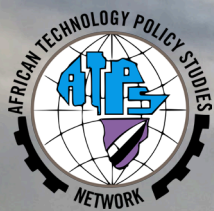


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TECHNOPOLICY AFRICA

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ATPS Vision:

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

ATPS Mission:

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

Overall Objective:

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

ATPS Motto:

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

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As we come to the end of the Phase VIII Strategic Plan (2017-2022), we are happy that we have been able to work on projects around the priority sectors identified in the Strategic Plan; Agriculture, Food and Nutrition; Energy; Climate Change and Environmental Management and Health Innovations. Through our work, we have been able to strengthen existing partnerships and forged new ones.

Throughout the year, we have participated in and contributed to engagements that continually influence and positively affect the present and the future of Africa and its population, especially around matters of Science, Technology and Innovation (STI). Such of these engagements have been around Artificial Intelligence, Intellectual Property, Entrepreneurship, Technological Innovations, and Climate Change, just to mention a few.

On behalf of the board and the management of ATPS, I wish to acknowledge the honourable work that our National Chapter Coordinators do and the support they continue to offer the Secretariat. Their impact has especially been felt within this last quarter when a lot of information and on-ground coordination was required for the successful implementation of most of our projects if not all. We have seen a significant scaleup of networks in various countries and this has had a significant impact on the work that we do.

I wish to take this opportunity to thank all the donor organizations and development partners that have funded and keep funding our activities and the individuals and partners whom we collaboratively work with. As we close the year 2022, I warmly wish all of you happy holidays and good tidings for the year 2023.

Prof. Crispus Kiamba,
Chairman, ATPS Board of Directors

I am greatly honored to welcome you to the nineteenth edition of the **Technopolicy Africa** Newsletter. Within a year where so much has happened, including the General Elections in Kenya where our Secretariat is based, to the 27th session of the Conference of Parties (COP27) and on a lighter note the World Cup, we are glad to have successfully gone through this year.

In this edition, we have a look at some of the activities and engagements that have heavily shaped the year at the ATPS as we promote the generation, dissemination, use and mastery of Science, Technology and Innovation for Africa's development, environmental sustainability and global inclusion.

As the world continues to readjust and heal from the effects of the Covid-19 pandemic, we have a renewed appreciation for technology that has enabled us to effectively and efficiently carry out our activities that could be handled remotely.

With the lift of most of the restrictions that had been put in place, we have been able to carry out some in-person engagements that have immensely contributed to the work that we are doing.

Among others, we are extremely delighted to be working on projects that are aimed towards bettering lives of millions of people through the application of Artificial Intelligence in Agriculture and through their involvement, will positively impact the work of many youth in Africa and beyond.

On behalf of the ATPS fraternity, I wish to thank all our partners and donors for the immense support and guidance that they continue to offer us. We remain committed to our work and continually seek to improve the quality of STI policy research, policy making and implementation. Lastly, I take this opportunity to wish all of you a merry Christmas and a Prosperous New Year 2023.

Dr. Nicholas Ozor,
Executive Director, ATPS



Big Win as ATPS Secures a grant from AFDB to Assist in Building the Capacity of Select Countries to Effectively Measure Progress in Their Nationally Determined Contributions Implementation

By Alfred Nyambane – ATPS Research Officer

An agreement between the African Development Bank (AFDB) under the Africa Climate Change Fund (ACCF) and the African Technology Policy Studies Network (ATPS) was signed on 22nd July 2022 to finance the project tagged “Building the Capacity of Selected Sub-Sahara Africa (SSA) Countries to Effectively Measure Progress in their Nationally Determined Contributions (NDCs) Implementation Using Tracking Tools and Indexes”. This project will be executed by a consortium led by the ATPS and other partners namely, Pan African Climate Justice Alliance (PACJA) and The West African Green Economic Development Institute (WAGEDI), Gregory University, Uturu, Abia State, Nigeria.

The goal of this project is to have sub-Saharan African (SSA) countries successfully implement their NDCs and progressively increase their NDC ambitions in compliance with the Paris Agreement which will be achieved through both capacity development and policy and practice interventions.

The idea of this project was birthed in 2019 when ATPS and PACJA developed and piloted NDC implementation monitoring, tracking tools and index to gauge the status of NDC implementation in countries against the targets indicated in their submitted NDCs. The tracking tool covered the five NDC components, namely; Governance, Finance, Mitigation, Adaptation and Measurement, Reporting & Verification (MVR) the index will indicate areas among the components where each country is performing well and where they are not performing well. The tool will enable improvements in policy decisions in areas where performance is low with regards to the implementation of the NDCs.

This project seeks to utilize the key product from this pilot study to build the capacity of focal persons in twelve selected SSA countries to effectively measure their NDCs implementation progress using the tracking tools and Indexes.

For each output of the project, a series of activities will be implemented by the project team members and coordinated by ATPS and Partner National Chapter Coordinators in the 12 selected countries namely: Cote d’Ivoire, Ghana, Ethiopia, Kenya, Liberia, Namibia, Nigeria, South Africa, Tanzania, Uganda, Zambia and Zimbabwe.

On 29th August 2022, a virtual Project Launch took place with representation from all the partners in the project. The team from the AFDB took the project team through the administrative processes and requirements and also gave an overall summary of the expectations from the project.

The team is optimistic and geared up to deliver on the project expectations (outputs and outcomes) which is set to close on 30th July 2025.



Pictured Nnenna Nwabuo, Director General, East Africa Region, African Development Bank Group and Dr. Nicholas Ozor, Executive Director, African Technology Policy Studies Network (ATPS) during the signing of the project partnership agreement

ATPS and Its Partners Award 10 Grantees with USD 520,000 to Support Artificial Intelligence Research and Innovations in Agriculture and Food Systems in Africa

By Engr. Dr. Joel Nwakaire – ATPS Postdoctoral Research Officer

Africa's population is expected to reach about 2.6 billion by 2050. This will require an increase in agricultural and food production by up to 70% to fit the need of the population, a serious challenge for the agriculture and food systems. Such requirement, in a context of resource scarcity, climate change, the COVID-19 pandemic, and very harsh socioeconomic conjecture, is difficult to attain without the intervention of emerging technologies and innovations such as AI to leapfrog the transformations required in the sector.

The African Technology Policy Studies Network (ATPS) and its partners, the International Centre of Insect Physiology and Ecology (icipe) and Kumasi Hive have received a grant from the International Development Research Centre (IDRC) and Swedish International Development Cooperation (Sida) as Managing Organization (Hub) for Responsible Artificial Intelligence for Agriculture and Food Systems Innovation Research Network in Africa. The overall objective of this initiative is to advance the responsible development, deployment, and scaling of homegrown AI research and innovations to tackle pressing challenges in agriculture and food systems in Africa. This will be accomplished through setting up, managing, and supporting an innovation research network on AI for agriculture and food systems. The grantees will therefore take up the task to develop, deploy, test, and seek to scale responsible and homegrown artificial intelligence research and innovations through their projects.

