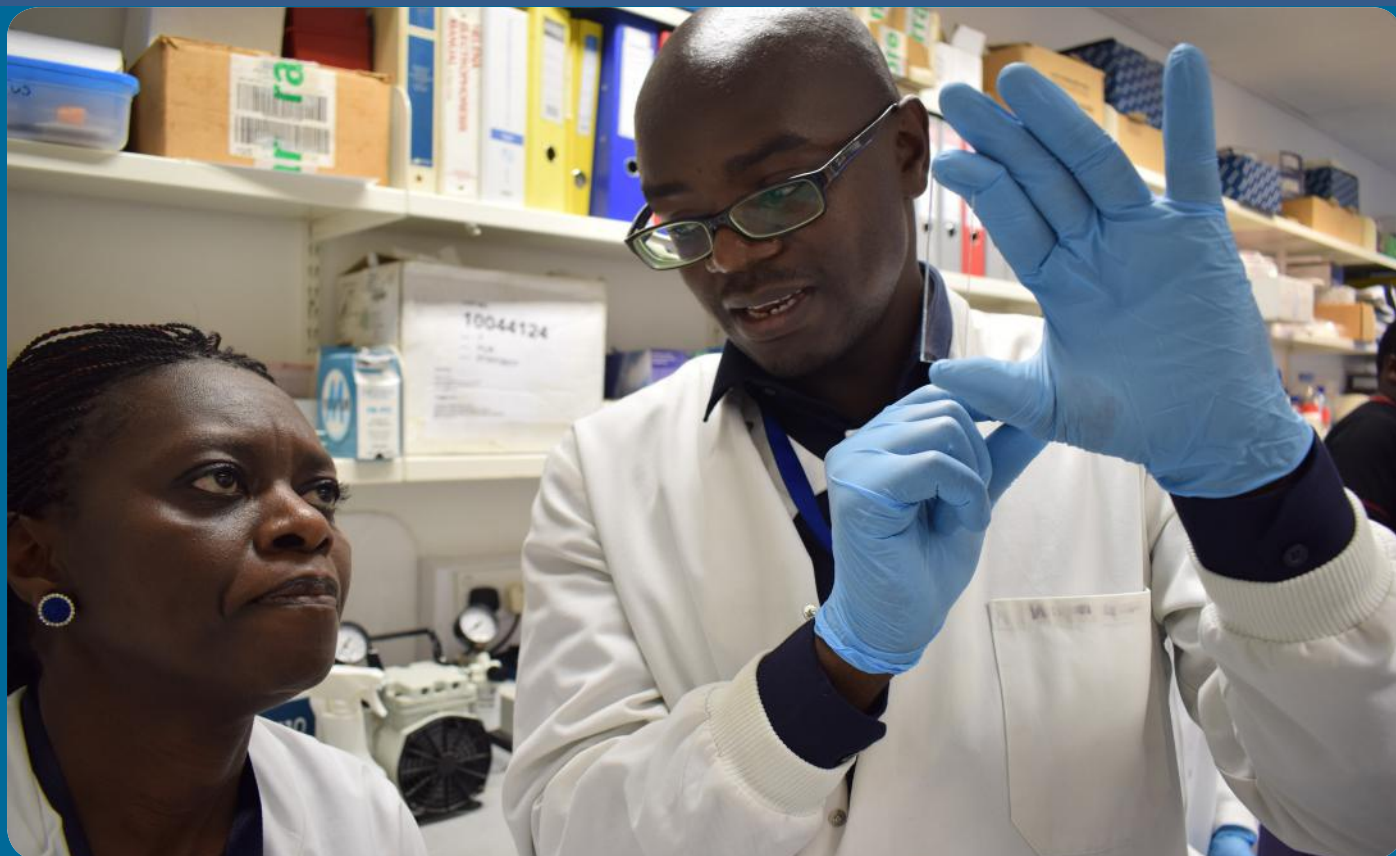




# TECHNOPOLICY

## AFRICA

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



### Highlights:

**ATPS Ranked Best Think Tank Network for the Fourth Year in a Row According to a Global Report**

**ATPS seeks for an Expert to Draft a Masterclass Paper on the Theme: "New Approaches for Funding Research and Innovation in Africa"**

**International Day of Women and Girls in Science**

**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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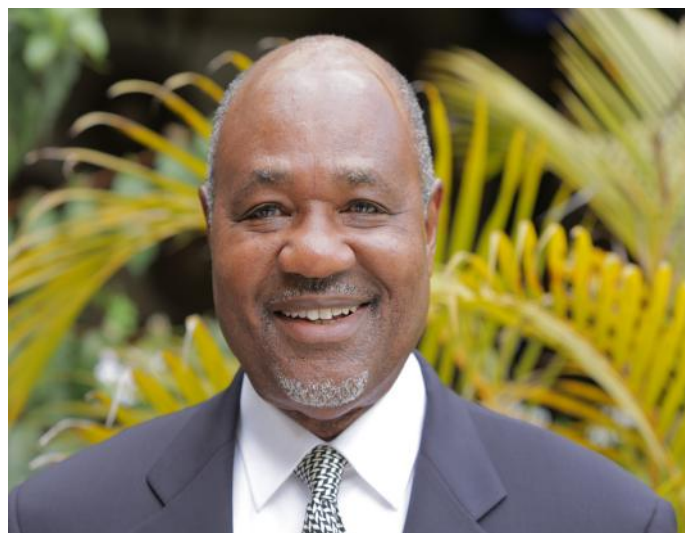
## CHAIRMAN'S MESSAGE

**W**elcome to this year's maiden issue of *Technopolicy Africa* newsletter, our quarterly publication that highlights topical issues in the field of Science, Technology and Innovation (STI) research, policy and practice in Africa.

In June 2014, the African Union (AU) held its 23rd Ordinary session of Heads of State and Governments Summit and unanimously adopted a 10-year Science, Technology and Innovation Strategy for Africa (STISA-2024). The new strategy which is currently being implemented aims to use science, technology and innovation as the core driver for Africa's economic development. However, this will only be possible if there is increased development in technical skills, institutional capacity, entrepreneurship, innovation and improved research. STISA-2024 has six priority areas namely: Eradication of hunger and achieving food security, Prevention and control of diseases, Communication, Protection of our space, Unity and wealth creation.

In order to complement efforts being made by the AU and heads of states, the ATPS recently launched its new strategic plan which aims to address the continent's most pressing issues through Science, Technology and Innovation. The Phase VIII Strategic Plan is a sector focused Plan with four key thematic/sectoral priority areas which include: Agriculture, Food and Nutrition; Energy; Climate Change and Environmental Management; and Health Innovations. In order to effectively implement this four point thematic priority areas, five strategic programmatic objectives were developed namely: 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. Our target is to keep pace with developments in the new disruptive technologies and leverage the use of mobile phones, Internet and other modular technologies. We continue to solicit for support from various stakeholders to assist us in the implementation of activities in this Plan.

During the quarter, the World celebrated two key events, the International Day of Women and Girls in Science; and International Women's Day. These two events recognized the outstanding work done by women in our society politically, socially and economically. Less than 30% of the world's researchers are women but despite this, the number of women who are soaring higher and mentoring the young ones is remarkable. In this issue, read about Prof. Faith Osier from Kenya who has received global accolades for her scientific research work on malaria; her hope is to develop a vaccine against malaria.



**Mr. Chuma Ikenze**

To contribute to closing the gender gap in science, technology and innovation, ATPS through its new Strategic Plan has identified programs benefiting women: The Youth and Women Innovation Challenge is designed to identify and support STI initiatives; the Women Social Entrepreneurship Program aims to support business start-ups in liaison with social entrepreneurs initiatives; the Youth and Women Internship and Mentorship Program is designed to facilitate and encourage graduates from Africa and the rest of the World to gain valuable international work experience in STI; the Youth and women post-doctoral Fellowships and Staff exchange programs is designed to support youth and women in their early careers to sharpen their skills in STI policy research and development work in Africa; and lastly, the STI Congress is designed to convene African youth and women to chart a proactive way of harnessing their potentials for sustainable development.

On behalf of the board, I take this opportunity to thank all those who have supported us last year through development grants, linkages, partnerships and also in the implementation of programs outlined in our new Phase VIII Strategic Plan. We welcome new partners to join us in our work as we develop Africa's STI capacity for sustainable development.

