



TECHNOPOLICY

AFRICA

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



Scientometrics and STI Indicators as an Option for Improving Science and Technology Development in Africa

ATPS Conducts Training for Farmers and Extension Agents in Kenya on the Use of the LandInfo Mobile App

The Only Disability in Life is a Bad Attitude

ATPS Vision:

To become the leading international centre of excellence and reference in science, technology and innovation systems research, training and capacity building, communication and sensitization, knowledge brokerage, policy advocacy and outreach in Africa.

ATPS Mission:

To improve the quality of science, technology and innovation systems research and policy making in Africa by strengthening capacity for science and technology knowledge generation, communication and dissemination, use and mastery for sustainable development in Africa.

Overall Objective:

To develop Africa's STI capacity (knowledge basis & infrastructure, knowledge circulation & networks, knowledge conditions & policies) today for sustainable African development tomorrow.

ATPS Motto:

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

INSIDE

- Scientometrics and STI Indicators as an Option for Improving Science and Technology Development in Africa
- African Development Bank's Appraisal Mission at the ATPS
- ATPS Staff Participate in the Capacity Development Training for Utilizing the AFAAS Virtual Social Network Platform
- NEPAD Engages ATPS Experts in the Implementation of the Science Granting Councils' Initiative in Sub-Saharan Africa
- Emergence of Inclusive Partnership for Strategic Action in Agro-Food Chains: Changes Realized in Cassava and Soya Value Chain in Ghana
- ATPS Conducts Training for Farmers and Extension Agents in Kenya on the Use of the LandInfo Mobile App.
- The Only Disability in Life is a Bad Attitude
- Soil Carbon Loss Mitigation: A Tool for Forest Conservation and Climate Change Mitigation
- ATPS Participates in the CAAST-NET Plus Workshop for Early Career African Climate Academics
- Grants Received by the ATPS during the Quarter
- New Appointments
- Scholarships/Opportunities

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CHAIRMAN'S MESSAGE

There is no doubt that many of the transformations in the world today are being realized through the application of Science, Technology and Innovation (STI) in key sectors of the economy in most countries. African countries are not left out. They are harnessing STI as one of the greatest potentials for addressing the key societal challenges on the continent including food insecurity, poverty, climate change, energy crisis, unemployment, and other social ills.

More than 60% of African countries have increased their investments in research while some still lag behind by investing less than 0.5% of their GDP in research which is less than 1% of the agreed target set by the African Union since the Lagos Plan of Action in 1980 which outlined the fundamental role of STI and the allocation of 1% of Nation's GDP to research and development (R&D). This is a wake up call for African governments to prioritize research and start investing their capital towards this noble cause.

As the year comes to an end, my main message is gratitude. It has been a great year full of rewards and challenges. This is the fourth year since the launch of ATPS Phase VII Strategic Plan (2013-2018) which aims to improve the understanding and functioning of STI policy research and policy making processes and systems to strengthen capabilities, social responses, and governance of STI-led sustainable development in Africa. We have continued to implement the plan and this year we made remarkable strides. For instance, in July, we held our Stakeholders' Forum to review the current plan and align it with Science, Technology and Innovation Strategy for Africa (STISA 2024) and the UN Sustainable Development Goals (SDGs) so as to serve our numerous stakeholders' better. This effort is leading to the development of the ATPS Phase VIII Strategic Plan for 2017-2022.

In the proposed new plan, ATPS will adopt a sector focused strategic approach with key focus in Agriculture; Food and Nutrition; Health; Energy; and Climate Change, and Environmental Management. The target is to keep pace with developments in new disruptive technologies and leverage the use of mobile phones, internet and other modular technologies whose adoption will take advantage of costs. We will launch the new strategic plan during the first quarter of next year 2017.

I take this opportunity on behalf of the Board of Directors and Management of the ATPS to appeal to our numerous donors, development partners, regional and national governments and especially the private sector actors to support and fund our



Prof. Shaukat Abdulrazak

new strategic plan for 2017-2022. In the next five years, we plan to make even greater impacts through our interventions on the key African development challenges including poverty, unemployment, hunger and starvation, diseases, climate change, and energy crisis among others. We pledge as always to deliver value for money and exceed all the expectations from our interventions.

I thank my fellow board members for their hard work and teamwork towards the accomplishment of our vision statement, and also to Dr. Nicholas Ozor and his team for their doggedness and determination to uplift ATPS to higher status. I also appreciate all those who have supported ATPS this year through development grants, linkages, partnerships and other collaborative activities namely: the JRS Biodiversity Conservation Foundation, Technical Centre for Agricultural and Rural Cooperation (CTA/ Netherlands), Global Alliance for Livestock Veterinary Medicines (GALVmed), Association of African Universities (AAU), the African Union Commission (AUC), the African Development Bank (AfDB), the African Capacity Building Foundation (ACBF), Pevans East Africa, United States Department of Agriculture-Agricultural Research Service (USDA-ARS), African Climate Change Fellowship Program (ACCFP), African Forum for Agricultural Services (AFAAS), African Economic Research Consortium (AERC), Commercial Bank of Africa Limited (CBA), and Ford Foundation.

We look forward to working with you again. Merry Christmas and a Prosperous 2017

Prof. Shaukat Abdulrazak, PhD, FKIM, FAAS FASI, FTWAS, MBS
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EXECUTIVE DIRECTOR'S MESSAGE

Science, Technology and Innovation (STI) is and will remain the core driver of major developmental advances in many countries for many years to come. African countries therefore have no choice but to embrace and deploy it as the engine of growth for their socio-economic developments. This can only happen when governments invest significantly in research and development (R&D) as already prescribed by the African Union. Unfortunately, 37 years since after this prescription of 1% of country's GDP to be allocated to R&D (Lagos Plan of Action, 1980), countries still fail to implement this investment agreement. The question then is: Why have countries failed to realize this target? What are the underlying reasons why countries are not meeting this target? Is it a failed agreement? Were countries not actually prepared for it and just moved in a bandwagon direction? How has the African Union effected compliance to this agreement so far? These and more questions remain the unanswered questions that need to be addressed if Africa is to truly take stock and move forward in the right direction towards increasing investments in R&D.

The African Technology Policy Studies Network (ATPS) will in the next year 2017, seek funding assistance to undertake research to understand why African governments have not been able to realize this feat, discuss with critical key stakeholders of governments, and design innovative approaches that will enable governments at country levels to increase their investments in R&D. We recognize the crucial roles that the private sector will play in order to realize this objective, but it is only a conducive policy environment that can spur their engagements and participation.

Give thanks for a little and you will find a lot. This is my message as we say goodbye to 2016 and welcome 2017. It has been a great year full of accolades and support despite the challenges we have faced as an organization.

At the beginning of the year, the 2015 Global Go To Think Tank Index Report was released and ATPS emerged as the best Think Tank in Africa (getting the highest number of rankings as well as ranking first in more categories) under the Think Tank and Civil Societies Program (TTCSP) of the University of Pennsylvania, USA. ATPS also received the prestigious Climate Information Prize Award 2016 for promoting the adoption of our LandInfo mobile app technology in Africa. During this quarter, we conducted a capacity building training for farmers and extension agents in Meru County, Kenya on the use of the LandInfo



Dr. Nicholas Ozor, ATPS Executive Director

mobile app. The project was supported by the African Forum for Agricultural Advisory Service (AFAAS).