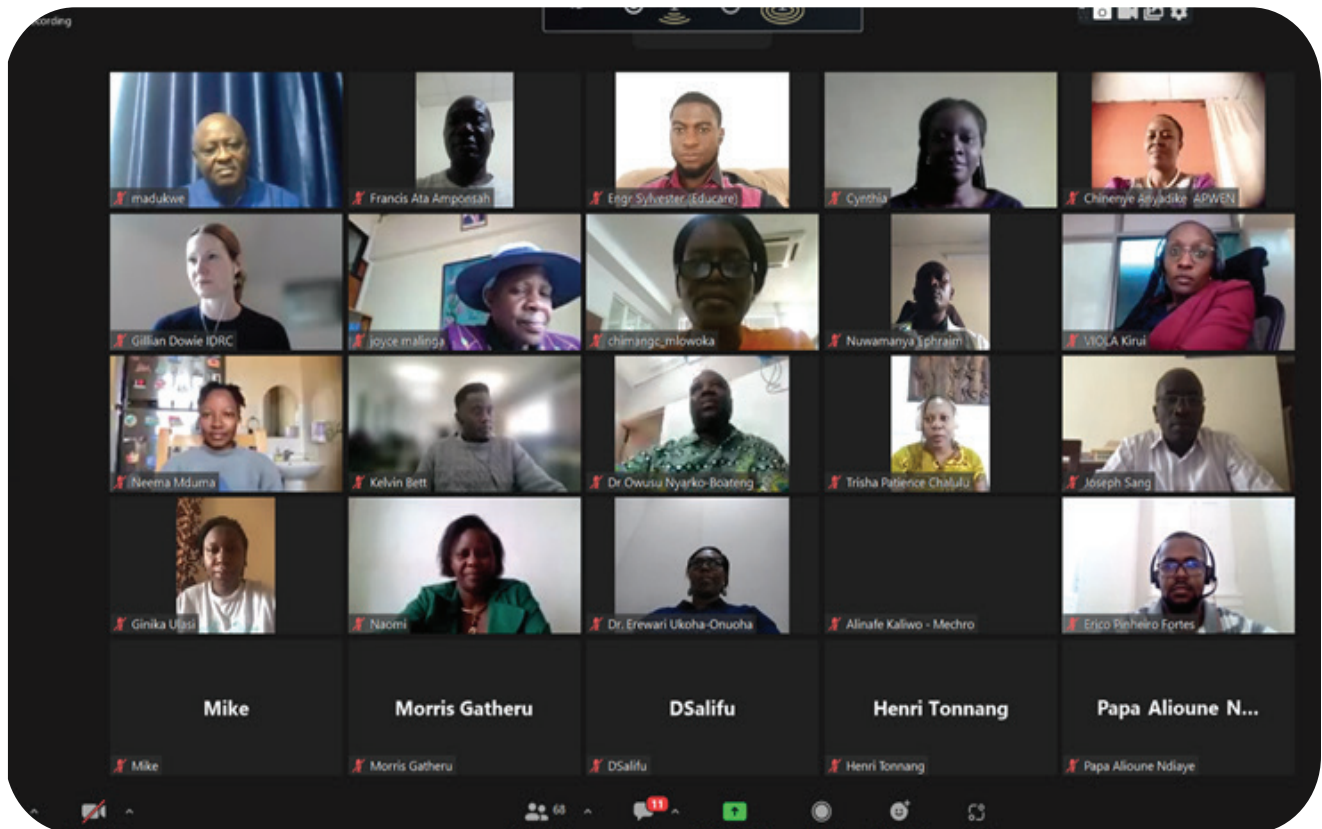
On 10th May 2022, the Artificial Intelligence for Agriculture and Food Systems (AI4AFS) Innovation Research Network hub received 107 applications from across Sub-Saharan Africa (SSA).

These applications give hope to Africa's quest to leapfrog agricultural and food systems development production to feed millions of its population through the use of responsible artificial intelligence tools and services.

After a thorough review process, twenty-eight applications were shortlisted to proceed to the first round of reviews by experts selected from Nigeria, Sudan, Kenya, Rwanda, South Africa, Senegal, Mozambique and Ghana. Out of the twenty-eight, seventeen were selected for the full proposal stage and were trained on key responsible Artificial Intelligence (AI) principles, Carbon Footprint Reporting, Gender Equality and Inclusion, and Principles of Product Scale-up and Commercialization. Upon further reviews, 10 grantees emerged victorious to be awarded the grant.

On 9th September 2022, the much-anticipated unveiling of the AI4AFS innovation research grantees who represent Kenya, Uganda, Tanzania, Senegal, Cape Verde, Nigeria and Malawi took place virtually. This was in the presence of the grantees, their partners, the project donors (IDRC and Sida); and the AI4AFS Hub management committee which consists of ATPS, Kumasi Hive and icipe.

During the project inception meeting, all the grantees committed to effectively use the funds to pump up productivity in the agricultural sector through innovations that will be scaled in the Sub-Saharan Africa region. In turn, this is expected to improve food security in the continent. The grantees are implementing their projects in the various countries with notable community engagement activities to ensure impact.



A snapshot of the AI4AFS virtual inception meeting held on 9th September 2022

Meet Our AI4AFS Grantees

For further information please contact the ATPS Executive Director at: executivedirector@atpsnet.org

Project Country of Implementation: Cape Verde

Official Language: Portuguese

Project Title: Monitoring and Artificial Intelligence Tools for Smart Agriculture



Meet the Project Principal Investigator

Dr Sónia Semedo is a Professor in the Faculty of Science and Technology of the University of Cabo Verde, in Cabo Verde. She received her Ph.D. degree in Physics Engineering, specialization in Instrumentation from the University of Coimbra, Portugal.

Project Amount: US\$ 50,000.00 (Fifty Thousand US Dollars Only)

Grant Award Number: AFS-9957569475

Project Abstract:

Cape Verde is a country with a strong agricultural tradition and has recently experienced long cycles of drought that have a direct impact on agricultural production. The utilization of emergence technologies such as the Internet of Things (IoT) and Artificial Intelligence (AI) can be a way to face the problems arising from the drought. In Cape Verde, a large part of agriculture is developed by small farmers on small plots of land with subsistence production, so in this project we intend to study the feasibility of using emerging technologies such as IoT and AI, to increase the efficiency and effectiveness of agricultural production. Specifically, in this project, we will use wireless sensor networks to monitor the soil, weather conditions, irrigation water availability, and drones to monitor crop growth, and based on the data collected. We will combine Artificial Intelligence models to define strategies to increase production. To validate our hypothesis, we will implement a pilot on a farm and monitor

the production process. With this project, we hope to contribute to increasing production, creating mechanisms for managing water and soil health, as well as creating a database for Artificial Intelligence models that will allow us to scale the study to other agricultural areas. The main goal of this project is, using Internet of Thing and Artificial Intelligence solutions suitable to Cape Verde, to develop an approach for agriculture capable to increase the production level, that allows mitigation and gains resilience in the face of climate change that we have been experiencing in Cape Verde.

Project Country of Implementation: Tanzania

Official Language: Swahili

Project Title: Development of Machine Learning Model for Crop Pests and Diseases Diagnosis Based on Crop Imagery Data



Meet the Project Principal Investigator

Dr. Hudson Laizer, Mbeya University of Science and Technology.
Interests: Sustainable agriculture, Agro-ecology, Climate smart agriculture, Biodiversity conservation, Botanical pesticides, Pre- and Post-harvest loss in agriculture

Grant Amount: US\$ 51,000.00 (Fifty-one Thousand US Dollars Only)

Grant Award Number: AFS-2504001568

Project Abstract:

Common beans and Irish potatoes are among the important food and cash crops to most smallholder farmers in Tanzania. Despite their importance in the household economy and food security, yield is generally low due to the effects of diseases, specifically Bean rust and Bean anthracnose for Common beans, and Early and Late blight for Irish potatoes. The current management of these four diseases includes the removal of the affected leaves and plants to reduce their spread, signifying that early detection is the key to successful management. This project will therefore develop a Machine Learning model that will be able to detect these four diseases early based on leaf imagery data and enable the farmer to make the appropriate decisions to manage the spread of the diseases. The development of beneficial and effective real-world Machine Learning applications depends on localized datasets to accurately train the model. The proposed project consortium of agricultural and machine learning researchers aims to deliver a two-way approach for the effective management of these crop diseases in Tan-

zania and other parts of Africa using Artificial Intelligence. Specifically, the proposed project will (i) Collect high quality geo-coded and time-stamped datasets of more than 120,000 crop leaf images representing diseased and healthy Common bean and Irish potato crops; and (ii) Develop a Machine Learning models that will be deployed in a mobile application for early detection of the targeted crop diseases. The model developed will be used by agricultural extension officers, farmers and other stakeholders in the early diagnosis of affected crops for effective management. The crop leaves imagery data collected will be deposited in open repositories to be used by other researchers in the field of Machine Learning to diversify options for early disease identification, disease diagnosis, and modelling disease spread which will ultimately help in managing and controlling targeted crop diseases and pests hence alleviating the food security problem in Africa. The project will demonstrate Responsible AI practices and Carbon Footprint reporting.