**Mr. Chuma Ikenze,  
CEO Kenzel, LLC,  
Chair, ATPS Board of Directors**



## EXECUTIVE DIRECTOR'S MESSAGE

**W**e welcome all our stakeholders to the New Year 2018. This Year, ATPS's work will be guided by the Phase VIII Strategic Plan, 2017-2022. In line with the thematic and programmatic priorities, the following key events have been scheduled in 2018.

**Hosting of the Kenya workshop on Governing Inclusive Green Growth in Africa:** ATPS in collaboration with the University of Reading, United Kingdom, organized the third round of workshops on **"Governing Inclusive Green Growth in Africa (GIGGA)** from 8-9 March 2018 in Nairobi, Kenya. The workshop aimed to bring together relevant stakeholders to explore how countries in Africa can benefit from inclusive green growth research, investments and innovations in low carbon sustainable development.

**Hosting of the British Council-Newton Funds Trilateral Researcher Links Workshop:** ATPS in collaboration with Lancaster University (UK) and North-West University (S. Africa) organized a Researcher Links Trilateral workshop on *"Air pollution in Emerging Mega-Cities: sources, evolution and impacts"* in Nairobi, Kenya from 15-20 April 2018. This scheme brought together over 30 Early Career Researchers (ECR) and practitioners from the UK, Kenya and South Africa to learn about atmospheric research and to lay the foundations for future collaborative research partnerships across disciplines and geographical boundaries.

**LandInfo App Training in Nigeria and Malawi:** ATPS held its capacity building workshop on the use of LandInfo mobile app for improving agricultural productivity and climate change resilience from 26-29 March 2018 in Nsukka Nigeria and will hold another one in Malawi in August 2018. The LandInfo app is a community-driven app that enables users to instantaneously access climatic and soil information and interpret them in the context of local conditions and values, including crop preferences for specific soils.

**Case studies for the development of climate adaptation toolkit in Nigeria and Kenya:** As part of the ATPS-led consortium for the implementation of the Climate Development Special Fund (CDSF) project on "Bridging Climate Information Gaps to Strengthen Capacities for Climate Informed Decision-making" the Stockholm Environment Institute (SEI-Africa Centre) conducted a Focus Group Discussion (FGD) in Edem-Ani, Nsukka Local Government Area of Enugu State, Nigeria from 2-4 May 2018 to elicit useful climatic information in the agricultural sector that will be used to develop an adaptation toolkit. A similar case study will take place in July 2018 in Migori County, Kenya.

**Midterm review and supervision by the African Development Bank on our CDSF project:** A joint supervision/midterm evaluation of our CDSF project by AfDB is scheduled to take place from 14-15 May 2018. The objective of the mission is to ascertain the progress with the implementation of the ATPS-led project and assess performance in management, technical, financial and procurement activities.

**Regional climate change dialogue and capacity building workshop for policy makers and scientists in Africa:** ATPS and its partners collaborating in the CDSF project will organize



**Dr. Nicholas Ozor**

a three day climate change dialogue and workshops for scientists and policymakers in Africa from 25-28 June 2018 in Nairobi, Kenya. The dialogue/workshop will provide opportunity for stakeholders to reflect on the progress made and challenges experienced in the target project countries in terms of climate change adaptation and mitigation through timely provision of climate information and services and how policy interventions are aiding or abating this process.

**ATPS Board Meeting:** As part of our improved governance strategy, the ATPS Board of Directors will hold their Board meeting during the week of 24 June 2018 in Nairobi, Kenya.

**SGCI Annual Regional Meeting in Ghana:** ATPS will co-host the Science Granting Councils Initiative (SGCI) Annual Regional Meeting (ARM) with the Ministry of Environment, Science, Technology and Innovation (MESTI), Ghana from 5-7 July 2018 in Accra, Ghana. The theme of this year's ARM is on "Research and Innovation for Job Creation".

**SGCI Annual Forum in Abidjan, Cote d'Ivoire:** ATPS will organize the 2018 SGCI Annual Forum from 5-7 November 2018 in Abidjan, Cote d'Ivoire. The theme of this year's AF is on "New Approaches for Funding Research and Innovation in Africa". The SGCI is a 5-year Initiative which aims to strengthen the capacities of Science Granting Councils (SGCs) in sub-Saharan Africa in order to support research and evidence-based policies that will contribute to economic and social development. The Initiative is jointly funded by IDRC, DFID and NRF, South Africa. The SGCI theme on Networking Africa's SGCs is being implemented by ATPS in partnership with The Scinnovent Centre.

As we implement these and many more activities during in 2018, we continue to solicit for supports from development partners, governments, donors and the private sector to support the work of the ATPS in building Africa's capabilities in STI policy research, policymaking and implementation for sustainable development on the continent.

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

# ATPS RANKED BEST THINK TANK NETWORK FOR THE FOURTH YEAR IN A ROW ACCORDING TO A GLOBAL REPORT

**T**he ATPS for the fourth time consecutively emerged as the Best Think Tank Network in Africa. The 2017 Global Go To Think Tank Index Report was released by the University of Pennsylvania under the Think Tank and Civil Societies Program. ATPS was also ranked as the best transdisciplinary Research Think Tank, Top Science and Technology Think Tank, Best Use of Internet and Best Think Tank with an annual operating budget of less than \$5 million USD in a year. Overall, ATPS was ranked 101 worldwide and 7th in the Africa.

Brookings Institution (USA) emerged as the top think tank in the World. Globally, ATPS emerged 5th, 10th, 10th, 14th, 15th, 16th as the Best Think Tank with an annual budget of less than \$5 million, Top Science and Technology Think Tank, Best Transdisciplinary Research Think Tank, Best think Tank Network, Best Regional Studies Centre (Free Standing) and Best Institutional Collaboration involving two or more Think Tanks respectively.

Water and food security are the two new categories introduced



## 2017 Global Go To Think Tank Index Report

in the 2017 Global Go To Think Tank Index; the new categories are as a result of the slowly diminishing ecosystem which has led to drought and famine in some parts of the world. Think Tanks under this new category are expected to work with governments to come up with effective policies that will help mitigate the effects of climate change.

### ATPS Ranking at a Glance

S/N	Relevant Criteria	ATPS Ranking Worldwide	ATPS Ranking in Africa
1.	Best Think Tank Network	14	1
2.	Best Transdisciplinary Research Think Tank	10	1
3.	Top Science and Technology Think Tank	10	1
4.	Best Use of Internet	23	1
5.	Think Tank with annual operating budget of less than \$5 million USD	5	1
6.	Best Institutional collaboration involving two or more think tanks	16	2
7.	Best Managed Think Tanks	22	2
8.	Most Significant Impact on Public Policy	30	2
9.	Best Regional Studies Centre (Free standing)	15	2
10.	Best Advocacy Campaign	20	3
11.	Top Global Health Policy Think Tanks	26	3
12.	Think Tank with the most Innovative Policy ideas/ proposals	31	3
13.	Top Domestic Health Policy Think Tanks	32	4
14.	Best Independent Think Tank	77	4
15.	Top international development Think Tank	46	4
16.	Top Domestic Economic Policy Think Tanks	82	5
17.	Top Think Tanks Worldwide (US and Non-US)	101	7
18.	Top Think Tanks in sub-Saharan Africa	N/A	30
Number of Think Tanks ranked in the world 2017		7,815	
Number of Think Tanks in Sub-Saharan Africa		664	
Number of Think Tanks ranked in Kenya		57	

The number of Think Tanks in Africa is still low at 664 when compared to Europe which has 2,045 Think Tanks; Asia has 1,676, North America 1,972 and Central and South America at 979. In Africa, South Africa has 92 think tanks which is the highest followed by Kenya (57), Nigeria (52), Ghana (40) and Uganda (32). The number of think tanks in Africa is still low. Out of these, approximately 25%-30% are fragile due to the failing hostile political and regulatory environment to NGOs, inadequate funding and underdeveloped institutional capacity of some countries. According to James McGann, Director Think Tanks and Civil Societies Program there is need to raise

awareness of think tanks sustainability in Africa and more effort put in place to address inadequate funding and shortage of staff.

With these successes, the ATPS Board extends its gratitude to the entire 1,500 network members and stakeholders spread across 51 countries in 5 continents for their great support and strategic guidance. We continue to build Africa's capabilities in science, technology and innovation policy research, policy-making and policy implementation for sustainable development.