We are in the final stages of producing our Phase VIII ATPS Strategic Plan for 2017-2022 which will be launched during the first quarter of 2017. We are optimistic that following our widespread consultations, stakeholders' dialogues and expert opinions, the new strategic plan will enable us achieve our core objective of building Africa's capabilities in science, technology and innovation research, policy and practice for sustainable development on the continent. We kindly request for support from donors, development partners, governments, and the private sector to enable us implement the numerous activities lined up in the plan.

As we plan to start a new year, I encourage all ATPS National Chapter Coordinators to be vocal and work towards strengthening their chapters to contribute more significantly in uplifting the ATPS. I take this opportunity to sincerely thank all those who have supported us in 2016 through development grants, linkages, partnerships and other collaborative activities. We will surely have the opportunity to work better together in the coming new year 2017.

Merry Christmas and a Prosperous 2017!

Dr. Nicholas Ozor
Executive Director, ATPS

SCIENTOMETRICS AND STI INDICATORS AS AN OPTION FOR IMPROVING SCIENCE AND TECHNOLOGY DEVELOPMENT IN AFRICA



Photo: Mail & Guardian

By Yussuf Utieyineshola
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Various reports have pointed out on the critical role that Science, Technology and Innovation (STI) plays in development. The 2005 World Summit in its outcome document titled, “Science and Technology for Development” emphasized on the need to build STI systems for emplacing sustainable development.

Similar to this report were the UN Commission on Science and Technology for Development Report (2004) which sought to identify approaches for the effective promotion and the use of science and technology to meet development goals; the World Bank report of 2003 titled, “Strategic Approaches to Science and Technology in Development” which suggested that development will not be possible without science and technology. Furthermore, The UN Millennium Project 2005 tagged, “Innovation: Applying Knowledge in Development” also posited that developing countries must have the courage to break with traditional approaches and explore the role of STI in their development strategies.

Incidentally, the contributory role of STI to

development cannot be determined if it is not measureable. Scientometric indicator is one of the most efficient and objective methods of assessing research and innovation performance. Scientometric analysis is the quantitative study of the innovation system based mainly on bibliometric and patent indicators.

In bibliometrics, the number of publications in a field is considered as an indicator of research activity while in patent analysis the number of patents awarded to an institution or a country is used as an indicator of technological activity.

Patent indicators within the Science and Technology (S&T) context are used to measure inventive performance, diffusion of knowledge and internationalization of innovative activities across countries, firms, industries, technology areas, etc. The philosophy underlying the use of bibliometric indicators as performance measures has been summarized in De Solla Price’s statement that “for those who are working at the research front, publication is not just an indicator but, in a very strong sense, the end product of their creative effort”.

Statistics on the world share of publications by different regions show that Africa produced only

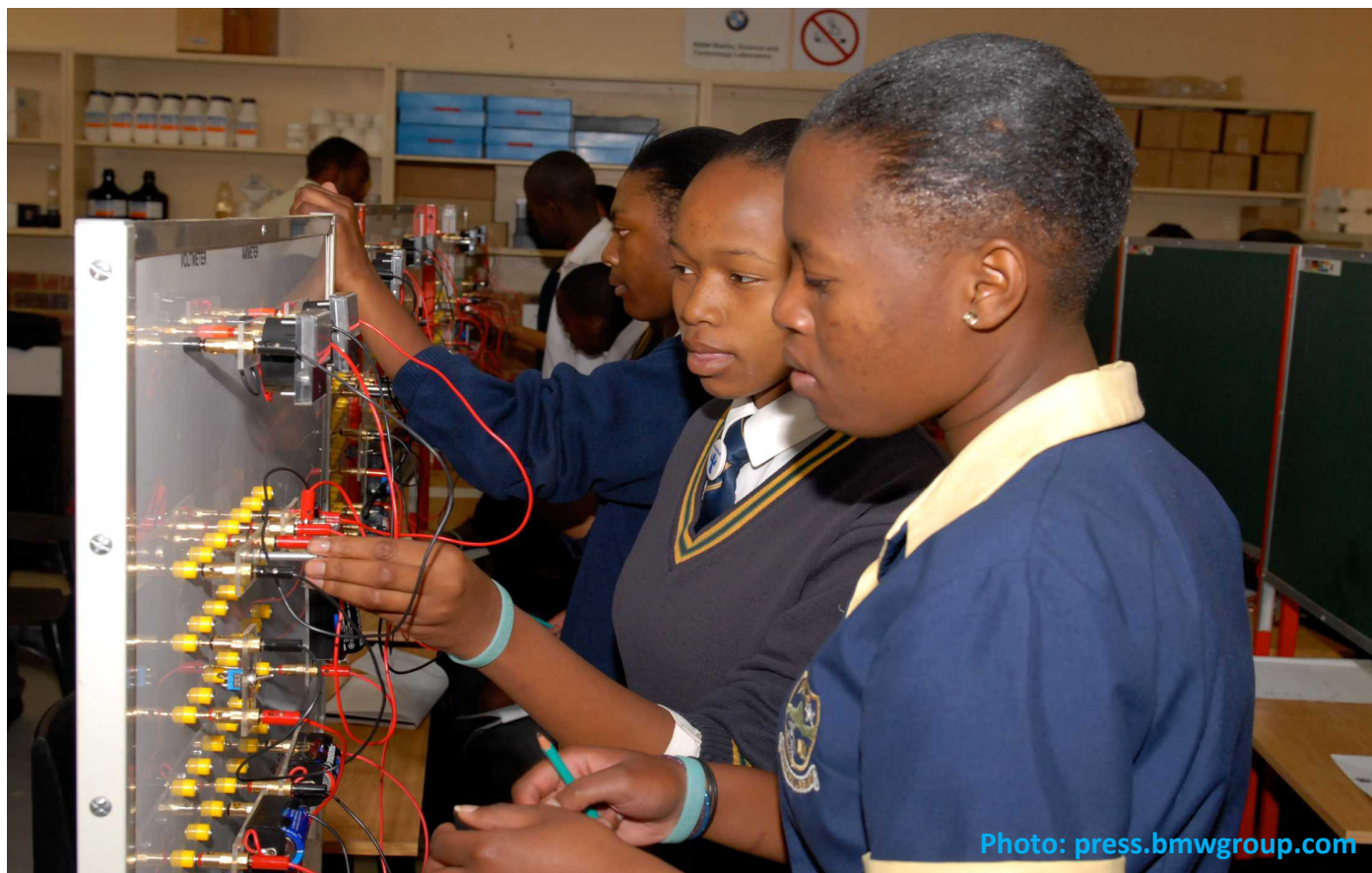


Photo: press.bmwgroup.com

about 68,945 publications between the periods of 2000-2004 which is 1.8% of the World's publications. India (Asia) produced 2.4% and Latin America 3.5% of the World's research publications.

Research in Africa is concentrated mainly in two countries; South Africa and Egypt. These two countries produced just above 50% of the Continent's publications. Examination of the Continent's inventive profile, as manifested in patents, indicates that Africa produces less than one thousand of the world's inventions. About 88% of the Continent's inventive activity is concentrated in South Africa.

