years?**

I've faced the same challenges as many other researchers, especially in terms of funding constraints and high teaching loads. Teaching large classes takes valuable time away from research activities. The main challenge I'm experiencing at the moment is finding funding for my postgraduate students, who often don't have the means to support themselves.

**Of the publications you have worked on, which would you say has received the most positive reception in terms of implementation and why?**

One of my all-time favorite publications is "Facial adiposity: A cue to health?" which I published in 2009. It was the first publication I published during my PhD and made a noticeable contribution to the field.

**Of the accolades under your belt, which one would you say has had a tremendous impact in your research?**

All accolades contribute in their own way, but if I had to choose one I would say selection as a Next Einstein Forum Fellow has thus far had the biggest impact on my research.

**How does your membership in the Royal Society of South Africa influence your research?**

The Royal Society of South Africa offers various collaboration and networking opportunities as well as exposing members to cutting-edge research.

**What do you find most fulfilling about your research?**

The fact that my research can make a positive difference in people's lives.



African Technology Policy Studies Network (ATPS)

## Africa Netpreneur Prize

The Africa Netpreneur Prize Initiative is Jack Ma's flagship entrepreneur program in Africa led by the Jack Ma Foundation. Our mission is to identify and spotlight African entrepreneur heroes and their stories to inspire the continent and beyond.

US\$1 million Prize Money. The Prize will host a grand finale pitch competition in Africa where ten finalists from across the continent will compete for a share of US\$1 million in total grant prize money. Pitch to Jack Ma at the Grande Finale. Make it to the grand finale and you'll have your shot to pitch your story to Jack and the rest of the judges. The Prize will be fully inclusive. Entrepreneurs of any age, gender, and sector who are nationals from any 54 African countries are encouraged to apply.

For more information please visit: <https://www.netpreneur.africa/>

## 2019 Scholarship Program at University of Science and Technology of China

USTC scholarship is created for candidates from countries around the world to study at University of Science and Technology of China. You may be interested in pursuing your study in China, and getting to know new living environment.

There are two types of USTC fellowships – USTC fellowship A is available for degree seeking students, and USTC fellowship B is offered for exchange students from partner universities

Nationality: Non-Chinese citizen

Where: University of Science and Technology of China

Degree: Bachelor, Master, or doctoral according to your preferences

Scholarship award: free tuition, monthly living allowance based on your degree, free housing, medical insurance

For more information please visit: <https://www.isnpo.org/blog/2019/02/17/2019-scholarship-program-at-university-of-science-and-technology-of-china/>

## Growthpoint's Grant Program

The program supports Corporate Social Investment (CSI) programs that promote skills development and empowerment, rather than dependency. Acknowledged as being at the forefront of sustainability and as leaders in our field, we aim to impact the lives of the previously disadvantaged and marginalized groups by creating opportunities for them to thrive, through education and skills development. We are also focused on supporting education across South Africa because we believe that partnerships with educators will yield positive results towards our common vision of building a better life for all.

Our educational involvement is focused on four key areas:

1. Early childhood development
2. Primary school learning
3. High school learning
4. Youth development for job creation

Tips to help you complete the form: When thinking about what the funding will be used for and how this make a difference towards the intended beneficiaries, remember that the social impact refers to the change in people's socio-economic position in society (after being helped).

For more information please visit: <https://growthpoint.co.za>

## **2019 Food Security Center (FSC) Regional Workshop Announcement “Sustainable Safe Food Systems in Africa: Moving towards a Sustainable Food Future” 23th to 26th September, 2019- University of Nairobi, Kenya**

Context: Food and nutrition insecurity still remains a big challenge in many countries globally. Food insecurity is now exacerbated by global food price inflation, climate change, growing urbanization, and conflict. The new Sustainable Development Goal (SDG) no. 2 aims to “end hunger, achieve food security and improved nutrition, and promote sustainable agriculture”. For this to happen, Sustainable Safe Food Systems have to be emphasized to fit the current situation and future food environments. This is a training and knowledge sharing workshop to promote sustainable safe food systems in Africa.

Organizers: This Regional Workshop is organized by the Food Security Center, University of Nairobi (Kenya) and the University of Hohenheim (Germany), and funded through the DAAD with funds from the German Federal Ministry for Economic Cooperation and Development (BMZ).

Venue and dates: The workshop will be held at the College of Agriculture and Veterinary Sciences (CAVs), University of Nairobi from 23rd to 26th September, 2019.

Eligibility criteria:

- \_ Postgraduate students and young scientists working in the area of Food and Nutrition Security.
- \_ Be a citizen of the following countries; Uganda, Ethiopia, Nigeria, Rwanda, South Sudan, Tanzania and Malawi.
- \_ Be proficient in English reading, writing and speaking.
- \_ Be willing to participate actively in the workshop.
- \_ Demonstrate knowledge, interest and active involvement in Agriculture, Food and Nutrition Sciences.

Benefits:

- \_ The selected participants will participate in a face to face workshop and share knowledge on country status with regard to the workshop theme.
- \_ Engage in field visit to develop technical and practical skills.
- \_ Participants will also build partnerships and networking.
- \_ All workshop costs, including air travel, meals and accommodation, will be covered for selected participants.
- \_ At the end of the workshop, participants will be expected to present their country status report based on the workshop theme „Sustainable Safe Food Systems in Africa

Guest Speakers: Prof. Lamis Jomaa, American University of Beirut, Lebanon and Joana Acu-Rizu, University of Hohenheim, Germany.