## STI POLICY GAP: A BARRIER TO ECONOMIC PROGRESS IN AFRICA



Photo: africaatlanta.org

*A cross-sectional overview of Africa's key sectors of the economy.*

**By Dr. Jaro Arero**  
**Deputy Director, Basic Sciences & Engineering**  
**Division at the Kenya National Commission for**  
**UNESCO and a STI Policy Expert.**

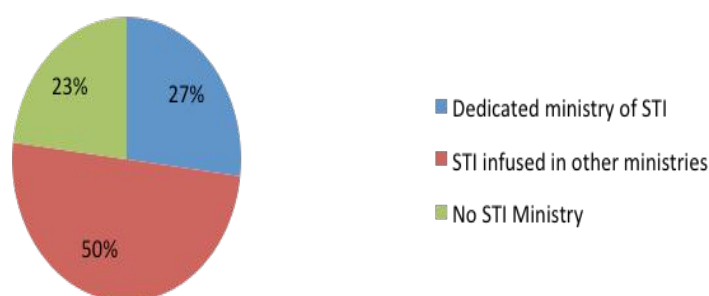
**A**s global economic trends move from commodity to knowledge economy, ideas have become an important constituent of the modern day trading process. Ideas have replaced goods and services and are critical factors of production for start-ups and in some cases entire economies.

In the 21st century, national economies rely on the ability to create sustainable jobs or robust economies, capable of withstanding fluctuations in global markets through harnessing the power of Science, Technology and Innovation (STI); strengthened and up to date STI frameworks and policies will

be central to realizing the African Union Agenda 2063 and the UN Sustainable Development Goals. Unfortunately, most African countries do not have a functional STI policy in place, the few that have do not regularly review them to ensure they are in tandem with the fast changing national priorities and global trends. Like any other policy, STI policy needs to be championed at high levels of governments and this is also an indicator of the priority attached to it and which also comes with funding. A desktop search shows that only 52% of African countries have published STI policies. Very few countries have ministries or state departments dedicated to Science, Technology and Innovation. **Figure 1** below shows that 27 % of African countries have Ministries dedicated to STI Policy while 23 % do not have a dedicated ministry nor infused in another ministry



## Proportion of African Countries with Ministries Dedicated to STI



STI is an enabler for economic progress and sustainable development considering all the challenges posed by population growth, diminishing wetlands, fresh water scarcity, food insecurity, pollution, loss of biodiversity, rising sea levels and climate change. African countries cannot afford to continue operating on a business as usual policy model, but need to have a paradigm shift and harness the benefits of STI to break out of poverty, dependence on foreign aid, export of raw agricultural produces and a work force unprepared for the jobs of the 21st century.

Without sufficient funding of Research and Development, countries will only be at the bottom of knowledge food chain where they can only consume knowledge generated elsewhere. Different continents have different regional priorities and so are their R & D priorities. Evidence-based solutions to societal challenges do not always work by copy pasting from one region to another. In 2010, the percentage of GDP allocated to R&D (GERD) in Africa ranged from 0.02 to 0.79 far below the recommended 2%. Compared to R&D investments in 2015 of tech giant countries such as Israel (GERD, 4.27%) and South Korea (GERD, 4.23%) a pattern comes out. These two countries economically stand out despite being both being natural resources-scarce.

African countries still fare badly in other indicators of a strong STI culture. There is a positive correlation between research output and economic development. According to Elsevier, in 2012, the share of the world's articles with African authors was 2.3%, which is a significant improvement compared to 1.2% in 1996. But considering that in 2012 population of Africa was 15% of the global population, Africa's contribution in 2012 to knowledge generation was still disproportionately dismal.

Effective Intellectual Property Rights (IPR) laws and regulations are critical in knowledge economies, as it provides a favourable environment for creators, innovators and investors. Using patent output to measure entrenchment of innovation culture, Africa as a region is an underperformer. It is not that

innovations are not taking place in Africa or Africans are not innovative enough, the challenge emanate from weak Intellectual Property policies and poor enforcement of the existing ones. Small and micro-enterprises form the basis the continent's economic base and also the epicenter of innovation; however, they are made vulnerable by unawareness of their IPR, weak enforcement of existing legislations and these exposes them to loss of their ideas. In 2013, Africa contributed only 0.1% of patents generated.

Africa's poor performance in research output has its genesis in the shortage of researchers. Even of the few researchers produced by the universities in Africa, a significant number leave the continent due to lack of infrastructure and resources. According to UNESCO Science report 2015, in 2013 Africa's share of researchers was 2.4 %; a ratio that has not changed since 2007 when it was 2.3%. The situation is more dire when looked at in absolute terms, the continent has just 79 scientists per million of inhabitants compared to better performing countries such as Brazil and United States where the ratio stands at 656 and 4,500, respectively. This lack of skilled human capital will certainly continue to slow down the continent's economic take off and realizations of development goals such as the Sustainable Development Goals. It is estimated that to achieve the goals of SDG 6 (Clean water and Affordable sanitation); sub-Saharan Africa needs 2.5 million engineers. The bulk of students in African universities are enrolled in arts and business courses, in some countries they make up to 70% of the student population.

Without change in policy approach going by this current trajectory, Africa may not produce enough Science, Technology, Engineering and Mathematics professionals critically needed for socio-economic transformations to knowledge economy and sustainable society. As with other industrial revolution, the 4th industrial revolution may also by pass Africa.

## TRANSFORMING LIVES OF FARMERS AND SCHOLARS USING THE LANDINFO MOBILE APP TECHNOLOGY IN NIGERIA



*Dr. Ernest Acheampong (Second from Right) ATPS Senior Research Officer demonstrates to participants on how to use the LandInfo app in the field.*

**By Alfred Nyambane**

The African Technology Policy Studies Network (ATPS) conducted a Training of Trainers Workshop on the use of LandInfo Mobile App at the University of Nigeria, Nsukka (UNN) from 28th - 29th March 2018. In attendance were Deputy Vice Chancellor Administration (UNN)-Prof. Charles Igwe, Dr. Mathias Onu-Programme Manager of Enugu State Agricultural Development Programme (ENADEP), Prof. Michael Madukwe- ATPS National Chapter Coordinator Nigeria, Dr. Nicholas Ozor- ATPS Executive Director, Dr. Ernest Acheampong and Mr. Alfred Nyambane both ATPS Research Officers. The workshop attracted more than 120 participants who comprised of agriculture extension workers, farmers, final year students and lecturers of University of Nigeria, Nsukka.

The Vice Chancellor of UNN Prof. Benjamin Ozumba in his opening remarks which was read by Deputy Vice Chancellor Administration Prof. Charles Igwe, reiterated that the university recognises the importance of technological advancement in agriculture in the actualization of its vision of creating a functional, global competitive and research focused environment to respond to the needs of the society. He further added that the Faculty of Agriculture UNN, has proven to be at the forefront of technological advancement. He expressed optimism that the LandInfo mobile app will equip the participants with knowledge to make informed decisions on land use planning and farm management which would sustainably increase agricultural productivity.

The LandInfo Mobile App allows users to use smart phones to determine their land potential by assisting farmers to determine the average weather conditions of a given point and the soil type. The app is freely available on google play store and site specific data one can gather from the app includes: temperature, rainfall, estimated amount of water the soil can store for plants (aridity index) and growing season length.

Dr. Mathias Onu challenged participants to train their colleagues who were not part of the training on the use of the mobile app so that as many people as possible are able to get and utilize the app to improve their agricultural production.

Participants were very excited to learn about the mobile app and appreciated the fact that they were given the opportunity to be among the first people to be trained on how to use the app in Enugu and in Nigeria. They vowed to support the efforts of ATPS in creating awareness about the app across Enugu State and Nigeria as a whole.

The training workshop was organized by the ATPS secretariat and Nigeria Country Chapter (Led by Prof Michael Madukwe and assisted by Remmy Ozioko) in collaboration with UNN and ENADEP and funded by the African Development Bank.



# RECIRCULATE: THE ROLE OF THE AFRICAN RESEARCHER IN DRIVING SUSTAINABLE ECO-INNOVATIONS



A cross section of some of the participants who took part in the RECIRCULATE Training Workshop in Accra, Ghana.