Monitoring and evaluating the various facets of the scientific sector is a necessary and integral tool needed for STI policy to deliver its role to the development of any society. African leaders and policy makers must appreciate the need for encouraging and supporting its institutions saddled with the responsibility of monitoring the performance of STI through identified indicators as practiced in the developed countries. They must be made to realize that STI indicators have become essential tools for assessing knowledge capacity in a country or region and as evidence for setting policy actions.

In order to project African countries to the top table in terms of scientific and technological development, researchers from various countries in the continent

must ensure that proper documentation of their S&T activities are monitored and evaluated. They must also realize that publishing and patenting scientific papers or results is not enough but that ranking of their scientific publications, which is a component of STI Indicator, will only be recognised if they are well indexed and recognized in global databases such as; S&T Data Centre of UNESCO Institute for Statistics (www.uis.unesco.org/ScienceTechnology/); OECD Science, Technology and R&D Statistics (<http://www.oecd.org/sti/>); Agricultural Science and Technology Indicators (ASTI) (www.asti.cgiar.org/); African Science, Technology & Innovation Indicators Initiative (ASTII) (<http://www.nepadst.org/astii/index.shtml>); or in web-based S&T indicators like; Webometrics Ranking of World Universities (<http://www.webometrics.info>); and the WISER Project (Web Indicators for Science, Technology and Innovation Research) (<http://www.wiserweb.org> and <http://www.webindicators.org>).

AFRICAN DEVELOPMENT BANK'S APPRAISAL MISSION AT THE ATPS



The AfDB team conducted its appraisal mission at the ATPS on the proposed project, "Bridging Climate Information Gaps to Strengthen Capacities for Climate Informed Decision- Making in Africa." From Left: Mr. Sam Sakwa (AfDB), Mr. Patrick Owouri (AfDB), Dr. Ernest Acheampong (ATPS), Mr. Solomon Ngoze (AfDB), Mrs. Teresa Werrhe (ATPS), Dr. Nicholas Ozor (ATPS), Mr. Onesmus Maina (AfDB) and Mr. Dennis Wafula (ATPS).

By Teresa Werrhe

The African Development Bank (AfDB) carried out an appraisal mission at the ATPS on its proposed project, "Bridging Climate Information Gaps to Strengthen Capacities for Climate Informed Decision-Making in Africa" from 9-14 December 2016 at the ATPS office in Chancery Building, Valley Road.

The bank's appraisal mission team was led by Mr. Onesmus W. Maina- Senior Agricultural Expert, EARC/OSAN. Others in his team were: Mr. Patrick Owuori- Senior Procurement Specialist, Mr. Sam Sakwa- Consultant Financial Management Specialist and Mr. Solomon Ngonze- Consultant Climate Change Specialist CDSF/OSAN.

The ATPS team was led by the Executive Director, Dr. Nicholas Ozor, Dr. Ernest Acheampong- Project Manager, Mr. Dennis Wafula-Finance Manager, Mr. Hillary Ragen- M&E Specialist and Mrs. Teresa Werrhe- Procurement Specialist.

The objective of the mission was to finalize discussions on technical, financial and procurement arrangements between the bank and the ATPS management regarding the funding of an ATPS

project under the Climate Development Special Fund (CDSF) grant which was awarded to the ATPS. The proposed project seeks to reduce vulnerability and foster a food secure Africa through strengthening African countries capabilities to understand and deploy appropriate climate information and best practices to inform decision making and support development planning. The project will be implemented in partnership with other organizations including; the Stockholm Environment Institute (SEI) Africa Centre; the IGAD Climate Prediction and Applications Center (ICPAC); the Observatoire du Sahara et du Sahel (OSS); the AGRHYMET Regional Centre (ARC); and the Regional Centre for Mapping Resource for Development (RCMRD). The ATPS leads this consortium of partners in the implementation of the project.

The appraisal mission ended up with a wrap up meeting on 14th December 2016 and it was chaired by Dr. Ozor. The findings, conclusions and recommendations made during the meeting were documented in an Aide Memoire which was signed by both parties.

ATPS STAFF PARTICIPATE IN THE CAPACITY DEVELOPMENT TRAINING FOR UTILIZING THE AFAAS VIRTUAL SOCIAL NETWORK PLATFORM (VSNP)



From Left Standing: Mr. Raymond Mumo (ATPS), Ms. Sharon Anyango (ATPS) and other participants during the Virtual Social Network Platform Training held at the Ministry of Agriculture, Kenya from 8-9 November 2016.

By Sharon Anyango

The Kenyan Forum for Agricultural Advisory Services (KeFAAS) held its first training on the Virtual Social Network Platform (VSNP) from 8th – 9th November 2016 at the Ministry of Agriculture Office, Committee Boardroom.

The aim of the training was to capacity build its members on the AFAAS Virtual Platform in order to manage national virtual marketplaces for information and services. ATPS was represented by Ms. Sharon Anyango and Mr. Raymond Mumo from the department of Communications and IT respectively.

The AFAAS Virtual Platform is a mobile and web based network that brings together agricultural advisory service agents and other stakeholders to collaborate, ask each other questions, solve problems and pursue new projects in the field of agriculture. Membership to the AFAAS Virtual Platform is by registration and is free of charge.

KeFAAS is affiliated to the Africa Forum for Agriculture Advisory Services (AFAAS), the umbrella network organization for Agricultural Advisory Services (AAS in Africa). AFAAS main objective is to create an efficient, effective and synergistic linkages and partnerships between AAS of member countries to improve the delivery of services to farmers.

ATPS received a seed grant from the AFAAS to build the capacity of extension agents in Meru County, Kenya on the use of the LandInfo mobile app technology which the ATPS is out-scaling across Africa. LandInfo app enables farmers to determine the potential of soil at point-given locations and produce weather information that will enable farmers to determine the potential of soils at point-given locations and produce weather information that will enable farmers take optimal farm decisions based on the soil and climatic information that the app provides.

NEPAD ENGAGES ATPS EXPERTS IN THE IMPLEMENTATION OF THE SCIENCE GRANTING COUNCILS' INITIATIVE IN SUB-SAHARAN AFRICA



Participants at the Regional Science Granting Councils Initiative Workshop held in Harare, Zimbabwe from 1-4 November 2016.

By Dr. Nicholas Ozor

The New Partnership for Africa's Development (NEPAD) Agency has engaged the services of the ATPS experts in the implementation of their activities under the Science Granting Councils' Initiative (SGCI) for sub-Saharan Africa. The Science Granting Councils' Initiative (SGCI) is an opportunity to strengthen Africa's innovation ecosystems by enhancing the capacities of Science Granting Councils' (SGCs) to effectively: manage research (theme 1); design and monitor research programmes, and to formulate and implement policies based on the use of robust science, technology and innovation (STI) indicators (theme 2); support knowledge exchange within an STI system (theme 3); and establish partnerships with all actors in a science and technology system (theme 4). Councils that are effectively managed and connected with multiple actors, at scale, will strengthen national science systems to deliver on Africa's transformative agenda.

NEPAD is leading the implementation of the SGCI theme 2 and ATPS is providing training support on the status of STI policy in Africa, STI policy instruments and policy mixes and its importance in achieving effective and efficient public policy in African countries.