Project Country of Implementation: Tanzania

Official Language: Swahili

Project Title:

Enhancing Farm-scale Crop Yield Prediction using Machine Learning models for Internet of Agro-Things in Tanzania



Meet the Project Principal Investigator

Dr. Barakabitze Alcardo Alex, had a PhD in Computer Science from the University of Plymouth, UK in 2019. He received Master Degree of Electronics and Communication Engineering with first class from Chongqing University, PR China, in May 2015 and BSc. in Computer Science (Honours) from the University of Dar es Salaam, Tanzania in 2010. Dr. Barakabitze is recognised as the BEST Tanzanian Male ICT Researcher of 2021, an award that is awarded by the ICT Commission of Tanzania. Sokoine University of Agriculture, Morogoro, Tanzania

Project Amount: US\$ 51,000.00 (Fifty-one Thousand US Dollars Only)

Grant Award Number: AFS-3882447997

Project Abstract:

Agricultural productivity growth is seen as a catalyst for broad shifts in the Tanzania employment structure, especially in heavy-farming communities. This is because rising agricultural productivity enables greater surplus production from different crops. Agriculture is undoubtedly the largest and most important sector of the Tanzanian economy, with the country benefitting from a diverse production base that includes livestock, staple food crops and a variety of cash crops. Agriculture in Tanzania represents almost 30% of the country's GDP with more than 75% of the country's workforce involved in this sector. While most commonly food crops cultivated in Tanzania are maize and sorghum, farmers and other sector stakeholders face considerable challenges in modernizing the industry to increase yields. This is because smallholder farmers are struggling to access economically viable technology. Farm-scale crop yield prediction for maize and sorghum in Tanzania is very challenging due to many factors; such as crop and variety, soil type, management practices, pests and diseases, and climate and weather patterns during

the season. Machine learning techniques take a data-driven or empirical modeling approach to learn useful patterns and relationships from input data and provide a promising avenue for improving crop yield predictions. This project proposes to implement and build a supervised learning-based method to utilize high- and low-resolution satellite vegetation indices (VIs) and climate data to determine the boundaries of the small-holder farmers for two crops (maize and sorghum) fields. The project will develop supervised learning farm-scale crop yield prediction models that will provide good recommendations or predictions for local farmers (e.g., during the early season or end of the season). The project is the first of its kind in Tanzania to investigate the importance of different data sources (weather and climate patterns, remote sensing data, crop type, soil type, etc.) in predicting crop yield for different crops across different regions in the country. This project will allow more than 50,000 small-holder farmers in Tanzania to get early season or end of season predictions of crop yields. 60% of the farmers will be women farmers.

Project Country of Implementation: Nigeria

Official Language: English

Project Title: Using Artificial Intelligence to enhance the Production, Management and Marketing of Nsukka Yellow Pepper (*Capsicum Chinense* Nsukkadrilus)

Meet the Project Principal Investigator



Engr Prof. Chinenye Anyadike, Chinenye Anyadike is a Nigerian and the Chairman APWEN Tech4mum and Alt. Chairman APWEN Technology and Innovation Committee. She is an advocate of the Girl Child Education in STEM and capacity development for women and youths. She pioneered the Association of Professional Women Engineers of Nigeria (APWEN) Nsukka Chapter and is the first female professor and Head, Department of Agricultural and Bioresources Engineering, University of Nigeria Nsukka. She is interested in smart Agricultural and Aquacultural systems and has been teaching, researching, mentoring and impacting positively the communities within her reach for over sixteen (16) years

Grant Amount: US\$ 59,000.00 (Fifty-nine Thousand US Dollars Only)

Grant Award Number: AFS-0575120455

Project Abstract:

Nasukka yellow pepper (*Capsicum Chinense* Nsukkadrilus) is one of the varieties of pepper grown in Nigeria. The pepper attracts a higher demand than other peppers mainly because of its unique fruit aroma, characteristic yellow colour and hotness ascribed to the high content of capsaicin. These desired attributes have attracted governments, entrepreneurs and researchers on measures to improve and sustain the production of this economically valuable crop. The local economy of Nsukka is dependent on the production of Nsukka Yellow Pepper (NYP) with 70% of the farmers being dominantly rural women. Its production is faced with serious challenges ranging from low productivity due to depleted soil nutrients, climate change-induced high-water demand and pest attack, loss of distinctive aroma, high cost of inputs such as fertilizers and labour, and inadequate support from extension service providers, low-profit margin due to the role of middlemen in marketing, and limited access to the market. To help overcome these bottlenecks, the project aims to leverage Artificial Intelligence(AI) tools and applications to enhance the economic viability of NYP by collecting its datasets for early pest detection, providing support for early soil nutrient loss detection, improving water conservation through a

smart irrigation system, and providing e-extension service support in adapting and mitigating risks faced in production and improving access to the market, thus increasing the NYP value chain. The project will adopt the participatory action research approach in co-developing and deploying responsible AI soil monitoring, smart irrigation, and an integrated e-extension service and marketing application for overcoming the problems identified.

The project will adopt gender equality and inclusion principles to listen, learn, collaborate, and build the capacity of the men and women farmers to adopt and use the tools and services. The outputs of the project will be training manuals, Nsukka yellow pepper crop datasets for machine learning, a combined soil nutrient detection and smart irrigation system, and an e-extension service application for farmers' support. The outcome will be that women, youths, and the vulnerable will be empowered to use modern technology in farming practices; there will be increased synergy between the government, private sector, and academia in solving societal problems; AI will be utilized in water conservation; dataset will be generated for home-grown machine learning, and farmers will be supported to market their products.

Project Country of Implementation: Uganda

Official Language: English

Project Title:

Scaling Smartphone-Based Tools for Early Crop Diseases Detection & Monitoring



Meet the Project Principal Investigator

Dr. Godliver Owomugisha is a Senior Lecturer and researcher at Busitema University, Uganda in the Faculty of Engineering. Her research interests are in machine learning and computational intelligence in relation to solving real world problems.

Grant Amount: US\$ 55,000.00 (Fifty-five Thousand US Dollars Only)

Grant Award Number: AFS-0163245214

Project Abstract:

This research proposes to tackle one of the most challenging problems in agriculture; the detection and diagnosis of crop disease in the field by using low-cost smartphones with embedded assisted technologies. The study is embedded in a broader research project whose aim is to leverage machine learning techniques applied to the smartphone. The goal is to elevate early crop disease and pest surveillance and diagnostic capabilities in the hands of cassava smallholder farmers at scale. Cassava is a staple food crop in Africa that feeds more than 500 million people daily. However, the current disease diagnosis of the plant is done by experts in the form of a regular paper-based survey over a selected sample of different areas in Uganda. In this work, we will combine computational tools to address this problem. The innovation lies in: (i). Scaling our existing diagnostic tools to a whole system run by non-experts; anyone with a smartphone can participate in this system. (ii). Identification of

diseases in plants using non-symptomatic disease data acquired with a spectrometer device. This approach is premised on the hypothesis that diseased crops without visible symptoms can be detected using spectral information, allowing for early action measures. This research will pave the way for the development of similar tools specializing in other crops, e.g. maize and beans with beneficial effects on food security in Sub-Saharan Africa.

Project Country of Implementation: Kenya

Official Language: English

Project Title:

Pest Occurrence Early Warning System and Diagnostic Tool Development using Geoinformation and Artificial Intelligence: A Case Study of Tomato Leaf Miner (*Tuta Absoluta*), and Whiteflies in Machakos County, Kenya)



Meet the Project Principal Investigator:

Dr. Hilda Manzi, of Geospatial Research International, is an Agriculture Consultant, with a strong background in the application of GIS and Remote Sensing in the said field. She holds a B.Sc. in Agriculture (Egerton University, Kenya) and an M.Sc. in Environmental Information Systems (Jomo Kenyatta University of Science and Technology, Kenya).

Grant Amount: US\$ 52,000.00 (Fifty-two Thousand US Dollars Only)

Grant Award Number: AFS-4241717219

Project Abstract:

The Kenya Horticulture sub-sector is the largest in agriculture contributing 33% of the agricultural GDP. The subsector has been successful in the past three decades, offering the best alternative for among others, increased food self-sufficiency, food security, and improved nutrition, all ensuring the generation of increased incomes and employment, and foreign exchange earnings. The threats of climate change have however affected both productivity and profitability of the sector, resulting to limited growth and sustainable development. Increasing temperatures and changes in atmospheric moisture have resulted in the emergence of new pests as well as an upsurge of existing ones. Tomato is one of the crops affected by changes in weather. According to the Government of Kenya it accounts for 14% of total vegetable production and 6.72% of total horticultural crops.