**By Ruth Oriama & Dr. Akanimo Odon-Africa Strategy Advisor, Lancaster University**

**R**ECIRCULATE (Driving eco-innovation in Africa Capacity building for a safe circular water economy), is a GCRF funded project that seeks to support new partnership-based approaches to enable African researchers to grow transformational impact through working with, in and for their communities and developing robust, durable and equitable partnerships with UK researchers. It is based on solution focused and interdisciplinary co-designed research. Two ATPS staff, Ms. Ruth Oriama and Mr. Alfred Nyam-bane attended training workshops organised by Lancaster University, UK through its Centre for Global Eco-Innovation to implement its project in which ATPS is Phase Two partner. The third workshop on Entrepreneurship & Innovation held on from 28 January–1 February 2018, for example focused on the use of leapfrog technologies to provide eco-innovative solutions for safe and sustainable water use. Fifty eco-innovation models will be fully sponsored for residency in Lancaster UK, out of the programme's objective to enable African researchers co-design ambitious eco-innovation projects.

Eco-innovation involves the provision of novel products and/or processes, which contribute to sustainable development to the end users. The ecological or resource-efficiency of these innovations warrants them the prefix eco. Examples of such innovations are replete, with social innovation models providing for numerous cases. An example in the case of water for energy efficiency is the use of local hydro-electric grids as a sustainable energy source for communities, or the use of mobile technology to alert community members when water channels have been opened. These innovations have great potential in making a difference in Africa as they are solution based and they offer local employment and reinvest profit in upkeep and maintenance.

The African researcher has a vital role in the eco-innovation agenda as they understand best the African challenge. Today, out of the global research output, only 2.6% of it is contributed by the Africa researcher who also produces only 0.2% of worldwide patents. In their efforts to produce research output majorly in the form of publications, they have capacity to collaborate with researchers, innovators, civil society groups and governments within and beyond Africa. They understand the basic challenges of their communities whether in water, food, energy or health and sanitation and can assimilate with ease opportunities for change. The politics that play in the question of who should drive the innovation agenda comes with the knowledge vs money vs power vs rights competition, needless to say that communicating and providing value in eco-innovation propositions requires the involvement of all these groups in a responsible research and innovation setup.

Therefore, the entrepreneurial challenge for Africa is not just limited to a lack of government support, lack of foundational infrastructure and/or a lack of seed funds, but also inadequate business modelling. Technology and in particular leapfrog emerging technologies such as use of smartphones, geo-localisations, biotechnology, affordable solar technologies etc. can empower local communities exposing them to more opportunities for growth in specific challenges as seen in the use of local hydro-electric power grids or water purification technologies such as LifeStraw. The adoption and diffusion of these technologies and the possibility of African economies to benchmark best practices are very much possible.

While Africa's Regional Economic Communities (RECs) act to influence the adoption capacities of these economies, it is evident there are cultural and economic commonalities that are forged within these regions to create more natural "regions" so that there is a convergence of cultural, trade and investment activities and not just a convergence of governance systems. The African researcher and innovator could easily increase their outreach to these regions, permitting them to not only have a widespread research network, but also to understand and appreciate different academic and entrepreneurial environments. The French speaking West Africa for instance is understood to be the most interconnected region in the continent. The cultural and economic commonalities render not only the individual communities, or countries, but the entire region accessible to the African researcher and entrepreneur. They are therefore called upon to start internally and grow externally, to develop a "sustainable research and innovation" mind-set and to leverage on regional and continental institutions such as the African Technology Policy Studies Network, the African Academy of Sciences, the African Union, Embassies and High Commissions in their countries, which exist to facilitate the researcher and entrepreneur to develop pan-African solutions; because why be a local champion when there is Africa to conquer?

# A TIME TO RELOOK ON STI POLICIES IN AFRICA



*African Heads of State at the African Union Headquarters in Addis Ababa, Ethiopia.*

**By Justus Wanzala**

**Journalist and Post-graduate student, Development Studies**

**T**he African continent has sought and is still seeking solutions to challenges facing it for decades with mixed results. These challenges range from poverty to diseases, to inadequate infrastructure, amongst others. Despite Science, Technology and Innovation (STI) being key to addressing the continent's challenges, there has been a lackadaisical approach in enacting sound and strong policies.

In an interview with Dr. Ann Kingiri, a Senior Research Fellow at the African Centre for Technology Studies (ACTS), she opines that generally, there have been a political push by governments to put right policies in place to drive the Development Agenda. "Whereas countries are putting in place STI policies which is the underlying agenda in meeting national needs some are still lagging behind by not prioritising the STI agenda while some have failed to revised their current STI policies. The trend is observable through various regional level approaches which are in tandem with the African Union vision 2024. Research is needed to determine what is happening at national level as some countries may not have achieved much and can learn something from countries noting progress," says Dr. Kingiri.

Key component of STI policies according to Dr. Kingiri is what STIs can achieve in driving development. This has to be linked not only to evidence generated, but also, more crucially, to issues such as extent of policy implementation, the indicators being used and socio-economic status of the people. African countries require a holistic and systemic way of assessing the

impact of STI policies on their people. This assessment should not just be based on the linear approach such as physical infra-structure like labs or papers presented in forums but on factors such as how STIs are providing employment.

Still she notes that African nations are grappling with the issue of research funding, a key element in driving research and development. This is despite the consensus reached in Addis Ababa, Ethiopia by African governments in 2006 to commit at least two percent of their Gross National Product (GDP) on research funding. Most countries in Sub Saharan Africa have not honoured the political agreement.

Dr. Kingiri is however concerned with where resources are being directed to when it comes to funding research. Even as countries commit themselves to fund research, these funds are apparently being directed to multisectoral or interdisciplinary research and to funding innovations. She observes that interdisciplinary research and collaborative initiatives have a greater impact. She further adds that funds should not be given individual researchers because they may be influenced by their own interests.

Additionally, governments should influence and monitor what is being done so that researchers can engage in research that is crucial to socio-economic developments. For STI policies in Africa to be aligned to the continent's development needs, certain steps are crucial. First, is capacity building initiatives involving policy makers, innovators, entrepreneurs and curriculum developers: there is need to do away with the misconception that innovation is just research. "All concerned stakeholders should be involved," she stresses. Secondly, she notes that agenda setting in policy implementation should be



done by African experts. "We encourage external support but agendas should be set in the local context," she advises.

Dr. Kingiri also calls for change of approach in STI policies formulation in Africa to ensure policies are holistic and systemic rather than linear. She argues that research initiatives should complement each other and sectors should be aligned such that agriculture policies are linked to ICTs or industrial ones for instance. This will ensure STIs play its role in Africa's development agenda. Another key aspect is to rejuvenate STI by enhancing collaboration, networking and partnership. Collaboration, she points out, is key to ensuring wide participation in tackling challenges affecting the continent.

In February 2018, the African Academy of Sciences (AAS) published results calling for reform of national STI policies. The study which sought to identify the role of STI in sustainable development focused on specific policy measures and practical actions that African countries must individually or collectively undertake to leverage STI to achieve the SDGs. In its examination of policy and programmatic initiatives to tap global scientific and technological opportunities to address sustainable development challenges of the African continent, it indicted the continent for displaying lethargy on matters STI as a component of development. The sad finding was that in 2016 fewer than half of African

countries had adopted STI policies and countries and that do not consider sustainable development issues holistically but rather are focused on funding scientific research with less emphasis on technology development, procurement and innovation. The report's conclusion is that African countries must improve the quality and relevance of their national STI policy frameworks to address sustainable development. Titled Africa Beyond 2030: Leveraging Science and Innovation to Secure Sustainable Development Goals, it peered into how STI is essential to closing the gap between the continent and the Global North. The report was categorical in the finding that progress in Research and Development in Africa in the last decade has yielded mixed results. It proposes, just like Dr Kingiri did, harnessing STI to achieve SDGs through policy reform supported by adequate budgets, skilled personnel and a legislative monitoring and evaluation component to assess impact.

Dr. Evelyn Namubiru-Mwaura, the AAS' Policy and Strategy Manager optimistically noted in a statement that followed the release of the study that existence of the STI policies on the Continent demonstrates political goodwill to advance the sector. She noted that governments should promote equitable distribution of STI benefits and maximise impact of their sustainable development agendas and prom.

## NATIONAL FARMERS HELPLINE IN NIGERIA ENHANCES AGRICULTURAL EXTENSION SERVICE DELIVERY THROUGH ICT



Photo: Guardian Nigeria

*A farmer harvesting potatoes from the farm.*

**By Prof. Michael Madukwe**  
**National Chapter Coordinator Nigeria**

Agriculture is one the highest contributors to Africa's GDP however according to the Rockefeller Foundation, Africa's GDP

is slowly diminishing due to few investments in the sector. This is despite the fact that in 2003 during the Maputo Declaration on Agriculture and Food Security, African Heads of State agree-





**A section of some of the farmers and extension agents in Nsukka, Nigeria analysing the results obtained from the LandInfo App .**

ed to invest at least ten percent of their national budget to agriculture development.