During the months of November and December, the ATPS experts led by the Executive Director, Dr. Nicholas Ozor and the ATPS Senior Researcher, Dr. Ernest Acheampong joined their NEPAD counter-



Participants at the Regional Science Granting Councils Initiative Workshop held in Kampala, Uganda from 6-10 December 2016.

parts to implement these training programmes in three regions of Africa namely: Harare for the Southern African countries; Senegal for the West African countries; and Uganda for the East African countries. In all these training programmes, delegates drawn from the different countries' in the Science Granting Councils' are trained on how to develop, collect, analyse and disseminate indicators relevant to STI policy and associated instruments. Most specifically, the training programme enables delegates to:

1. Understand their own STI policy, legal framework, policy instruments and mixes
2. Collect and store disaggregated datasets on R&D and Innovation that address national STI policies and strategies
3. Describe and process (analysis) datasets on R&D and Innovation at the institutional level
4. Develop data analysis products (Reports and Policy Briefs) and use the same as advocacy tools for increased R&D investment by national governments

The five year project is jointly funded by the International Development Research Center (IDRC) -Canada, the British Department for International Development (DFID) -United Kingdom, and the National Research Foundation (NRF) -South Africa.

Discussions are also being concluded to engage the ATPS to lead in the implementation of theme 4 of the SGCI aimed at building partnerships and networks among science granting councils and other science system actors in sub-Saharan Africa.

EMERGENCE OF INCLUSIVE PARTNERSHIP FOR STRATEGIC ACTION IN AGRO-FOOD CHAINS: CHANGES REALIZED IN CASSAVA AND SOYA VALUE CHAINS IN GHANA



By Dr. Alexander Nuer, Prof. Liesbeth Dries and Prof. Stefano Pascucci

Inclusive partnership for development initiatives have become new businesses and innovation pathways that many researchers, donors, governments, non-governmental organizations, as well as communities in developing economies seek to rely on to improve livelihoods across many agro-food chains.

There are many undocumented, as well as unexplored studies to showcase changes that have or could emerge from initiatives that subscribe to the adoption and use of this type of initiative across many developing countries agro-food value chains.

Ghana has adopted and used inclusive partnership value chains approach to create participatory platforms that ensure that all actors benefit and participate in inclusive decision making processes.

Inclusive value chains refers to the creation of avenues such as platforms and collaborative arenas that ensure strategic actors within and along specific agricultural commodity chains identify challenges, share knowledge and expertise, whilst equitably contribute to ensure the viability as well as the sus

tainability of value chains they are associated with. We conducted two studies on the inclusive partnerships initiatives which were formed between 2014 and 2016; the 2scale partnership and the Dissemination of New Agriculture Technologies in Africa (DONATA) Cassava Partnership.

The 2scale partnership was initiated by the International Fertilizer Development Centre (IFDC) to scale up activities initiated in Northern Ghana; our focus was on the soya value chain which aims to improve the production, governance, market access and create a platform that can be shared by various people along the value chain.

The outcome of the study was that the partnership had led to the establishment of farmer based organisations such as co-operatives; a marketing company was formed to directly purchase and pre-finance cultivation of soya crops. Financial service providers such as banks also joined the value chain to provide financial incentives and inter mediation such as loans to farmers and buyers along the chain.

The DONATA partnership initiative was established



in 2011 to help bring about innovative ways that would help improve income level of smallholder cassava farmers, as well as processors and marketers through the transfer, sharing and dissemination of improved agriculture technologies along the cassava value chain within the Wenchi municipality in Ghana. DONATA had three priority entry points into the cassava value chain namely; to improve cassava varieties and enhance soil fertility management, to advocate for the use of herbicides to control perennial weeds in cassava (on farm) and cassava product development and market access.

DONATA established Innovation Platforms (IPs) which connect value chain actors to transfer, share as well as disseminate improved technologies and indigenous knowledge along the cassava value chain in the pilot communities.

The IPs have led to the cultivation of two locally

known improved cassava varieties, Bankyehemaa and IFAD, with a yield of twelve to sixteen tons per hectare (12-16 t/ha). Cassava farmers received a net profit of an average of UD\$80.00/ha, as against a previously lower yield of about 5-9t/ha during the experimental period. The IPs have bridged the gap between identified actors and established a strong information sharing platform along the cassava value chain.

It is evident from the two studies that inclusive partnership initiatives ensure strategic actors' bridge identified gaps within value chains they are associated with. Innovation mechanisms such as innovation platforms ensure that information, knowledge as well as core competencies are equitably shared among actors along and within identified value chains.

Dr. Alexander Nuer is the lead consultant at Alamnyaki Social Venturing Initiative. Liesbeth Dries works as an Associate Professor in Wageningen University and Research, Agriculture Economics and Rural Policy Group, Netherlands while Stefano Pascucci is the Agriculture and New Institutional Economics Professor at University of Exeter Business School, United Kingdom.

ATPS CONDUCTS TRAINING FOR FARMERS AND EXTENSION AGENTS IN KENYA ON THE USE OF LANDINFO APP



ATPS conducted its LandInfo App training workshop for farmers and extension officers on the use of the LandInfo mobile app in Nkubu, Meru County from 15th-16th December 2016 at Kaguru Agricultural Training Centre.

By Dr. Ernest Acheampong and Sharon Anyango

ATPS in partnership with the African Forum for Agricultural Services (AFAAS) conducted the LandInfo mobile app training for 50 farmers and extension officers at the Kaguru Agricultural Training Centre in Nkubu, Meru County from 15th-16th December 2016. Participants were drawn from Igembe South, Igembe North, Igembe Central, Tigania West and Tigania East sub counties.

The objective of the training was to build the capacity of farmers and extension agents on the use and application of the trendsetting LandInfo mobile app for enhancing agricultural production, land-use management and climate change resilience.

Mr. Dunstan Kaburu, Deputy County Director Department of Agriculture officially opened the two day training workshop. He expressed confidence that farmers in Meru County will benefit from the app and it will help boost their agricultural harvests. He also thanked the ATPS team for prioritizing Meru County to be among the first Counties that have benefited from the LandInfo app training.

Dr. Nicholas Ozor, ATPS Executive Director expressed joy at the number of participants who had turned up for the training and assured them that they will benefit immensely from the training program. For

the extension agents, he informed them that the app will help them in providing soil and climatic information for their farmers. On the other hand, he assured farmers that the app will enable them take appropriate and evidence-based decision on their farm work based on the climatic and soil information that the app provides at point-given locations almost instantaneously. He further urged them to advocate for the use of the app through the multiplier effect to other farmers and extension agents in the County and country as a whole.



Dr. Ernest Acheampong doing his powerpoint presentation about the LandInfo app .



Dr. Nicholas Ozor, ATPS Executive Director digs a pit to be used for the LandInfo App demonstrations at the field.

The workshop was divided into two sections: presentations from the ATPS team and field demonstrations on the use of the LandInfo mobile app. Dr. Ozor introduced the app and its potentials to participants who admitted that it was their first time to hear about the app. He informed them that the LandInfo mobile app 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. Dr. Ernest Acheampong on the other hand guided participants through the field demonstrations and showed them how to use the app with assistance from the ATPS team.