In Kenya, the tomato plays an important role in meeting domestic and nutritional food requirements, job creation, income generation and foreign exchange earnings, thus contributing to poverty alleviation. Despite its importance, tomato production is constrained by pests and diseases accounting to 80-100% losses, with

the most common pests being tomato leafminer (*Tuta absoluta*) and white flies. Tomato leafminer can cause 100% damage in tomato crop in both greenhouses and open fields if control measures are not carried out. The pests reduce crop quality, increasing tomato prices and regional bans on the trade of tomato including seedlings. Therefore, this research intends to develop an AI-based spatial tool for the monitoring and surveillance of *Tuta absoluta* and whiteflies on tomato crop in Machakos County, Kenya. To achieve this, Remote sensing will be employed to monitor changes in land surface temperatures and atmospheric moisture to enable real-time monitoring of pest occurrence. Artificial intelligence will be used to mine data that can be used for the identification and control of these pests. The spatial tool developed will sustainably be implemented among small-holder farmers through the Kathaana vegetable growers in a business model that will involve the youth and women for e-extension services. The framework is designed to focus on early identification of pests and control through an integrated solution system inbuilt into the tool for varied users with limited pest control knowledge.

Project Country of Implementation: Kenya

Official Language: English

Project Title:

Empowering Smallholder Farmers (SHF) in Busia County using Low-Cost IoT (Internet of Things) and AI (Artificial Intelligence) Tools.



Meet the Project Principal Investigator

Dr. Betsy Muriithi, is a Research Fellow at the Data Science unit of @iLabAfrica research centre at Strathmore University. Passionate data analyst with experience in managing various projects in a dynamic start-up and in research focusing on data analytics. She has extensive quantitative and analytical skills, especially in large data cleaning, pre-processing, statistical analysis, and data.

Grant Amount: US\$ 53,000.00 (Fifty-three Thousand US Dollars Only)

Grant Award Number: AFS-1465894639

Project Abstract:

Climate change is a challenge to development. Access to localized data has become critical in ensuring the sustainability of food reserves across all societies. Notwithstanding, smallholder farmers (SHF) who produce more than 70% of the food consumed in Kenya lack access to localized productivity maximizing data and are extremely incapacitated by severe changes in weather and a lack of capacity to predict such changes. As such smallholder farmers are severely handicapped in terms of their ability to mitigate the impacts of climate change due to the lack of such data and thus are extremely affected by such changes. Reliance on traditional methods by farmers to understand weather predictions limits their mitigation capacity. Artificial Intelligence (AI) coupled with Internet of Things (IoT) technologies can work as assistive tools in enhancing crop yield, production monitoring, and supporting sustainable agriculture, thus ensuring food security. Moreover, the local capacity established over the past decade in Kenya to rapidly build and deploy low-cost devices to support such services is a plus as it has catalyzed the development of systems such as agro-weather tools, and their customization to

suit specific challenges and cost-effective for smallholder farmers. Deployments are simpler for outdoor use cases and robust enough to withstand weather effects. Using our IoT-based tool with enhanced AI features and plugins we intend to test the viability of strengthening local economies through the provision of access to vital weather data that would enhance crop yield. Our tested and evaluated product will employ the use of affordable mini-weather stations deployed strategically in parts of Busia county, a county with a 54% food insecurity and whose economy solely depends on Agriculture. Such deployments will continuously collate and aggregate data to a platform that farmers can easily access. This will be synced with existing information in delegated bodies such as Kenya Agricultural and Livestock Research Organization (KALRO) through train the trainer sessions and refined to suit the farmers' needs through dedicated channels more specifically DigiFarm, an integrated mobile platform that offers farmers convenient, one-stop access to a suite of products, including financial and credit services, quality farm products and customized information on farming best practices.

Project Country of Implementation: Malawi

Official Language: English

Project Title:

Building the artificial intelligence (AI) for soil moisture and nutrient monitoring under irrigated agriculture among smallholder farmers, academic and agriculture experts in Malawi.



Meet the Project Principal Investigator

Dr. Isaac Fandika, Department of Agricultural Research Services (DARS), Kasinthula, Chikwawa, Malawi.

Grant Amount: US\$ 54,000.00 (Fifty-four Thousand US Dollars Only)

Grant Award Number: AFS-4193755526

Project Abstract:

Irrigation has been one of the leading solutions to climate change and population growth challenges to food security in sub-Saharan Africa (SSA). However, irrigation has failed to live up to its potential. The irrigated land is far lower than any other region in the world, and expansion has been slow. Despite this, irrigation abstracts the largest amount of fresh water and remains the only hope to relieve farmers' poverty. Malawi is in the process of expanding the irrigated area. However, any planned expansion must be achieved with increased water use efficiency. Improving water and nutrient productivity is central to solutions for sustainable agriculture development as poor management results into low yields that lead to low profitability of irrigation. DARS, in collaboration with the Commonwealth Scientific and Industrial Research Organisation (CSIRO), foreseeing these problems, implemented digitized soil moisture and nutrient monitoring project using sensors. This project developed and refined these AI tools. However, the tools were not fully adopted and institutionalized among partners in irrigation development. For these reasons, a project with the overarching goal of institutionalizing the deployment and scaling of innovative digital solutions for improved agriculture and food availability will be implemented in Malawi for 18 months. The project aims to

scale up sensor technology for soil water and nutrient monitoring in irrigated agriculture. It is expected that a public-private partnership will be set – up to be developing and deploying AI tools for monitoring soil moisture and nutrient in irrigated farming covering 660 farmers at 30 irrigation schemes. The institutionalization of these AI tools will facilitate the establishment of distribution outlets for the tools and related accessories. In building AI4AFS, 30 public extension workers, 5 private data collectors and 660 farmers will be trained to use AI tools. There will be at a total of 660 farmers directly and 2,000 farmers indirectly benefiting where over 30% will be women with the youths representing 50% of the beneficiaries. Hence, farmers will practice smart irrigation with monitoring tools to produce for home consumption and surplus for the market and hence earn better incomes. In the longer term, there will be an increased understanding of how AI solutions promote sustainable agriculture and food system, wide adoption of AI innovations, and increased productivity and food availability of irrigation enterprises. This increase will be achieved through improved water and nutrient management as well as the creation of job opportunities. This project will assist in achieving sustainable agriculture, food availability and stability to achieve zero hunger – sustainable development goal 2.

Project Country of Implementation: Senegal

Official Language: French

Project Title:

TOLBI AI, an AI-based digital tool for smart, sustainable and efficient agriculture



Meet the Project Principal Investigator:

Mouhamadou Kebe has MSC in Network and Telecommunications Design Engineer from Ecole Supérieure Polytechnique de Dakar (Sénégal) and Innovation and entrepreneurship - Draper University (California) 2020. He is the Co-founder and CEO of TOLBI

And Head of Innovation and Entrepreneurship of Polytechnical School of Dakar 2021-2022. He is a Lecturer, Institut Mines Télécom (IMT Dakar), 2022.

Grant Amount: US\$ 48,000.00 (Forty-eight Thousand US Dollars Only)

Grant Award Number: AFS-5795725875

Project Abstract:

In sub-Saharan Africa, losses incurred as a result of non-adapted agricultural practices to climate change are 30% (plant health management, fertilization, irrigation) and the associated post-harvest losses are estimated at 4 billion US dollars. With the development of Climate Smart Agriculture, the main objective of the Tolbi AI project is to use a combination of Artificial Intelligence (AI), satellite images and local languages to provide small scale agriculture producers and inform national agricultural policies with real-time information on yield forecasts using a field management platform that monitors plant health, fertilization and water needs. The expected results of the project are; reduce post-harvest losses by 60-80% with an AI-based decision making system and yield forecasting for producers and public organizations (+6 Million acres, 18 months, 6 seasons), increase production as well as income of farmers and women by 30% through optimized agricultural inputs (fertilization) together with better plant health management; improve the output of family farms with the adoption of new smart

agricultural practices using AI; impact 80,000 farmers (50.43% women) by 2023 in Senegal and 1 Million farmers by 2025 across Africa. eTolbi AI aims to contribute significantly to food security in Africa, particularly in Senegal, with the use of Artificial Intelligence.