In order to transform the Agricultural sector, a lot of innovations have been developed to boost Agricultural productivity. These advances in technology and innovation are paving way for the creation and invention of new tools in the agricultural sector through for instance, the development of mobile apps that can generate information and knowledge on agricultural production, livestock, market value and crop insurance.

The ATPS is currently outscaling the LandInfo mobile app which is a community-driven app that produces accurate soil and climatic information that empowers farmers, extension agents and land-use planners in decision-making regarding agricultural production, land use management and climate resilience. In 2016 ATPS received the Wazo Prize during the Climate Information Prize. ATPS also successfully outscaled the use of the app to farmers, extension agents and agriculture students who are in their final year at the University of Nigeria, Nsukka Enugu State. The aim is to improve agricultural productivity in the region.

In Nigeria, the agricultural sector is using a unified ICT driven knowledge management platform to avoid duplication of efforts and the proliferation of conflicting messages. The Minister of Agriculture and Rural Development Nigeria, Chief Audu Ogbe officially commissioned the National Farmers HelpLine (NFH) as a bid to enable farmers share information which will help boost agricultural productivity and also help solve the inability of farmers to reach extension officers. The proliferation of ICT projects aims to support extension services in agriculture. The new technology will help bridge the gap already experienced from the dwindling number of extension agents in the national agricultural extension delivery system. It will also bring support on climate resilience, optimization of resources

in terms of employing fewer but efficient agricultural managers and it will also bring global exposure to farmers and their produce.

The National Farmers Helpline is an innovative platform that will reach out to the youths with information about farming activities and career opportunities in the agricultural sector, bearing in mind that the current national farming population is aging. NFH will also maintain a comprehensive information database for stakeholders in the nation's agricultural sector, serve as catalyst for transforming subsistence farmers to agriculturist from small-scale to medium and large-scale farming and help farmers acquire specific knowledge related to certain problems and solutions hence assist them in decision making. Farmer groups can evaluate and improve their opinion-forming and decision-making skills and provide a platform for transparent distribution of farm inputs to farmers and other stakeholders in line with government's policy.

Additionally, the helpline will help farmers analyse their present and expected future farming and livelihood needs and situations, strengthen the link between agricultural development activities and the private sector, so that these organizations can provide a wide range of extension education and technical support services such as micro-credit financing and supply of essential inputs and increase knowledge and develop insight into field and policy problems, and help structure existing knowledge on such issues.

It is expected that the National Farmers Helpline will provide real-time extension services to farmers using subject matter specialists, link farmers to farm input agencies, provide market information research, serve as first and second-level help desk, provide information on farm business development and farmers' link to markets and market resources.

The NFHL headquarters is housed at the National Agricultural Extension and Research Liaison Services (NAERLS), Ahmadu Bello University Zaria. Its zonal hubs are situated in six coordinating Research Institutes namely: Institute of Agricultural Research (IAR), Samaru; National Cereal Research Institute (NCRI), Badeggi; LCRI, Maiduguri; Institute of Agricultural research and training (IAR&T) Ibadan; National Root Crop Research Institute (NRCRI), Umudike; and Nigeria Institute for Oil Palm research (NIFOR) Benin.

The helpline provides support in following main languages in Nigeria; English (All Zones), Pidgin English (all zones, but mainly South-South and Southeast), Hausa (North), Igbo (South-East) and Yoruba (Southwest).

# INTERNATIONAL DAY OF WOMEN AND GIRLS IN SCIENCE



Prof. Faith Osier (Left) and his colleague in a medical laboratory.

## By Sharon Anyango

The World recently celebrated, the International Day of Women and Girls in Science on 11th February, 2018. This year's theme was *"Equality and Parity in Science and Peace Development"*. Different stakeholders converged in different parts of the World to celebrate outstanding girls and women in the field of Science, Technology and Innovation and also to discuss on the efforts needed to close the gender gap in the field. The day is a reminder that girls and women have a big role to play in the field of STI and they too need support in order to scale to new heights.

The ATPS and other stakeholders have been on the forefront in closing the gender gap in STI. In 2015, the UN officially launched the seventeen (17) Global Sustainable Development Goals (SDGs) which will help it achieve Agenda 2030 for global transformation. Goal five (5) aims to address gender equality in the world by ending all forms of discrimination against girls and women. The ATPS Technopolicy brief No. 44 titled *"Mainstreaming Gender in the National Science, Technology and Innovation (STI) Policy of Kenya"* published in 2014 was ranked 45th globally and 2nd in Sub Saharan Africa among the Best Policy Study/Report produced by a Think Tank (2013-2014). The report is available online at: <http://www.atpsnet.org/Files/pb44.pdf>

The number of girls/women in STEM courses is still low despite efforts done by various institutions to encourage more girls/women to undertake STEM. According to a report by UNESCO

(2014-2016) less than 30% of researchers are women and approximately 30% female students prefer to study STEM-related fields in the University. According to UNESCO's Fact Sheet No. 43, Tunisia leads with the highest number of female researchers at 53.9% followed by South Africa (43.7%), Namibia (43.7), Egypt (42.4) and Mauritius (41.9%). Togo has the numbers of female researchers at 9.5% followed by Guinea, Congo, Ethiopia and Burundi at 9.8%, 12.8%, 13.3% and 14.6 respectively.

Some of the factors contributing to the low now number of women in STEM field is that the courses are expensive, stereotypes are still associated with women who pursue STEM, underrepresentation by women in leadership positions for instance, in Africa many university departments and research institutes are often led by men), lack of or ineffective gender policy frameworks so support career advancement for women in STEM, as well as lack of mentors, amongst others.

However, despite these limitations there still are outstanding women in the STEM field. Prof. Faith Osier from Kenya is leading African scientific research work in Malaria. She is optimistic that one day she will be remembered in history as a researcher who took part in coming up with a vaccine against malaria.

The African Union, for instance, through its strategic plan, Science, Technology and Innovation Strategy for Africa (STI-SA-2024) aims to use Science, Technology and Innovation to provide solutions to some of the Continents pressing challenge. This means that the labour workforce needed will be from the field of STEM. In order to close the gender gap it is



important good policies are put in place so that young girls and women can join the field of STEM so that they too can

help realize the AU's Agenda which is to accelerate Africa's transition to an innovation-led, knowledge based economy.

## Interview by Sharon Anyango

**Prof. Faith Osier is a medical officer/research officer at Kenya Medical Research Institute (KEMRI) and a visiting Professor of Malaria Immunology at the University of Oxford. She is expected to give a TED work in April about her research work in finding cure against Malaria disease. Prof. Osier has received many awards namely: The Royal Pfizer Award, Young African scientist award and Merie A Sande Health Leadership Award. Her research interests are in Malaria vaccines, Immuno-epidemiology, antibodies and Plasmodium falciparum merozoite.**



**Prof. Faith Osier**

### 1. How would you best describe yourself?

I am an ambitious young African Clinician Scientist. I am also a wife, mother, mentor and educator who strongly believes in empowering young Africans to take on the health challenges facing our continent.

### 2. How did you develop your interest in scientific research work?

As a child, my mother had a friend who was a doctor and my parents encouraged me to be like her. I dreamt about being a doctor one day and finding cures to big diseases. As an adult, my interest in science really developed while working as a junior doctor in what is now Kilifi County Hospital at the Kenyan Coast. There, I was exposed to a brilliant team of scientists carrying out malaria research and I got hooked.

### 3. There are many tropical diseases in Africa; some of them include Dengue fever, yellow fever and Ebola virus amongst others. Why did you decide to focus your work on Malaria?

I joined Kilifi County Hospital in 1998, 20 years ago. At that time, malaria was a major cause of hospital admissions and I remember admitting up to five or six children with severe malaria on a night on call to the high dependency unit. The scientists there focused on malaria and I decided to join them.

### 4. Why has it been difficult to treat Malaria?

Malaria should be simple to treat if it is diagnosed early and the right drugs are given, at the right dosage. Major problems arise due to delays in diagnosis which allow complications to develop, resistance to drugs or their incorrect use. In rural settings where the burden of malaria is highest, access to health-care facilities and the right drugs continues to be a challenge.