The app enables farmers and extension agents to deepen their knowledge on the biophysical characteristics of soils, users are able to target investments on land for specific purposes such as crop choices for specific soils, with knowledge on annual average rainfall and temperature, farmers are able to plan their farming enterprises adequately to avoid losses due to climate variability and hence improve agricultural productivity and climate change resilience.

Policy makers can aggregate data across larger areas without losing key pieces of information such as presence of small, highly productive or vulnerable sites within the region. The app also allows users to instantaneously access the best available information and interpret it in the context of the local socio-economic conditions and local values including crop preferences.

The app has recorded a continuous rise in adoption rate by target beneficiaries ever since its launch in 2013 as a result of ATPS's innovative approach in disseminating and promoting the adoption of the technology.

The app has been successfully used in Samburu County, Baringo County, Kisumu County and its associated conservancies with initial focus identifying and prioritizing areas for restoration of perennial grasses and monitoring of livestock and wildlife while in Namibia the Ministry of Lands focused on resettlement with initial focus being undertaking livestock carrying capacity on land plus the crop production potential of resettlement areas.



Participants write down short notes about the LandInfo app during the classroom session.

THE ONLY DISABILITY IN LIFE IS A BAD ATTITUDE



Mr. Nick Vujicic, an Australian motivation speaker who was born without limbs. He is able to perform normal duties like any other person despite his disability.

By Sharon Anyango

Disability is not inability is a popular saying among gender proponents. Persons with disabilities have for a long time been marginalized by the society with no one or very few individuals ready to speak up for their rights. Most institutional facilities do not cater for their needs: there are no special stairs, lifts or toilets especially for those who use wheelchairs, and using public transport is also a menace in most parts of Africa.

When it comes to information dissemination, the deaf were always left out, it is until recently that media stations in Kenya were ordered to have a sign interpreter so that the deaf can also access information. Churches too are embracing this technique, there is always a sign interpreter who communicates to the deaf sited inside the congregation.

Most persons with disabilities live in a vicious cycle of poverty due to stigmatization, limited education opportunities and lack of economic opportunities. Families tend to shy away from relatives with disability. Some are locked up in their own rooms and fed through the window while some families see the disabled as a business opportunity and send them out to the streets to beg for money, but for how long will they beg?

Many have not let their disability hinder their successes in life despite the hurdles they have faced.

Nominated Kenyan MP, Isaac Mwaura was born with albinism, his father abandoned them when he was born because he was considered as a misfortune.

His mother was accused of being unfaithful for having a different child from others. Mr. Mwaura went to a special school and always topped in his class, he was a student leader who represented special needs students at the Kenyatta University where he graduated with a Bachelors degree in Special Education and French. Today, Mr. Mwaura is happily married to Nelious Mukami Mwaura, he once admitted that he had challenges dating because of his condition. He has used his elective role to support persons living with albinism by establishing a government program with an allocation of Ksh.100 million annually to support albinos by giving them free sunscreen lotions, protective clothing, skin cancer treatment and eye care services each month. It is because of his efforts in this direction that contributed to the hosting of the world's first albino beauty pageants in Kenya aimed at raising their self-esteem.



Second from Right Sitted: Mr. Isaac Mwaura, Nominated Senator with some of persons living with albinism at his office in Nairobi.

Mr. Nick Vujicic, an Australian motivation speaker was born without limbs due to a rare congenital condition known as tetra- Amelia syndrome. His father ran out and vomited when he was born and his mother did not hold him until he was four months old. Growing up as a person with disability was not easy just like any other disabled child who has faced stigmatization, he was bullied and felt inferior, and at one point he had suicidal thoughts to drown himself in their bathtub at home. He would often ask God Why me? Nick has accepted his condition and today he travels around the world giving motivational talks. He performs his duties normally as others and he can swim and surf using a surfboard.

Little has been done to help persons with disabilities in their daily challenges especially in this part of the world (Africa).

Mr. Peter Mbiria, a former student at the Technical University of Kenya invented an E-Con wheelchair to help those who depend on the wheelchair to be able to move on their own and support themselves in their daily activities like standing up and picking something on the shelf. Ms. Florence, Peter's friend introduced him to her friend the late teacher Wairimu who was suffering from arthritis. The disease took toll of her legs until she began using crutches and eventually the manual wheelchair. Peter used to visit her often and he could observe how she was struggling to do the things she used to do effortlessly on a daily basis. Independence and happiness slowly siphoned out from her life.

"I embarked on an online search on the available powered wheelchairs that would be a solution to her problem. I couldn't find one wheelchair with the ability to do almost everything like tackle stairs, move on a smooth terrain as well as a rugged terrain, and enable the user to stand. The ones that had more features were very expensive and not locally available," says Peter.

This led to the birth of the E-Con wheelchair. He did it secretly since he wanted it to be a surprise only to receive news of her demise in 2012. Peter is among the few innovators who have focused on solving the problems faced by persons living with disabilities.

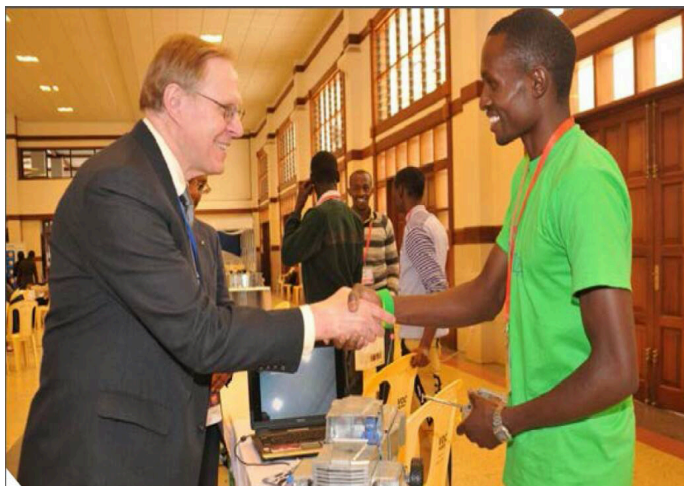
The Persons with Disabilities Act, 2003 in the Kenyan constitution led to the creation of the National Council of Persons with Disabilities as a statutory organ to oversee the welfare of persons with disabilities. The Council endeavors to secure the reservation of five percent of all casual, emergency and contractual positions in employment in the public and private sector to persons with disabilities. Other countries in Africa should learn from this initiative and support persons living with disabilities.

Learning institutions should take into account the special needs for persons living with disabilities and more special schools and institutions especially for the deaf should be established to cater for formal education, skills development and self-reliance.

The Inventor of E-Con Wheelchair also Designed the Linda Nchi (Protect the Country) Robot to be Able to Secure an Admission into the University.

Mr. Peter Mbiria, developed the E-Con wheelchair to help persons with disabilities who mainly depend on the manual wheelchair to be able to conduct their duties freely without assistance from a second party. The E-Con wheelchair has received global accolade as Mr. Mbiria was among the 16 shortlisted candidates in Africa during the Africa Prize of Engineering Innovation by the Royal Academy of Engineering in London. The award aims to encourage ambitious and talented engineers from all disciplines to apply their skills to develop scalable solutions to local challenges. Mr. Mbiria currently works at IBM Research Africa as a Hardware Engineer.