Project Country of Implementation: Ghana

Official Language: English

Project Title:

Detection of Crop Pests and Diseases on Web and Mobile Devices using Deep Learning.



Meet the Project Principal Investigator

Dr. Patrick Kwabena Mensah is a Ghanaian and a Senior Lecturer at Department of Computer Science & Informatics; University of Energy and Natural Resources (UENR) – Ghana. He has PhD, MSc, and BSc in Computer Science. He also holds HND in Electrical/Electronic Engineering. He has taught and done research (since 2012) with over thirty (30) publications and three (3) books. His research interests include improving Capsule Network performance on complex images, Plant disease detection on mobile devices using Deep Learning, and Internet of Things in Augmented Reality.

Grant Amount: US\$ 49,000.00 (Forty-nine Thousand US Dollars Only)

Grant Award Number: AFS-1233809296

Project Abstract:

The University of Energy and Natural Resources has sought to develop skills needed to solve natural resource problems through interdisciplinary research in Science, Engineering, and Agriculture. The communities in the University's catchment area are highly dependent on agriculture for their livelihood. They feed their families with food from maize, cassava, and tomatoes and sell some for financial gains. Due to the scarcity of land, the farmers cultivate cashew plants on small pieces of land to support their families financially. However, these crops are infested by pests and diseases every farming season, resulting in crop losses, hunger, malnutrition, low income, and poverty. To contribute to the improvement of farmers' livelihood, we aim at developing a deep learning (DL)-based mobile (Android/iOS) and web app to efficiently detect cassava, maize, tomatoes, and cashew pest/diseases. The DL models will be trained on Google Collab (to reduce carbon footprint) with both healthy and sick images of the plants. The models will be embedded in a mobile app and deployed on mobile phones using the Tensor Flow lite framework. When the app is installed on a mobile device, the user may capture/scan a plant with the phone's camera and the recognition will be shown instantaneously in addition to the certainty (probability value) of the results. For further verification of high uncertain

certainty), the user will be alerted of the necessity to seek clarification from an expert serving as a man-in-the-loop for the system. Due to high illiteracy rates in the farming communities, our AI system will be user-friendly and have text-to-voice facility to communicate the results and recommendations in English and the popular local language "Twi". This is to also facilitate easy usage by the visually impaired. To achieve responsible AI, the models will be designed to be privacy preserving and robust by means of frequent security updates. Due to low internet penetration, the mobile apps will not need internet connectivity for detecting plant pests/diseases. For sustainability and project scale-up after the project phase, we propose setting up e-kiosks in five communities to provide services to illiterate farmers, the visually impaired, and those without phones and internet connectivity at a subsidized fee. As part of gender equality and inclusion, the e-kiosks will be managed by women and disabled persons. The Ministry of Agriculture, district assemblies, our partner NGO and SME will be used to disseminate information about the app to farmers.

Is GMO the Way Forward to Ensure Food Security?

By Wanjeri Obi and Wentland Muhatiah

Genetically Modified Organisms (GMOs) are any plant, microorganism, or animal whose genetic makeup has been altered by the deliberate introduction of a single gene from a different, unrelated species. With plants, this is typically done to bestow a desirable trait, such as higher production, resistance to insects or drought, among others. The term “genetic engineering” describes the field of study that focuses on extracting the genes responsible for a desired trait from one species and inserting them into another, so altering the genetic makeup of both species.

Domesticated crops have benefitted from human efforts to enhance their quality for thousands of years. Conventional breeding, in which desirable characteristics are favored, selected, and then passed on to subsequent generations, has been largely responsible for this success. Using the traditional methods of breeding could take up to a decade. In most cases, genetic engineering has a timetable of less than five years. However, most Genetically Modified (GM) crops have been in the works for decades, especially in Africa, where commercialization restrictions have been particularly stringent.

Kenya banned GM crops in 2012. The ministerial statement on the ban was largely informed by a 2012 scientific report dubbed the Séralini study that associated GMOs with cancer in rats.

Anti-GMO activists have often referred to that report and in addition presented the unknown impact of the modifications as the main reason for pushing for bans. The other issues range from fears about the effects of GMO, the mixed signals from EU about health and safety of GM foods, and the potential risk of GMOs to the environment and biodiversity.

The activists also cite the fear of possible effects of GMOs on non-target organisms and poten-

tial development of resistance to insect-pests by the GM crops. Lastly, food safety fears of GMOs remain pertinent in some parts of the continent.

The Kenyan government’s change of stance was underpinned by a number of developments. First of which was the report by a task force on genetically modified foods that resulted in proper scientific regulation and presence of a strong regulatory framework.

Another factor is the lingering drought and erratic weather patterns in Kenya which according to a recent analysis (July to September 2022), has left about 3.5 million Kenyans food insecure. This may have led the government to consider more radical solutions despite opposition.

Whereas, it may appear GMOs are a quick fix to the food security challenge Kenya is facing, a critical review on long term impacts should be assessed and appropriate ways to mitigate them established. Questions such as what happens when there is seed scarcity of the adopted GM seeds for staple crops such as maize? Currently, farmers in the country are encouraged by agricultural extension officers to grow Bt maize. Bt maize is hailed for its ability to resist pests. However, the control and multiplication of the seeds is not controlled by farmers. This is likely to create a seed scarcity challenge should the seed producers pull out of the market. Companies such as Monsanto (now Bayer) are among the world’s largest seed companies and have been known to push GM innovations on key crops such as brinjals, maize and potatoes across the world, their major interest being profits. Allowing these companies to dominate the production and importation market of key crops such as maize is likely to affect the livelihoods of the farmers who, in Kenya, produce about 40-45 million bags of maize every year. These farmers will certainly be competing for

market against imports of cheap GM maize from the US which has been pushing to expand its exports of genetically modified food crops into the Kenyan market. Kenyan imports of GM foods and food crops will also affect our East African neighbors such as Tanzania and Uganda who export their surplus produce to Kenyan market. With the loss of market comes the loss of interest in farming and the abandonment of land, which in turn could lead to rural-urban migration by populations in search of alternative livelihoods, leaving the door wide open for multinational corporations to buy abandoned land to grow commercial crops for export. Lifting the GMO ban will also expose farmers to draconian intellectual property laws related to patents held by GMO multinationals. GM seed is patented and this could land the farmers on whose farm GM crops have grown without their knowledge into intellectual property disputes. These farmers are likely to be forced to pay royalties for GM crops that contaminate their farms through pollination or crossbreeding.

In the US, Bayer sued hundreds of farmers to protect its GM seed patent rights. In Brazil, Bayer won a US\$7.7 billion lawsuit after a court ruled that farmers cannot save and replant their patented Roundup Ready soybeans. In India, PepsiCo, the manufacturer of Lays Potato

Chips, had sued four farmers for an amount of about KSh15 million for illegally growing its potatoes.

In view of the increased population and unprecedented weather conditions, the introduction of GMOs seems like a viable route for countries such as Kenya to take. However, as this is a relatively new practice, long-term implications on humans and the environment are not clear. Further research to ensure adaptability, risk assessment and quality assurance need to go into this and where necessary, the findings should be openly shared with the stakeholders including the public to ensure transparency and accountability. In so doing, also offer sensitization on matters GMO-related. A lot of collaboration between the government and bodies such as the Kenya Plant Health Inspectorate Service (KEPHIS) is needed through this process.

To aid the process, there might be a need to borrow a leaf from countries such as South Africa which was the first country in Africa to farm genetically modified crops; looking to understand their successes and failures as well as the regulations and control measures that they have put in place and see if the same can be successfully replicated in Kenya if and when the ban is fully lifted.

Developing a Place-based Approach to Entrepreneurial Capacity Building across African Higher Education Institutions

By Wentland Muhatiah – ATPS Research Officer

Universities are not only recognized for playing an important role in the creation of new knowledge and innovations but also for playing an important role in the training of the next generation of leaders, engineers, and scientists. The African continent is faced with a myriad of challenges ranging from climate change to high rates of unemployment and there is a dire need to come up with long-term solutions to address these challenges.

This desire is captured in Africa's Agenda 2063 which aims to have a prosperous Africa based on inclusive growth and sustainable development. For this to be attained, entrepreneurship, research, and innovations spearheaded by universities will be critical in providing much-needed home-grown solutions.