Applications: Motivated young scientists and postgraduate students are requested to send their applications in English including a CV, Statement of motivation, and letter of introduction from their employer/ institution to the coordinator, Dr. Catherine Kunyanga: E-mail: ckunyanga@uonbi.ac.ke OR nkirotekatie@yahoo.com; Mobile: +254-722873357.

**Deadline for the applications:** The deadline for applications is 30th April, 2019. Successful applicants will be notified via email by 15th May, 2019

African Technology Policy Studies Network (ATPS)

**Photo Gallery- Recirculate Knowledge Exchange (KE) and Exchange Workshop, Lilongwe Malawi**



**Delegates taking part in group activities**



**Two of KE Engagement Training Team; Ms. Ruth Alcock (left) and Ms. Noimot Balogun**



**Group Discussions during one of the sessions**



**Delegates taking part in group discussions**



**Group Presentation of KE Mechanisms**



**Group Presentation of KE Mechanisms**



Part of the KE Training team Recirculate Knowledge Exchange and Engagement in Malawi



Delegates present at the Recirculate Knowledge Exchange and Engagement in Malawi

African Technology Policy Studies Network (ATPS)

Photo Gallery: Tekeleza Prize 2018 Radisson Blu Hotel Nairobi 2018



ATPS Management receiving the Tekeleza Prize Cheque



Dr. Nicholas Ozor, ATPS Executive Director with the prizes from the event



**Photo Gallery: Recirculate Entrepreneurship & Innovation workshop in Kitwe, Zambia 2019**



**Delegates at the launch of Women Innovators Network for Africa (WINA)**



**Delegates participating in a group discussion**



**Delegates present at the Recirculate Entrepreneurship and Innovation Workshop in Kitwe, Zambia**

African Technology Policy Studies Network (ATPS)

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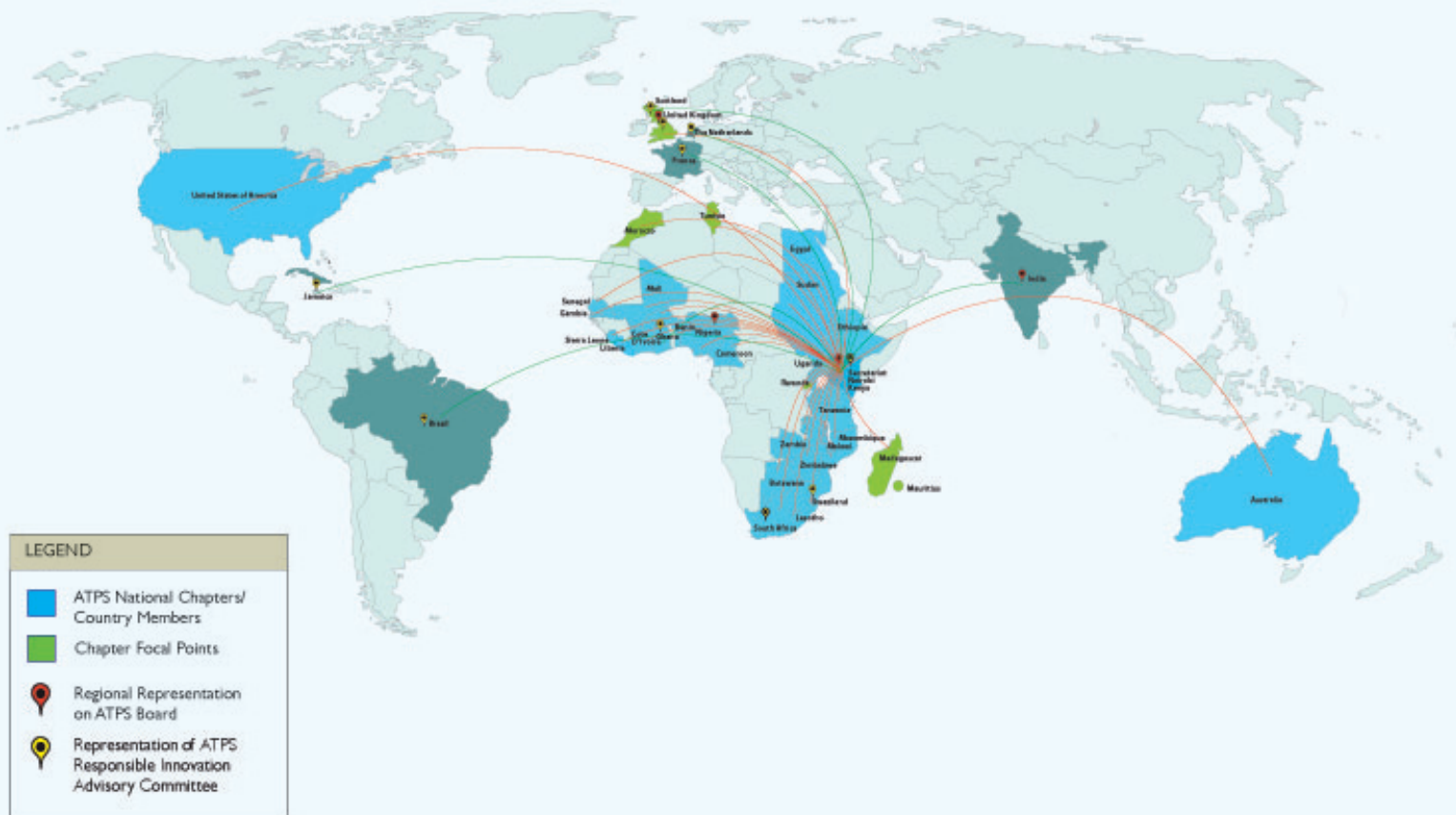
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