Barry Shoop (Left), President Institute of Electrical and Electronics Engineer (IEEE) congratulates Peter Mbiria (Right) for his innovative work.

Interview with Mr. Peter Mbiria

1. What is the E-Con Wheelchair?

E-con wheelchair is an electric convertible wheelchair that enables the user (physically challenged person) to be very comfortable and happy in conducting his or her daily business.

2. What is the niche that you identified that led to the invention of the E-Con wheelchair?

I had a friend Ms Florence who introduced me to her friend the late teacher Wairimu in 2011 who was suffering from arthritis. The disease forced her to use crutches and eventually the manual chair which gave her enormous difficulty to move from one place to another. I began an online search on the available powered wheelchair to solve her problem, I could not find a wheelchair which had the ability to tackle stairs, enable the user to stand alone as well as give them the ability to do physiotherapy. This led to my journey to the construction of the E-con wheelchair in 2011. Unfortunately, I received news about her demise in 2012.

3. How does the E-Con wheelchair work?

E-Con wheelchair uses powered tri-wheels instead of single wheels. It has a flexible chassis that enables it to twist when tackling rugged terrain and an automatic balancing system that enables the seat to remain level at all times. It can also steer on all four sets of tri-wheels and turn at a point to enable the user stand (there are straps for the waist and for the knees).

4. What are the advantages of the E-Con wheelchair?

It enables the user to be very mobile on smooth and rough terrain, the user can stand and still operate it in a standing position and reach out for something on a shelf or write on a board. Its automatic balancing

system maintains the seat's level at all times while tackling stairs or rugged terrain and it can be recharged with normal power supply. Its back up battery system does not increase its weight. The user also has minimal control as most of the functions are taken care of by the on board computer system and it can also be used by the illiterate.

5. What are the disadvantages of the E-Con wheelchair?

It is complicated both mechanical and electrical wise, it runs on a Li-ion battery which means if the user does not follow the manual properly, they may end up stuck away from their homes, it does not have a manual way to move like in the case of manual wheelchairs. It is heavier and bigger than a manual wheel chair and it can be a challenge to use public transport.

6. Does it use solar or electricity? Please explain further

It uses Li-ion battery. At the beginning while doing my research, I had considered using solar and a battery but the disadvantages were unbearable. Solar cells require huge surface area, which I do not have on my E-Con wheelchair so I removed that option.

7. How long did it take you to come up with the innovation and what are the challenges you have faced along the way?

It took me roughly two years just to do numerous designs and research, and 6 months to make the first small scale model. The main challenge was finances, most of the parts 89% I had to fabricate on my own since they are unique by design and size. Since I was still a student back then, I had to do degree projects for other students just to raise money.

8. What are the key components of the E-Con wheelchair?

It has numerous parts but the key ones are brushless motors, servos, batteries, controllers, onboard CPU for automation purposes, sensors for onboard control and for mapping (Advanced E-Con version), very simple user interface, gears, shafts, universal joints, drive belts, steering rods, straps and a lot more.

9. Congratulations for being selected among the 16th shortlists in Africa during the Africa Prize of Engineering Innovation by the Royal Academy of Engineering in London. What is the competition about?

The competition is about growing innovations in Africa so that we can develop custom solutions for

challenges we face as Africa, besides coming up with innovations, jobs will be created and economies will begin to grow.

10. How was the experience and what are the major lessons you learnt?

It was my first time to be on a plane heading outside Kenya and Africa in general. Many at times people told me there are many innovations I could focus on and not this one because they thought the market is limited. I was not primarily after money but after the happiness of physically challenged persons, being in London was just the first of many opportunities I have received, we learnt a lot about business models of our innovations, tips and tricks on how to pitch to investors and how to gain trust with customers.

11. What are your future plans with the E-Con wheelchair?

I am currently sourcing for funds to begin working on a full scale version of the E-con wheelchair before releasing it to the market

12. Have you patent your innovation?

Yes, I filed the patent in 2015 and I am yet to finish with the process.

13. You also invented the unmaned surveillance robot system popularly known as Linda Nchi (Protect the Country). What was the main reason for the robot?

I made the semi transforming vehicle in 2011 to convince universities that I was fit to do electronics engineering. I did my first KCSE in 2009 and I got C plain, I went to several universities but I was rejected due to my grade. I went back to my previous high school and repeated form 4. I did my best and got C+. I went back to the same universities and I was rejected again which was very painful.

I was studying my bible when I came across Mathew 7:7 "ask, seek and knock" it says knock and it shall be opened, this gave assurance and it dawned on me that I had to do something with my skills. It took me 6 months to create the robotic car model. I did not have a computer to do designs hence I would do all the simulations in my head and then transfer them on a sheet of iron where I would cut, fold, solder and test without giving up. I took it to the Technical University of Kenya where they were really impressed and that is how I secured admission to pursue a diploma in electrical and electronics engineering.



The Linda Nchi (Protect the Country) robot invented by Peter Mbiria in order to secure an admission to the University.

12. What is the progress made so far with Linda Nchi (Protect the Country) robot?

I have not made much progress with that innovation since its original goal, securing an admission to the university and getting publicity through it was met.

13. What is your message to upcoming innovators?

Put God first, seek His wisdom and you will be amazed. Focus on what you love and be a master in it, explore more fields but keep your passion as the backbone. Do not chase money, chase your passion and money will chase and catch up with you.

14. Your favourite quote?

I will be the best I can be.

15. Any support you require for the E-Con wheelchair?

I am seeking for financial support from people of good will. I have started purchasing tools and parts of the E-Con wheelchair with what I have, and any help will be greatly appreciated.

CARBON LOSS MITIGATION: A TOOL FOR FOREST CONSERVATION AND CLIMATE CHANGE MITIGATION

By Kum Christian Tegha and Prof. Sylvester Ndeso Atanga

The continued development of sustainable conservation agriculture premised on producing more from less is essential to maintain the quality and quantity of agricultural products for society, forest conservation, and the growing world population.

The current available agricultural lands need to be used efficiently to avoid the need for agricultural expansion into the remaining natural forest habitat. Sustainable conservation agriculture practices like minimum soil disturbance, crop rotation, and permanent soil cover can prevent the loss of carbon and other nutrients or contribute to reverse the process of soil degradation thereby resulting in optimal restoration of ecosystem services and optimal carbon storage in soils.

Below are two cases that demonstrate the need for sustainable conservation agriculture amidst forest degradation and climate change.

CASE 1: Soil Organic Carbon Storage under Different Land Uses- Mount Cameroon National Park (MCNP)

Mt Cameroon National Park (MCNP) supports a diversity of endemic and threatened species, and has the potential of mitigating climate change through carbon storage in its soils. The area is threaten by unsustainable agricultural land use practices such as forest conversion and burning, spraying with chemicals etc. therefore information on MCNP soil carbon stock compared to these agricultural land uses might add more impetus to its conservation and the need for sustainable conservation agriculture on the available agricultural lands.