The problem, however, is that entrepreneurship is not yet fully integrated into the activities of Universities across Africa, with most universi-

ties having no entrepreneurship capabilities or curriculum, and only a few having limited entrepreneurship training and support for students and staff.

Findings from a previous British Council Digital Africa project, led by Lancaster University (UK), revealed the need to develop entrepreneurial capabilities within institutions, for both students and staff to grow African economies and societies. Although there is a desire to develop entrepreneurial capabilities, there remain significant barriers to moving forward in this area; both in terms of integrating entrepreneurship into the curricula, as well as the training and support of academic scientists in creating impact from their research.

The main barriers that have derailed entrepreneurial capacity building across African institutions so far are:

- **Lack of institutional support**

although entrepreneurship is becoming increasingly prominent on the political agenda, this has yet to feed through to the development of entrepreneurial capabilities within institutions. Academics and scientists from Africa would like to learn how to become more entrepreneurial as academic researchers or scientists as well as how to train other colleagues or students to become more entrepreneurial. There has been paucity of successful academic-entrepreneur role models that can be looked up to. This has made it cumbersome for institutions to develop the capacity of their staff and students to enhance entrepreneurship in the different aspects of innovation.

- **Lack of industry-academia relationships and knowledge exchange**

African academics and academic institutions have a notorious tendency of working in silos, ignoring the huge benefits that could be accrued from collaborating with industry ecosystem partners. Currently, little is being done to bridge the gaps between academics/scientists and industries or the impact of research-driven

entrepreneurial thinking.

- **Lack of knowledge and understanding of entrepreneurial thinking and action**

The biggest challenges to entrepreneurial thinking in the African continent range from financial constraints, and lack of willingness and self-motivation to pursue entrepreneurship, to the paid-job-only mindset of students and staff. The few institutions that have some structure within their universities that support entrepreneurship actions do not provide any support services or capacity building for staff hence puncturing any meaningful efforts that were being advanced towards advancing entrepreneurial thinking.

Here are a few things that could be done to improve the situation /What needs to be done?

ATPS together with its partners Lancaster University (UK), University of Benin, and Kenyatta University designed and developed an online platform and toolkit to Stimulate Entrepreneurial Thinking amongst Scientists and Students (SETS). The toolkit is designed to help scientists, academics, and researchers and their institutions to develop entrepreneurial thinking of entrepreneurship education and learning as described below:

(i) Engaging in entrepreneurial practice

There is overwhelming evidence suggesting that thinking entrepreneurially requires not only an understanding of what entrepreneurship is about but also requires engagement in entrepreneurial practices and reflections. At the heart of the framework and toolkit is the engagement of academics and scientists in projects where they think more entrepreneurially from the onset about their research projects and about the ways they teach entrepreneurship.

(ii) Collaboration and knowledge sharing

Entrepreneurial thinking cannot take place in

isolation, it requires working alongside others, learning from others, sharing ideas, and allowing others to challenge your ideas to improve and shape them. Entrepreneurial thinking requires extending networks beyond the people one works with on a day-to-day basis and reaching out to academics and scientists in other disciplines, community members, and leaders in industry and policy. Collaboration and knowledge sharing are at the heart of the SETS framework and toolkit.

(iii) Entrepreneurial thinking needs to be place-based

Entrepreneurial thinking needs to be directed toward making a positive change in the world and to do so requires engagement with people and places that matter to individuals, their institutions, and within their unique environment.

Place-based thinking is the final element of the SETS framework and toolkit ensuring that entrepreneurial projects, or the development of entrepreneurship curricula for students are directed towards the places and site-specific challenges that matter the most.

SETS provides an opportunity for scientists and researchers to train their mindsets to be more entrepreneurial as they go on with their research. However, for this to be fully effective, institutions have to throw in their weight to support the SETS toolkit that is anchored on collaboration and the sharing of knowledge across stakeholders. It also requires a commitment to capacity building and training of academics and scientists which would in turn impact positively on entrepreneurial education for students and consequently graduate employability.

Nourished Soils, Nourished People, Nourished Economy

By Wanjeri Obi – ATPS Communications and Outreach Officer

As part of Agenda 2063, the Assembly of Heads of States and Governments of the African Union has adopted common African goals, drawing on the potential of its populations, especially well-nourished and healthy citizens, with a particular emphasis on women, adolescents, and children. Human capital is essential for development since it enhances lives, earnings, and national incomes.

Even if global and continental nutrition has improved over the previous decade, more work must be done to eliminate malnutrition. The efforts to increase food production to provide food security have been significantly hindered by challenges like the Covid-19 pandemic and erratic weather patterns. In this context, stakeholders should work on the creation and implementation of policies that promote interventions in Agriculture and Climate Change that aim to ameliorate the situation.

The African Technology Policy Studies Network(ATPS) contributes to improved nutrition in its own manner by participating in programs

that inform, influence, and facilitate progress toward this end. Recently, during the COP27 Africa Resilience Hub, Wanjeri Obi, the Communications and Outreach Officer at the ATPS spoke on how policymakers can promote soil management and food security.

Together with Kumasi Hive and International Centre of Insect Physiology and Ecology (icipe), we are collaborating with individuals across sub-Saharan Africa whose projects aim to improve food production through the use of responsible artificial intelligence tools and services. Youth should be involved in decision-making, not only as a matter of inclusion as this is critical.

Africa's population growth is anticipated to be 2.5% per annum. According to the United Nations, 70% of Sub-Saharan Africa is under 30 years of age. The only way for such a young population, which drives the economy and innovation, to reach their full potential is if they are completely empowered, particularly nutritionally.

Conference of the Parties, Just a Conference?



Following the 27th session of the Conference of Parties (COP27) recently held in the Arab Republic of Egypt, Wanjeri Obi, the ATPS Outreach and Communications Officer had a discussion with Khaduyu Michael (pictured) from the African Youth Commission on matters around COP27 and some outcomes from the conference.

1. Kindly tell us a little about yourself.

I am Khaduyu Michael the Project Lead for the African Activist for Climate Justice (AACJ) at African Youth Commission (AYC). I possess nine (9) years' experience in Climate Change and Environment policy advocacy and governance, Renewable and sustainable energy, and Climate Change Advocacy, implementing projects at the Continental, Regional, National and sub-national level. I am a Public Policy Expert passionate about the Environment, Climate finance, Sustainable development, Agriculture and recently added interest in Organic farming. I am currently pursuing a Masters in Environment Policy at The University of Nairobi (Centre for Advanced Studies in Environmental Law and Policy) and I hold a Bachelor of Commerce from Kenyatta University.

I continue to follow the international climate change negotiations prioritizing Climate finance, adaptation, capacity development and inter-generational equity with a bias of ensuring Pan-African youth involvement in the whole process of Diplomacy and negotiations. I lobby for Climate Financing opportunities to ensure attainment of the principle of Common but Differentiated Responsibilities and Respective Capabilities (CBDR/RC) as anchored in the United Nations Framework Convention on Climate Change (UNFCCC) and the historical injustice debate through the unlocking of the Private sector potential in financing climate Action.

2. Your profile describes you to have an interest in Climate Finance. Could you tell us what Climate Finance is and why you have an interest in it?

Climate finance is any finances or investments that go into reducing Greenhouse gases

(GHGs) emissions and Adaptation and Mitigation projects. My interest in climate change is from the premise that the solution to climate change is dependent on the investments made in conserving our environment, maintaining our biodiversity and helping communities that have suffered climate disasters and stand at a risk of climate risk exposure can confidently live knowing that their Adaptive capacity is enhanced and can deal with or have mechanisms to handle whatever is thrown their way.

Another interest that I have in Climate Finance is pegged on the premise that Africa needs to be compensated for the Loss and Damage (L&D) that they have suffered but they should live in the current reality that no donor has finances or resources laying idle to hand over to Africa. I seek to help unlock Africa's private sector financing; with the aim for the private sector to realize that they stand to lose more should Africa lose her biodiversity.

3. Climate conversation has been going on for decades and the effects of it are well known to us. Despite this, many people still engage in anthropogenic activities that exacerbate climate change. In your opinion, why do we have this disconnect?