### 5. How does the immune system respond to Malaria?

The immune system recognizes malaria parasites as foreign and immune cells secrete proteins such as antibodies and cytokines to tackle the infection. The immune response can result in clearance of malaria parasites without any clinical symptoms. Unfortunately, in patients with severe malaria, the immune system is thought to contribute to some of the complications of the disease.

### 6. What are some the reasons why Malaria kills more children than adults?

In general, adults living in areas with lots of malaria will have experienced the infection numerous times, and their immune systems "learn" how to cope with it. Children do not have this experience, which is why they succumb to the disease.

### 7. Is there a possibility to develop immunity against the Malaria disease?

Absolutely! The fact that adults living in endemic areas with lots of malaria do not get ill from the disease tells us that it is possible to become immune.

### 8. You have done a lot of research about Malaria, what are some of your findings?

I have been working to understand how adults acquire immunity, so that we can transfer these "principles" to children through vaccination. My main findings have been that adults appear to make lots of antibodies against specific proteins of the malaria parasite, and that these antibodies appear to work together synergistically to clear malaria infections. We have also identified new proteins within the malaria parasite that could be considered for malaria vaccines.

### 9. Are there any precautions to prevent malaria?

Yes, there are many things that can be done to prevent malaria. The majority of these are aimed at reducing the chances of contact with mosquitoes and include: insecticide treated bednets, mosquito repellants, indoor residual spraying with





**Prof. Faith Osier and young children in Kilifi**

insecticides, treatment of larval habitats for mosquitoes etc. One can also take prophylactic drugs.

**11. The world will mark, World Malaria Day on 25th April 2018 and the theme for this year is *ending malaria for good*. Will this be a reality one day and what strides are being made to make it real?**

I believe this will become a reality one day. Just as smallpox was eradicated, polio is almost completely gone, I look forward to the day that malaria will be relegated to history books. There are global and national efforts to control malaria through multiple initiatives targeting vector control, improved diagnosis and treatment, monitoring for drug resistance, vaccine development etc. Progress might appear to be slow, but if sustained, will eventually lead to lasting change.

**12. What has been your experience in working in a male dominated field and what have been your major lessons?**

The major lesson is to let my work speak for me and to make sure that I am exceptionally good at it. This way, I have nothing to fear.

**13. What are some of the publication you have worked on?**

My most highly cited publication is the one in which we showed that the breadth and magnitude of the antibody response against specific parasite proteins was a strong predictor of immunity against malaria. In a subsequent publication, we extended these findings to show that there were many more parasite proteins that could be considered for malaria vaccines. The links to some of my publications can be found at: <http://iai.asm.org/content/76/5/2240.long>, <http://stm.sciencemag.org/content/6/247/247ra102.long>

**14. Your message to upcoming researchers in the field of STEM?**

Be the best at your job. Do it with all your heart!

**15. Congratulations you are a recipient of the prestigious Royal Society Pfizer Award which is recognition of your work and your team at KEMRI Wellcome Trust on “New antigens for a multi component blood stage malaria vaccine” Briefly tell us about the research and its outcomes**

In this study we showed that there were many more parasite proteins that had potential for inclusion in malaria vaccines than had been previously thought. Essentially, the vaccine development field has concentrated on just a few parasite proteins yet we are faced with an organism that contains over 5000 proteins. We continue to uncover more proteins that appear to have potential for inclusion in malaria vaccines and in the future would like to see more of these make their way to the laboratory for testing.

**16. You are currently the secretary of the Federation of African Immunological Societies? What does the organization aim to do and what are its achievements so far?**

I have recently stepped down as the Secretary General of FAIS to concentrate on my duties as Vice-President/President-elect of the International Union of Immunological Societies (IUIS). The main purpose of FAIS is to promote immunology on the African continent. We do this by hosting immunology conferences at the national and regional levels. We also leverage funds for training for short courses in immunology held in conjunction with the IUIS. In 2022, for the first time in its history, the IUIS will host the largest global immunology conference in Cape Town, South Africa. The bid to host this meeting was put together by the South African Association of Immunology (SAIS) in partnership with FAIS. This will be game-changing for Africa and we are really excited and looking forward to it. We are launching a FAIS Legacy Project that will focus on increasing the numbers of African PhD trained Immunologists.

**17. Congratulations once again. You have been selected as 2018 Ted Fellow to talk about your efforts in coming up with a vaccine to cure malaria. What will be your main message to the world in the event which is scheduled to take place in April?**

My main message will be to remind the world that malaria is still a major burden in Africa, that there is no room for complacency and that vaccine development efforts should remain a priority.

**18. Your favourite quote?**

Life is not a rehearsal, LIVE IT!

**19. What should we expect from you in the future?**

Three things: i) contribution to the development of a highly effective malaria vaccine against malaria, ii) a legacy of internationally competitive African scientists that I will have had the privilege of training or contributing to their professional development and, iii) business investments in impoverished malaria endemic communities that will uplift standards of living.

# PROPOSED POLICY FOR ONE STOP AGRICULTURAL EXTENSION DELIVERY CENTRE IN NIGERIA



*A farmer ploughing his farm.*

**By Prof. Michael Madukwe,  
National Chapter Coordinator, Nigeria,**

**T**he National Public Agricultural extension services delivery in Nigeria has a very low presence in the farmers' fields. The number of agricultural extension workers has also greatly reduced due to retrenchment, retirement, death, change of jobs without replacement, inadequate complementary logistics support for the few remaining staff to effectively carry out agricultural extension services, support services to extension delivery such as access to quality inputs, markets and marketing infrastructure, tractor hiring services, and credits are poor or inadequate.

Therefore, there is need to strengthen extension support to farmers to enhance their capacity to increase agricultural production and productivity. One of the policy thrust of the Government of Nigeria towards strengthening the national agricultural extension system is the establishment of one-stop agricultural extension delivery Centre in each of the 774 Local Government Areas in the country to provide a variety of support services to farmers. The proposed One-Stop Agricultural Extension Delivery Centre will be established by the three tiers of government on the basis of 45-35-20 percentage cost sharing and would eventually be private sector driven.

## Components of the Centre

The one-stop Agricultural Extension Services Delivery Centre is to be established on:

- a three-hectare land in each of the 774 LGAs.
- The Centre will have plots/ponds/pens to demonstrate and disseminate appropriate and proven technologies and innovations to farmers along the value chains of key agricultural commodities.
- Host agro-dealers and their wares, mechanization facility, a training/ ICT hub, credit institutional support, etc.
- Provide training and demonstration on various value adding systems to support produce utilization and enhance product shelf life thereby increasing food availability.
- Government will provide the infrastructures and initial key staff.

## Services of the Centre

The Centre will provide farmers access to a range of services such as: soil testing, access to high quality seeds and other mechanization services; Access to both insurance and credit service providers, a technology demonstration and dissemination Centre where farmers will come to learn the 'how' of technology adoption and utilization as well as transformation of produce into various products to enhance uptake, marketing and consumer satisfaction.

Additionally, agro-dealers will have an opportunity to showcase their products (inputs) and demonstrate them where necessary to farmers and other end-users. It will also serve as a training Center for farmers and extension workers on new and





*A cross-section of some of the farmers and extension agents who attended the LandInfo app training in Nsukka, Enugu State, Nigeria. In attendance was ATPS National Chapter Coordinator, Nigeria Prof. Michael Madukwe (Sitted Second from Left).*

emerging agricultural technologies, practices and innovations to increase agricultural production and productivity.

To facilitate effective establishment of the Centre, the Federal, State and Local Governments are expected to contribute to the provision of infrastructure that will enhance the smooth operation of these Centers. The Federal Government is expected to build/renovate equip and furnish a 4-room administrative building that will accommodate offices of the Block Extension Officer, Extension Agents, Meeting room, Store, ICT Center and conveniences; provide one tractor, one 4-wheel drive vehicle (Hilux) and one motorcycle for the Centre operations; and a mini-metrological station for information on weather management and to provide technical backstopping and oversight for operations of the Centre.

The State Government is expected to build/renovate training hall with dwarf surrounding walls with a small room for storing training materials like projector, still camera, public address system, generating set, fans, chairs and tables, etc. The training hall will also serve as a shed for demonstration of value adding technologies; Provide access road to the Centre where necessary and bore-hole for water supply; Provide initial key staff, One Block Extension Officer and two Extension Agents who will serve as the key technical officers of the Centre; and attract private sector participation in the Centre's activities. The Local government is expected to build/ renovate appropriate building /shops for warehousing of agro-inputs by dealers; Liaise with community to secure appropriate venue, with

an adjoining cultivable land of not less than 10 hectares for the integrated Centre; and Provide the Local Agricultural Officer who will be trained to function as the administrative head of the Centre.