This study was conducted to estimate Soil Organic Carbon (SOC) quantities in different land uses as an impetus to forest conservation and sustainable conservation agriculture within the tenure of 2011-2012. A transect was drawn across the study area from which 5 (Idenau, Batoke, Ekona, Likomba & Buea) villages chosen across the different temperature and elevation gradients in the area. Nine land uses prominent and significant in the area were chosen: MCNP; palm, rubber, tea, and banana plan-

tations; maize, sugar cane and mixed cropping farms (Figure 1). Farming is by felling and burning down a forest and after about 3-5 years the plot is abandoned in search for a new farm (Figure 2). Samples were collected within 2500 m², 0-30 cm depth in each chosen land use and sieved through 20 mm mesh and sent to the Ekona soil research Laboratory for physical and chemical analysis. SOM and deterioration indices were estimated as follows.

$$\text{SOC} = \%C \times p \times V$$

$$\text{SOM} = \text{SOC} \times 1.78 \text{ (Wairiu \& Lal, 2003).}$$

$$\text{DI} = X - X_i$$

X Where: DI= deterioration index,

\bar{X} = mean value of soil parameter in forest site, while X_i = mean value of soil parameter in compare site Awotoye *et al* (2011).

LAND USE TYPES



Figure 1: Land use types of the study.



Figure 2: Cleared forest, ready for farming 752m above sea level. Looking South at 521011E, 452422N, on January 3rd, 2011.

The result revealed significant difference between SOM of forest and SOM of cassava farms, rubber and oil palm plantations (Table 1) giving rise to significant losses in CO₂ equivalence. Soil deterioration indices (Table 2) further showed that soils under rubber, sugarcane and cassava in that order were more degraded when compared to forest soil. This is an indication that forest conversion to agriculture probably leads to loss of SOM and soil degradation.

Table 2: Deterioration Indices (DI)

Land use types	%Moist	BD	Total N.	OC	pH	A. P	CEC
Banana	24.7	3.9	45.8	38.7	9.2	-251.1	35.2
Cassava	16.6	3.2	47.2	50.3	5.5	-119.1	36.8
Maize	10.2	9.4	30.5	29.1	0.004	-118.0	37.7
Mixed cropping	9.2	4.7	18.1	24.3	2.5	-85.4	21.7
Oil palm	17.7	7.8	44.4	41.6	6.6	-73.0	46.7
Rubber	62.1	-1.6	63.9	75.5	9.5	4.5	66.3
Sugar cane	22.3	3.9	55.5	61.2	6.2	-203.4	56.3
Tea	10.3	1.6	2.8	37.2	22.0	-203.4	2.1

DI in percentages of some soil properties. Values above 50 % show high deterioration and negative indices for bulk density depict highly compacted.

Table 1: Some of the different land use systems of the study area.

Land Use Types ± S.E	SOC Den (kgC/m ²)	TOC (t/ha)	SOM (t/ha)	CO ₂ Eq. SOC (t/ha)
Banana	13.15 ± 3.72	131.68 ± 37.2	234.43 ± 66.22	483.27 ± 136.40
Cassava	10.77 ± 2.95	107.72 ± 29.49	191.62 ± 52.49	395.33 ± 108.12*
Forest	22.53 ± 3.36	225.24 ± 33.65	400.96 ± 59.89	826.63 ± 123.37
Maize	14.64 ± 2.89	146.40 ± 28.87	260.55 ± 51.40	537.29 ± 105.87
Mixed cropping	16.14 ± 2.54	161.44 ± 25.43	287.29 ± 45.27	592.48 ± 93.26
Oil palm	12.16 ± 2.79	121.60 ± 27.89	216.41 ± 49.64	446.27 ± 102.25*
Rubber	5.61 ± 1.10	56.10 ± 11.00	99.86 ± 19.58	205.89 ± 40.33*
Sugar canea©	8.75	87.48	155.71	321.05
Tea©	13.95	139.52	248.35	512.04

*Significantly different from forest at p=0.05, ©: could be compared with forest because these and use types were in just one village and gave just one value.

CASE 2: Soil and Water Protection

This study was carried out with local farmers in Weh some 11 Km south east of Wum to evaluate impacts of conservation tillage and cover cropping on soil erosion in arable land compared to conventional practices. The study ran within tenure of 2009-2013. A combination of minimum tillage, crop rotation (leguminous plants), organic matter application and cover coping techniques were used. Samples were collected twice each year and sent for analysis. The results (Figure 3) revealed; reduction in soil erosion by more than 50%, agrochemical and fertilizer run off reduction by up to 60%, enhanced soil biodiversity - arthropods, earthworms, farm birds CO₂ emissions decreased by 70%.

Practical research will not yield full benefits to the forest conservation, agricultural community, the environment and wider society unless more is done to increase the uptake of such practices at the policy level and more actively involving a range of stakeholders. Policy programs need to provide further financial or technical assistance to farmers, particularly those who are younger or more entrepreneurial and willing or able to change their approaches.

Prof. Sylvester Ndeso Atanga is the National Chapter Coordinator ATPS Cameroon. He is also the Dean, School of Health and Human Services at Saint Monica American International University.

Mr. Kum Christian is the Research Coordinator ATPS Cameroon. He is a PhD research student at the University of Buea, Department of Environmental Science.

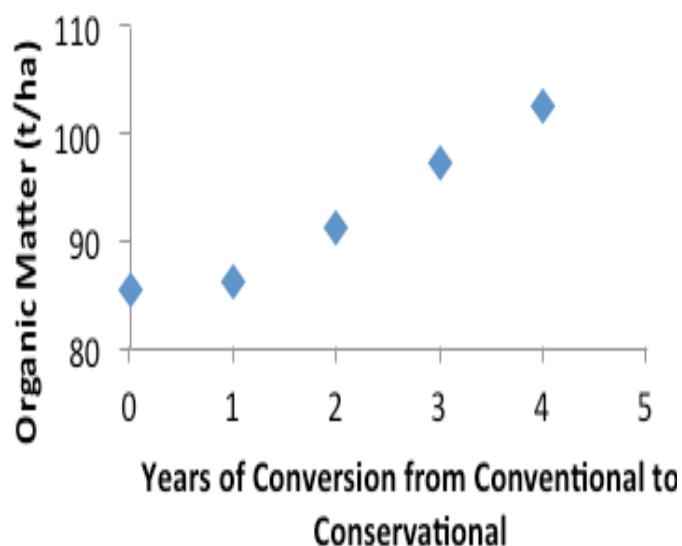


Figure 3: Comparison of build-up of organic matter in topsoil in Weh-Cameroon Case Study

Conclusion

No single set of practice works in all places, a range of approaches is required which is specific to crops, climates, and cultures. Practices and technologies must be tailored to the local landscape conditions and the socio-economic conditions of farmers, however, key principles of conservation agriculture; minimizing soil disturbance, covering the ground and rotating crops should not be compromised.

ATPS PARTICIPATES IN THE CAAST-NET PLUS WORKSHOP FOR EARLY CAREER AFRICAN CLIMATE ACADEMICS



Participants at the CAAST- NET Plus Workshop for Early Career African Climate Academics which was held in Accra, Ghana from 21-23 November 2016.

By Dr. Ernest Acheampong

Dr. Ernest Acheampong, ATPS Senior researcher participated in the CAAST- Net Plus workshop for Early Career African Climate Academics which was held in Accra, Ghana from 21-23 November 2016.

The aim of the workshop was to build the capacity of selected experts in the area of climate change (sustainable agriculture intensification) research and research funding from academia, the public and private sectors, and provide guidance and feedback to early career academic researchers based in Africa.