The reality is, people have to feed their families! In the pursuit of survival human beings will do anything to survive including cutting down trees to produce timber and charcoal when they are faced with starvation. A good example is what is happening in Kilifi, Kwale and Kitui where communities are cutting down trees for charcoal production. The disconnect is due to human greed especially by the rich persons and nations who through their pursuit of profit do not care about the welfare of their fellow

humans and the environment that they live in. It should also be documented that there exists technologies to help reduce the impacts of climate change but the “owners” of this technologies want to sell them at a high price; to the level that the people who need it cannot afford it. A good example of this is Solar power investments which is very expensive yet touted as the alternative to coal and oil and Gas.

4. Are local governments and institutions playing the role that they should in sensitization of climate change and measures towards mitigating it?

No. From my observation, majority of the sensitization that has taken place for local communities, at the subnational and national level has either been done by development agencies (NGOs CSOs and Community organizations) or the Media which gives climate change coverage especially during disaster. With the Financing Locally Led Climate Actions (FLLo-CA) program funded by the World Bank, we are seeing an increase in climate change legislation at the counties and the prioritization of climate change in the communities.

5. What can be done to make the situation better than it is?

There is need to ensure that the different stakeholders in the climate change cycle; the government, private sector, communities, NGOs and other Non-State Actors start having a conversation with the local communities proposing how they want the climate change response to be tailor-made to suit their needs.

6. What were your expectations going to COP27?

Honestly, for the Agenda Items none. My main expectation was to network and create new partnerships. The Agenda on everyone's lips was Loss and Damage; an Agenda that Africa has been pushing for adoption. The challenge is with it being agreed upon how will the financing be different from Green Climate Fund

(GCF) which everyone believed would purely be a grant but we have seen the introduction of Loans and Equity as part of its financing mechanism.

• Were those expectations met? If so, how? If not, how?

Though some long-standing expectations were met like the formation of the Sharm El Sheik program on Agriculture which extends the Agriculture mandate offering a platform to the continuance on Koronivia Joint Work on Agriculture (KJWA), The Sendai Framework on Loss and Damage, Global Goal on Adaptation were some of the Agenda that I had an interest and substantive discussions taking place.

7. In your opinion, do you think the delegates from Africa had realistic expectations?

Going into COP, Africa always has a wishlist that could be termed as over-ambitious and partners from donor countries have their expectations as well. Africa's comprehensive wishlist helps push an extreme reality to the developed countries who often give a counter offer that ensures that Africa receives some funding.

8. Kenya is said to have had the fourth largest delegation at COP27. Why do you think this is? Does this translate to impact?

For context, Kenya as a country is the committee of African Heads of the State and Governments on Climate Change (CAHOSCC). With the Kenyan president Dr. William Ruto attending COP, this meant that he needed to have a delegation to carry out the various roles.

Many global organizations that work with different department of the government are headquartered in Nairobi, Kenya and chose to sponsor the government officials that they work with to attend COP27.

This has definitely translated from the funding of projects that Kenya has been able to secure from the developed countries and partners.

9. What role can ordinary Kenyans who do not form part of the policy conversation or implementation play towards fighting climate change?

This is not just for ordinary Kenyans but all Kenyans. This ranges from basic practices such as proper waste disposal, waste sorting in homes and at source; planting trees and ensuring that they survive to be self-reliant and turning off lights when not in use.

Kenyans should be vigilant and take advantage of the civil space of public participation as enshrined in the constitution, lobbying for response measures that emerge from the community members themselves.

10. A lot of people do not know what COP is. Does this mean that there should be more capacity building, training and sensitization on matters to do with climate?

In my opinion, capacity building should be focused on climate response and prevention as opposed to the COP as the Conference of the Parties is more of a coordinated diplomatic process. Sensitization on climate matters should begin as early as possible in schools, meaning it needs to form part of our curriculum.

11. Besides conferences like COP27, how else can we ensure meaningful conversation and action on climate change takes place?

By holding our government accountable by participating in the Pre-COP process to help shape the government position towards COP and Post-COP to assess the Agenda achieved after. Following events such as the COP negotiations we need to have a way to further engage the government on climate change and monitor and assess the implementation and impact of the agreed upon plans and by being part of the solution by sitting in the project/program implementation committees.

12. Unethical corporate interests can be noted to water down progress made by climate advocates. How can we work around this

considering that many of these corporates have very deep pockets?

Africa should be united and speak in one voice and having a radical approach in dealing with these countries. We should set standards for these corporates to meet and be willing to face the consequences of turning them down.

13. Gaps in the promises made for funds and delivery of the same have been noted. For instance, developed countries failed to deliver on the USD100 Billion per year of climate fund for developing countries as committed to in Copenhagen in 2009. Really, based on this, is there any hope that the loss and damage fund will be implemented?

Yes and No, the funds should not be touted as the panacea for the entire Loss and Damage (L&D) challenges, however the funds may be beneficial to the groups or countries that can bilaterally engage with any development partner or country willing to fund L&D work.

14. With the loss and damage fund having being agreed to during COP27. When it is finally implemented, how do we ensure that those meant to access it do?

This can only be achieved by ensuring that those who qualify for these funds get information about these resources in a timely and precise manner that ensures that when the call for application is out there are quality proposals developed by the community members.

• Is it the saving grace for developing countries?

No but this is a start because L&D is one part of the climate themes. There is a lot that needs to be done.

• What can these countries do within their capacities?

Countries can include L&D Matters in the Country Climate Change Acts.

15. With COP27 being held in Africa, there was an expectation for African issues to be prioritized. However, there have been sentiments that this did not happen. Makoma Lekalakala; Director Earthlife Africa was quoted saying “This was not an African COP. It was just a meeting held in Africa.” What are your thoughts on this?

It is important to understand that progress on matters discussed at COP is a slow process. It would be unrealistic to expect COP to adopt issues in a supersonic speed merely on the fact that the conference was held in Africa.

16. What is your parting shot?

Africa should find a way to fund its own climate response initiatives without depending on the foreign donors or developed countries. When the disaster strikes it doesn't wait for resources from the donor community and it can never be enough for the challenges and disasters that Africa experiences.

Meet our New Staff

The African Technology Policy Studies Network(ATPS) continues to offer the opportunity for individuals from various professional fields and diverse cultural backgrounds to share work and share in knowledge. Within the year 2022, ATPS has seen growth and expansion of the team. Here are the new staff members that have recently joined the team.



Engr. Dr. Joel Nwakaire, is a postdoctoral researcher at the ATPS in Nairobi, Kenya. He is currently the Program Officer for the Artificial Intelligence for Agriculture and Food Systems Innovation Research Network. Joel Nwakaire is an Associate Professor at the University of Nigeria, Nsukka's Agricultural and Bioresources Engineering department where he has had 16 years' experience as a lecturer.

In the inaugural edition of the Innovation Prize for Africa, the result of his doctoral dissertation was nominated as one of the top five most innovative works in Africa. Joel Nwakaire received an award for being the most dedicated National Youth Service Corps member in Nassarawa state in

2005 batch A, where he designed a low-cost maize sheller for rural residents.

In 2009, Joel received his Master of Engineering. His Master's thesis on the design, construction, and testing of a 30-litre-per-hour continuous biodiesel plant earned first place in an all-African Young Professional in Science competition sponsored by CTA, ATPS, AGRA RUFORUM, and FARA. His writings have centred on biofuel, waste utilization, agricultural machinery, and energy management. He is dedicated to protecting the earth through renewable energy research. Between the years 1992 and 2002, he received technical training as an auto technician. Joel holds four (4) patents for original creations. He has a strong interest in renewable and clean energy systems. He is passionate about teaching and transferring knowledge.



Wanjeri Obi is the Communications and Outreach Officer at the ATPS where she among other things is involved in proposal development and report writing; program development and implementation; communication strategy and execution; network building content development and curation; and policy advocacy via integrated media management. Wanjeri holds a Bachelor of Arts Degree in Public Relations from Daystar University and is also certified in Integrated Brand Communications by the International School of Advertising.

She has proficiency in traditional and digital communications and is experienced in strategically engaging diverse stakeholders. In the past, she has worked in the Agricultural sector with Advanta Seed International which is under UPL, the 5th Agrochemical Company in the world. She has also worked in the gender development space as a Team Leader for Vunja Kimya, an initiative that was run by UN Women. Social justice, equity and the Arts are some of the things that Wanjeri passionately holds and works towards.