### Sustainability

In order to ensure sustainability, the Centers will be private sector driven with provisions for agro-input service providers across the value chains to show-case their products and services; processors to add value to produce and marketers to provide market information according to their various value chains; be operated under a public, private partnership arrangement where the community will provide the land and also ensure security of the facilities at the Center. The private sector will fund inputs, demonstration and over time operate the Center.



# ATPS SEEKS FOR AN EXPERT TO DRAFT A MASTERCLASS PAPER ON THE THEME: “NEW APPROACHES FOR FUNDING RESEARCH AND INNOVATION IN AFRICA”

**By Dr Nicholas Ozor, Executive Director, ATPS & Dr Maurice Bolo, Director, Scinnovent Centre**

## 1.0 INTRODUCTION

The Science Granting Councils Initiative in sub-Saharan Africa (SGCI) is a 5-year Initiative which aims to strengthen the capacities of Science Granting Councils (SGCs) in sub-Saharan Africa in order to support research and evidence-based policies that will contribute to economic and social development. The Initiative is jointly funded by the United Kingdom's Department for International Development (DFID), Canada's International Development Research Centre (IDRC), and South Africa's National Research Foundation (NRF). The SGCI theme on Networking Africa's SGCs is being implemented by the African Technology Policy Studies Network (ATPS) in partnership with The Scinnovent Centre.

The SGCI convenes Annual Forums (AFs) that brings together Africa's Science Granting Councils (SGCs) from 15 countries and other key stakeholders to deliberate and develop interventions in strategic areas. To facilitate sharing of lessons and good practices, the SGCI commissions a state-of-the-art paper on topics/themes of interest for Africa's development. The theme for the 2018 Annual Forum is on **“New Approaches for Funding Research and Innovation in Africa”**. This document provides guidelines on the Concept for a research paper to be commissioned on the topic ahead of the Annual Forum scheduled for 5 – 7 November 2018 in Abidjan, Cote d'Ivoire.

## 2.0 BACKGROUND

The role of knowledge – its generation, transfer, uptake and utilization has become a key topical issue as countries transition to the knowledge-based economy (KBE). Research and innovation – the two methods of generating and utilizing knowledge can only be sustained through adequate funding and investments. Yet 37 years after the adoption of the Lagos Plan of Action, countries have not fully complied with the commitment by the Heads of States to allocate at least 1% of their gross domestic products (GDPs) to research and development (R&D). The low domestic funding and investments in research and innovation in particular and in science, technology and innovation in general has been worsened by the 2007 global financial crisis and the 2008–2012 global recessions which resulted in reduced budgetary allocations for R&D globally. According to a recent report from the Science-Business Forum, third United Nations Environment Assembly 2017, mobilizing resources is a key challenge and especially for science (ATPS, 2017). Given the “more internal focus” and “our own first” approaches adopted by most donor countries, African governments need to explore other approaches to upscale and

sustain domestic funding and investments in research and innovation to support their economic transformations. New approaches, sources, tools and institutional arrangements have to be explored. Studies have shown that in order to increase the funding/financing opportunities for research and innovation under the current global financial crises and national cut-backs in research and development (R&D) budgets, new approaches and considerations must be made (Ozor, 2015 and World Bank, 2008).

Countries in the developed world and the newly industrialized countries have experimented with various approaches including through institutional reforms, models and mechanisms for funding and financing research and innovation that have delivered some good results. For instance, the Small Business Innovation Research Program (SBIR) is a pre-commercial procurement scheme introduced in the United States in 1982 that mandates the use of 2.5% of the federal R&D budgets from all government departments and agencies with large R&D budgets to contract R&D services from SMEs (<https://www.sbir.gov/>). Similarly, the Malaysian government has established the Cradle Fund, a unit of the Ministry of Finance that seeks to create an ecosystem to support a strong and innovative business building environment for technology entrepreneurs in Malaysia (<http://www.cradle.com.my/faq/>). As Africa joins in the transition to KBE, countries are reviewing their approaches - policies and procedures for funding and financing research and innovation. These on-going reviews could benefit from experiences and best practices from across the world.

In order to inform the current debates, reviews and re-organization of research and innovation funding in Africa, the SGCI wishes to commission a paper on *“new approaches for funding research and innovation in Africa”* paying particular attention on the learning experiences from good practices from across the world on institutions, schemes, and mechanisms and their potential applicability to African countries.

## 3.0 CONTEXTUALIZING THE NEW APPROACHES FOR FUNDING RESEARCH AND INNOVATION IN AFRICA: DEFINITIONS, CONCEPTS AND TYPOLOGIES

In the context of this paper, the term **“new”** is context-specific and takes both a spatial and temporal meaning. In other words, an approach is considered “new” if it has not been used before in a particular place/locality (the spatial dimension) or if it has been introduced in the same locality but at a different time frame (temporal dimension). The different timeframes may reflect different thinking, different actors, different governance structures and therefore same policy approaches and

mechanisms could have different outcomes even in the same locality.

The term “**approaches**” refers to the broad ways and means of dealing with the funding or financing challenges for research and innovation. These include the funding/financing schemes and models on one hand (higher level) and the funding/financing mechanisms on the other hand (lower level).

**Funding/financing schemes and models** include but not limited to public sector funding from government as well as private and philanthropic organizations. Governments predominantly use either direct funding in the form of grants and subsidies or indirect funding in the form of tax incentives, soft loans and other fiscal policies. For instance, the National Research Foundation (NRF, South Africa) and the National Research Fund (NRF, Kenya) have instituted functional STI research grants schemes while countries such as Ghana, Rwanda and Nigeria are in various stages of establishing their own national research funding schemes. The private sector use debt financing, venture capitalism, angel financing amongst other measures. Beyond these well-known examples, there are other emerging models such as crowd-funding, co-investments and IP-based funding models.

Funding/financing mechanisms refer to the various channels of delivery as well as the accompanying eligibility, selection and accountability processes. While competitive grants schemes, awards, contracts or block funds constitute tried and tested mechanisms, some countries have experimented with novel approaches such as “innovation vouchers”, soft-loans, etc.

**Institutional arrangements** refer to the policies, rules, laws, regulations, procedures, frameworks, processes, habits and practices that facilitate and underpin the implementation of the funding/financing schemes and mechanisms. There are a number of on-going policy initiatives at the national levels aimed at reviewing existing STI policies and strategies to incorporate better funding arrangements for research and innovation. These new developments are laudable and need to be supported, scaled and sustained. For example, Namibia is currently reviewing their STI policy with a view to creating a stand-alone innovation policy; Mozambique is reviewing both its STI policy to incorporate the private sector and its manual on funding norms and procedures; Rwanda is in the process of reviewing its 2005 STI policy (STIP) while at the same time developing its national research funding strategies. Uganda is reviewing its 1990 law following the creation of the new Ministry of Science and Technology. These policy and institutional reforms constitute an opportunity for the Councils to learn and integrate lessons and experiences into their overall approaches for funding and financing research and innovation in their respective countries. On a global scale, the Belmont Forum for example has announced its interest and commitment

towards the funding of STI in Africa especially in partnership with the national and regional governments so as to spur local ownership and action.

In the context of the foregoing, the issues to be addressed in the commissioned paper could include (but not limited to):

1. New funding/ financing schemes/models: This includes an understanding of the schemes and models used for funding research and innovation by governments, philanthropists and financial institutions and its potential applicability in African countries. Case studies, lessons, and key political economy conditions may be used to provide insights and deepen the understanding, practicality and applicability of such schemes and models.
2. New funding/ financing mechanisms: This includes an understanding of the pathways through which the schemes and models described above have been or can be implemented. Specific case studies and experiences with such mechanisms will be of interest.
3. New institutional arrangements: This includes institutions that enable or hinder the implementation of the schemes/models and mechanisms. Reforms should be discussed in the context of existing STI policies in Africa as well as on-going policy reviews. Discussions may also include the features of the prevailing approaches, political economy aspects and the monitoring and evaluation of such policies and institutional arrangements

#### 4.0 TERMS OF REFERENCE

In line with the above descriptions and expectations, the commissioned paper could explore the following questions:

1. What are the new and innovative funding approaches (schemes, models and mechanisms) that have been applied across the world and what lessons could be drawn for African countries.
2. What factors facilitate or constrain the implementation of the funding approaches and how have/can the gains be enhanced or the challenges resolved?
3. What institutional reforms accompanied the new approaches and how could Africa re-position its own institutional architecture for enhanced research and innovation funding?