In his presentation on “Strengthening Research Capacities for the Uptake of Sustainable Agriculture Intensification”, Dr. Acheampong described Sustainable Agricultural Intensification (SAI) as an emerging paradigm that targets to increase productivity of existing land and water resources to produce food and cash crops. He noted that about 65% of Africa’s land remains uncultivated, while current land under cultivation is characterised by low soil fertility and degradation.

According to Dr. Acheampong, developing Africa’s professional and institutional research capacity for sustainable agricultural intensification is critical

to improving agricultural productivity to meet the growing food demand. This is possible if individuals, institutions and countries undertake high quality research, use the knowledge acquired and products relevant to their needs and engage stakeholders accordingly.

In his concluding remarks, he emphasized that a research agenda for SAI requires the implementation of innovative strategies, including financial support in research and research capacity development; building collaboration with public and private partners, and developing policies that promote SAI. The workshop provided insights into how ATPS can better position itself to explore funding opportunities through the European Commission’s Horizon 2020 funding mechanism.



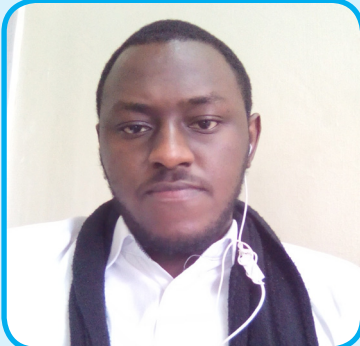
GRANTS RECEIVED BY THE ATPS DURING THE QUARTER

S/N	Donor	Project Description	Grants Received
1	Ford Foundation	Core funding support for the development of the new ATPS Phase VIII Strategic Phase VIII Strategic Plan for 2017-2022.	US \$ 50,000.00

NEW APPOINTMENTS



Mrs. Teresa Werrhe Abira is the Programme Assistant and Secretary at the ATPS. She is responsible for keeping track on the status of research grants and donor programmes, and assists with maintenance of all correspondence and files on programs and research projects. She also assists in drafting and consolidating donor reports for submission on a timely basis and monitors the implementation of programme/project activities involving extensive liaison with field projects. She also serves as the secretary to the ATPS Executive Director. Mrs. Abira holds a Bachelor of Science, Project Management and a certificate in Business Management. Prior to joining ATPS she worked at the International Livestock Research Institute (ILRI) as a Senior Administrative Assistant to the Assistant Director General..



Mr. Raymond Mumo is the Information Technology assistant at the ATPS. He is an on-going student at the Jomo Kenyatta University of Agriculture and Technology (JKUAT) pursuing Bachelor of Science, Information Technology. He is responsible for maintaining and updating the ATPS website, supporting and maintaining online databases, subsidiary websites, ATPS email system, installing and managing computer software and configuring new hardwares. He also maintains and operates the ICT system updates and ICT system configuration changes. He is among the students' at JKUAT who developed the JKUAT mobile application which was used to lay down some parts of internet connection at the University.

SCHOLARSHIPS

CAS-TWAS President's PhD Fellowship Programme

The Chinese Academy of Sciences (CAS) and the World Academy of Sciences (TWAS) signed an agreement to advance science in developing countries and sponsor upto 200 students/scholars to study in China for doctoral degrees for up to 4 years. The fellowship programme is open and the deadline for application is 31st March 2017.

REQUIREMENTS:

- Be maximum age of 35 years on 31 December 2017;
- Not take up other assignments during the period of his/her fellowship;
- Not hold Chinese citizenship;
- Meet the admission criteria for international students of UCAS/USTC (criteria of UCAS/criteria of USTC).
- Hold a master degree before the beginning of the fall semester: 1 September, 2017.
- Provide evidence that he/she will return to their home country on completion of their studies in China according to CAS-TWAS agreement.
- Provide proof of knowledge of English or Chinese language.

For more information, please visit: <http://twas.org/opportunity/cas-twas-presidents-phd-fellowship-programme>

OPEC/OFID Scholarships for Developing Countries 2017/2018

The OPEC Fund for International Development – OFID Scholarship Award 2017/2018 is open for qualified applicants who have obtained or are on the verge of completing their undergraduate degree and who wish to study for a Master's degree, to win up to \$50,000. The Scholarship is open to those students who wish to pursue studies in a relevant field of Development or Energy Studies such as: economics of development (poverty reduction, energy and sustainable development), environment (desertification), or other related science and technology fields.

SCHOLARSHIP BENEFITS: The winners of the OFID Scholarship Award will receive a full tuition scholarship of up to US\$50,000. The funds will be spread over a maximum of one year, toward the completion of a Master's degree, or its equivalent, at an accredited educational institution.

APPLICATION DEADLINE: 1st May, 2017

HOW TO APPLY: Applicants must complete the online application form which is available at <http://www.ofid.org/Beyond-the-scope-N1/Scholarship-Award-N1/Application-Guidelines>

OPPORTUNITIES

EAI International Conference on Innovations and Interdisciplinary Solutions for Undeserved Area

The EAI International Conference on Innovations and Interdisciplinary Solutions for Undeserved Area will be held in Dakar, Senegal. The conference will focus on five major topics namely: Innovative sustainable energy solutions and energy as means for economic development, ICT as an enabler for economic growth and social development in undeserved areas, Improving sustainability concept in undeserved areas, Innovation and entrepreneurship and citizens as leverage for scientific research and development in undeserved areas.

For more information about the conference please visit: <http://interdisciplinariesolutions.org/2017/show/home>

159th International Conference on Recent Innovations in Engineering and Technology (ICRIET)

The National and International Conferences in South Africa will hold its 159th International Conference on Recent Innovations in Engineering and Technology (ICRIET). The idea of the conference is for the scientists, scholars, engineers and students from the Universities all around the world and the industry to present ongoing research activities, and hence to foster research relations between the Universities and the industry.

Deadline for abstracts/proposals: 22-2-2017

For more information please visit: https://www.conferencealert.com/event_details.php?ev_id=49228

PHOTO GALLERY - LANDINFO APP TRAINING DAY ONE



Dr. Ernest Acheampong (in black and gold), ATPS Senior Researcher assists participants to download the LandInfo app in their phones.



Tea Break: Participants share bitings in between the training sessions.



Mr. Hillary Ragen, ATPS Research Officer digs a pit to be used for the field demonstrations.



Ms. Sharon Anyango (Right) ATPS Communications Officer assists a participant to analyse field findings derived from the app.



Open Forum: A participant asks a question about the LandInfo mobile app.



Classroom Session: Dr. Nicholas Ozor, ATPS Executive Director gives insights about the LandInfo mobile app.

PHOTO GALLERY - LANDINFO APP TRAINING DAY TWO



Dr. Ernest Acheampong guides participants at the field on how the LandInfo app works.



Dr. Catherine Kunyanga, the workshop facilitator leads participants in the introduction exercise.



The ATPS team that attended the LandInfo mobile app training workshop at Kaguru Agricultural Training Centre.



A participant measures the slope of land using the slope meter which is available on the LandInfo mobile app.



Participants follow keenly the LandInfo mobile app presentations from the ATPS team.



Participants at the field obtaining information about the land in regards to the type of soil, slope with assistance of the LandInfo app.

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