The questions above notwithstanding, authors are expected to frame more questions that will help in the understanding of the theme of the masterclass - ***New Approaches for Funding Research and Innovation in Africa*** based on their wealth of experience and expertise.

#### 4.1 RESEARCH METHODOLOGY AND EXPECTED OUTPUTS

***a. Approach for delivering the commissioned paper***

Interested authors will be invited to propose a methodology/approach for delivering the paper. Such methodology or approach could draw from primary data, secondary data, as well as insights and experiences of practitioners and other experts.

### b. Expected Outputs

In addition to the final masterclass paper which will be presented at the 2018 Annual Forum scheduled for 5-7 November 2018 in Abidjan, Cote d'Ivoire, the authors are expected to produce a high-quality article that will be published in an international peer-reviewed journal and a policy brief.

### 4.2 PROCESS AND TIMELINE FOR THE PRODUCTION OF THE OUTPUTS

- An Expression of Interest and detailed CV(s) of potential author(s)
- An annotated outline of the paper with a detailed work plan
- Draft paper that will be submitted at various stages for reviews by the ATPS/Scinnovent Centre team after the authors have been selected
- Final paper that will be revised after presentation during the Annual Forum
- A draft article for publication in an international peer-reviewed journal to be submitted for reviews by the ATPS/Scinnovent Centre team
- One draft policy brief emanating from the paper to be submitted for reviews by the ATPS/Scinnovent Centre team

#### Timelines for the Development of the Masterclass Paper

S/N	Deliverables	Timeframe
1.	Selection and Contracting of authors	15 June 2018
2.	Submission of the 1st draft paper	15 August 2018
3.	Submission of the 2nd draft paper	15 September 2018
4.	Presentation of the paper during the 2018 AF	November 2018
5.	Submission of the final paper	February 2019
6.	Submission of draft article for publication in a peer-reviewed journal	February 2019
7.	Submission of the final version of article for the paper	March 2019
8.	Submission of 1 Policy Brief	February 2019

### 4.3 SUBMISSION OF EXPRESSION OF INTEREST, DETAILED CV OF POTENTIAL AUTHOR, ANNOTATED TABLE OF CONTENT AND WORK PLAN

The deadline for submission of the Expression of Interest, Detailed CV(s), Annotated Table of Content, and Work plan is on or before Friday, 8 June 2018 by 6:00 pm East African Time. All submissions should be sent to: **executivedirector@atpsnet.org** and copied to **info@scinnovent.org**. Submissions received after this deadline may not be considered. The successful candidate will be notified within one week after the deadline. Please note that the **Expression of Interest** should

not exceed one page of an A4 paper, single spacing, font type- Times New Roman, font size- 11. The **CVs** should demonstrate strong experience from previous related assignments and publications on new approaches for funding research and innovation especially in Africa. The **Annotated Table of Content** should be clearly written with proposed chapters, sections and subsections as the case may be. The **Work Plan** should align with the deliverables and timeframe already identified under Section 4.2 above.

### 4.4 BUDGET

A maximum budget of up to **US\$27,000.00** has been marked for this assignment. A team effort in the production of the masterclass paper is **highly** recommended especially if coming from different regions of the world with Africa inclusive. We shall also cover the travel expenses for the main author to present the paper during the SGCI Annual Forum event scheduled for November 2018 in Abidjan, Cote d'Ivoire. **It is a requirement that the main author of the paper will have to be available to present the paper during the annual forum event.**

### 4.5 ATPS/SCINNOVENT CENTRE INPUT TO THE PROCESS

1. Provide relevant documents to the researcher as may be required; and
2. Review all drafts of the papers and make recommendations for improving the paper on a continuous basis.

### 5.0 REFERENCES

1. African Technology Policy Studies Network (ATPS) (2017) Technopolicy Newsletter Issue 011, ATPS Publications
2. Ozor, Nicholas (2015) Increasing Opportunities for Financing of Research: Lessons for the Demand Side. Paper presented during an international symposium organized on the theme: "New science, technology and innovation funding mechanisms in Africa" and held from 9-11 December in Dakar, Senegal.
3. World Bank Group (2008) New Ways to Finance Development in Sub-Saharan Africa. Available at: <http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/0,,contentMDK:21678510~pagePK:64165401~piPK:64165026~theSitePK:469372,00.html>



## OPPORTUNITIES/EVENTS

### Regional Climate Change Dialogue and Training Workshop

The African Technology Policy Studies Network (ATPS) in partnership with the Stockholm Environment Institute (SEI) Africa Centre, IGAD Climate Prediction and Applications Centre (ICPAC), Observatoire du Sahara et du Sahel (OSS), AGRHYMET Regional Centre (ARC), and the Regional Centre for Mapping Resource for Development (RCMRD) will host a regional climate change dialogue and training workshop in Nairobi, Kenya. The workshop is being held under the project, "Bridging Climate Information Gaps to Strengthen Capacities for Climate Informed Decision-Making". The project aims to reduce vulnerability and foster a food-secure Africa by strengthening the capacities of African countries' to understand and deploy appropriate climate information and best practices to inform decision-making and support development planning. The project is currently being implemented in five countries namely: Cameroon, Kenya, Malawi, Nigeria and Tunisia.

**DATE:** June 25-27, 2018

**VENUE:** Nairobi, Kenya.

For more information please visit ATPS Website: <https://atpsnet.org/>

### MERCK Accelerator Nairobi Satellite Program for Early Start-Ups

Are you an early stage start-up based in East Africa? Are you working at the cutting edge of innovation and would like to run a collaboration project with Merck to solve real-life problems? Is your startup innovation related to Healthcare, Life Sciences, Performance Materials, and Performance Materials and our innovation focus areas? If your answer is yes then apply for this great opportunity and stand a chance to win a \$3,000 cash prize & Fully Funded to Merck Innovation Center in Germany.

**ELIGIBILITY:**

- Early stage startups with no more than 4 years in existence.
- Startups in the fields of Healthcare, Life Sciences, Performance Materials and other search fields such as Biosensing and Interfaces, and Precision Farming.
- Startups with at least 2 co-founders.
- Founders that are available on May 15-18 to attend the bootcamp in Nairobi, Kenya, if selected.

**APPLICATION DEADLINE:** May 5, 2018

For more information, please visit: <https://www.opportunitiesforafricans.com/merck-accelerator-nairobi-satellite-program-2018-early-stage-start-ups-from-east-africa/>

# RECIRCULATE TRAINING WORKSHOP IN GHANA



**Prof. Nigel Paul (Left), Director Centre for Global Eco-Innovation Lancaster University congratulates ATPS Research Officer Mr. Alfred Nyambane (Right) for completing the RECIRCULATE Training Workshop.**



**Aerial View: Participants at one of the RECIRCULATE Training Workshops.**



**Break-Out Sessions: Participants in different groups discuss different themes related to the RECIRCULATE project.**



**Selfie Moments: Dr. Akanimo Odon, Africa Strategy Advisor Lancaster University takes a photo with some participants during the RECIRCULATE workshop.**



**Prof. Nigel Paul, Director Centre for Global Eco-Innovation Lancaster University giving insights about the RECIRCULATE Project.**



**Dr. Akanimo Odon, Africa Strategy Advisor-Lancaster University listens to a participant sharing his thoughts in one of the training sessions of the RECIRCULATE Project.**



# LANDINFO APP TRAINING IN NIGERIA



*A cross-section of some of the participants who took part in the LandInfo mobile app training workshop in Enugu, Nigeria.*



*Mr. Alfred Nyambane (Left) ATPS Research Officer assists participants on the step by step guide of using the LandInfo app on their phone.*



*Dr. Nicholas Ozor (ATPS Executive Director) demonstrates to participants on how to use the LandInfo mobile app.*



*Dr. Ernest Acheampong, ATPS Senior Researcher guides participants through the practical sessions on the use of the LandInfo mobile app.*



*Participants use the slope metre which is available on the LandInfo app to measure the slope of the land.*



*Participants analysing data they have gathered from the LandInfo mobile app.*



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