Nehemiah Ndinwa is the Finance and Administrative Officer at the ATPS. He holds a Bachelor's degree in Business Administration and is a member of the Institute of Certified Public Accountants (CPAK). With over seven years' experience in accounting and finance, some of the areas Nehemiah is adept in are; financial reporting and data analysis, budgeting and costing, tax, AP and AR reconciliations statutory compliance and internal controls among others.

With progressive experience and increased responsibility in the accounting practice, he is passionate about absolute dedication to executing his duties with a high level of integrity and professionalism.



Carolyn Karanja is the Finance and Administrative Assistant at the ATPS. She is a certified public accountant and holds a Master of Business Administration in Finance from Africa Nazarene University as well as a Bachelor's of Commerce in Accounting from Daystar University. Equipped with over five years of work experience, Carolyn has vast knowledge in grant and project management, financial analysis and corporate governance. She has previously worked in the corporate sector as well as the NGO space.

Interactive Collaborative Environment (ICE)

Our web-based tool; The Interactive Collaborative Environment (ICE) platform that is meant to ease professional interaction, help in capacity building through online training and enhance collaboration amongst stakeholders is now more collaborative.

With the addition and activation of the online discussion, slack chat and data upload spaces, ICE will now enable stakeholders from different sectors to interact in real-time and share information more effectively.

The ICE platform has particularly been of great support to the Artificial Intelligence for Agriculture and Food Systems Innovation Research Network (AI4AFS-IRN) which supports high-level discussions among its members, experts and research grantees.

The forum has aided and continues to aid in the creation of awareness of developments in the agriculture sectors concerning the application of Artificial Intelligence.

Intellectual Property in Africa: From Brain Drain to Brain Gain

On 31st October 2022, the ATPS and partners co-hosted and participated in an expert panel webinar on Demystifying the application of Intellectual Property Rights (IPR) for Africa's Sustainable Development. The main objective of the webinar was to exchange ideas and practices to allow for a deeper exploration of issues and sharing of knowledge and experiences by key stakeholders to support the implementation of policies around IPR.

The event was open to all participants including government officials, women and youth groups, civil society, academia, media among others was co-organized by the UN Office of the Special Adviser on Africa (UN-OSAA), the African Capacity Building Foundation (ACBF), the UN-OSAA Think Tank Network – African Technology Policy Studies Network (ATPS), Advocates Coalition for Development and Environment (ACODE) and Cellule d'Analyse de Politiques Economiques du Cires (CAPEC).

Kenya Innovation Week (KIW) 2022

The Kenya Innovation Week (KIW) 2022 intends to champion relevant policy engagements on innovations within institutions while promoting practical skills necessary to create innovations that impact people. In addition, Kenya Innovation Week purposes to strengthen the research and commercialization practices for greater socio-economic impact. ATPS being part of the consortium that implemented the projects tagged “Place-based Entrepreneurial Capacity Building also known as DIFFERENTIATE” participated in the KIW 2022 held at the Sarit Expo Centre in Nairobi from 6th to 8th December 2022. This was an opportunity to continue creating awareness of the SETS Toolkit which was the major output of the project.

ATPS participates in the AI4D Implementation Committee workshop in Senegal 29 November to 2nd December 2022.

The ATPS Executive Director, Dr. Nicholas Ozor and the Program Officer in-charge of the Artificial Intelligence for Agriculture and Food Systems (AI4AFS) project, Engr. Dr. Joel Nwakaire participated in the AI4D Africa implementation committee workshop in Somone, Senegal which was held between 29th November and 2nd December 2022.

The objectives of the workshop were for partners in the AI4D Africa programme supported by International Development Research Centre (IDRC) and the Swedish International Development Cooperation (Sida) to have a better understanding of the programme and their positions in it; increased collaboration across Africa; and laying the foundation for a collaborative development of a medium and long-term future of the AI4D Africa Programme.

Highlights of the 1st day events included a session on “Futures Thinking: AI in Africa 2050” which focused on deepening understanding of the potential futures within which AI4D Africa is operating, and identifying potential levers of change. The session included a dynamic refining of the future AI4D scenarios and uncovering the root causes of our futures.

The 2nd day session focused on “Designing AI4D Africa Phase II” with the objective of collaboratively laying the groundwork for the development of a proposal for phase II of the AI4D Africa Programme.

On the final day, participants engaged in the AI4D Africa Programme Information Session where various Hubs shared information and updates on AI4D Africa activities, and the “Designing AI4D Africa Phase II – part II” which involved backcasting, strategies and tactics for achieving the vision for the future.

Catch up with the Mastercard Foundation

On 11th November 2022, the ATPS hosted a team from the Mastercard Foundation to discuss and catch up on the project tagged “Understanding the Policy and Institutional Landscape for Technological Innovation Development in Africa to Enhance Youth Employability, Entrepreneurship and Job Creation (UPTIER)” funded by the Mastercard Foundation.

The UPTIER project goal is to review the Science Technology and Innovation (STI) policy and institutional landscape in selected sub-Saharan countries namely: Ethiopia, Ghana, Kenya, Nigeria, Rwanda, Senegal and Uganda with a view to understanding what works, what does not and the reasons in relation to technological innovation, job creation, youth employability and entrepreneurship.

Meanwhile, with the support from Afreximbank, the ATPS staff participated in Focus Group Discussions in eight African Countries to get further information on the role played by STI Policies and Institutions to enhance technological Innovation, job creation, youth employability, skills development and entrepreneurship.



Participants during the Focus Group Discussion held in Kampala, Uganda



Participants during the Focus Group Discussion held in Abuja, Nigeria



Participants during the Focus Group Discussion held in Accra, Ghana

Tribute to James McGann; Think Tanks and Civil Societies Program Founder



James G. McGann who was born in 1955 and passed away on 29th November 2021 was an American academic and Senior Lecturer in International Studies at the University of Pennsylvania. He founded the Think Tanks and Civil Societies Program in 1989 and authored many publications including the renowned annual Global Go To Think Tank Index which ranks think tanks in all regions of the world.

According to the 2020 Global Go Think Tank Index Report Africa Technology Policy Studies Network was ranked as the best top Science, Technology and Innovation Think Tank in Africa.

We celebrate the life and contributions of James McGann.



Celebration of Life of Madam Regina Esi Looye Quarcoo

We celebrate the life of Madam Regina Esi Looye Quarcoo; mother to Pastor Dr Fredrick Amu-Mensah who is the National Chapter Co-ordinator of ATPS Ghana. Madam Regina passed away on Friday 8th July 2022 at the age of 88 at her home in Riberio-Sukura, Accra, Ghana and was laid to rest at the Awudome Cemetery in Accra after funeral and burial rites at her father's house at Ayalolo, in Accra.

We pray that she Rests in Eternal Peace and pray for God's peace to be with her loved ones.



Mourning the Loss of Mr. Filippo Zulu

It is with deep sadness that we learnt of the untimely passing of Mr. Filippo Zulu, Acting Executive Secretary, National Science and Technology Council (NSTC), Zambia.

Filippo was instrumental in many projects and initiatives that the ATPS ran in Zambia. He was passionate about the link between science and policy and saw a key role of science granting councils in catalyzing greater engagement at this interface.

His wisdom, leadership and exceptional contribution to strengthening Science, Technology and Innovation (STI) capacities are celebrated and will be missed.

ATPS Signs an Agreement with the AFDB

An agreement between the African Development Bank (AFDB) under the Africa Climate Change Fund (ACCF) was signed on 22nd July 2022 with an aim of assisting in the financing of Building the Capacity of Selected Sub-Sahara Africa Countries to Effectively Measure Progress in their Nationally Determined Contributions' Implementation Using Tracking Tools and Indexes.

This project will also be executed by our partners Pan African Climate Justice Alliance (PACJA), The West African Green Economic Development Institute (WAGEDI), Gregory University, Uturu, Abia State.

ATPS signs a Memorandum of Understanding (MOU) with the African Union

A Memorandum of Understanding was signed between the African Union Commission Department of Education Science Technology and Innovation (AUC-ESTI) and the African Technology Policy Studies Network. The purpose of this MOU is to facilitate cooperation and collaboration between the two organizations. The MOU supports the overall implementation of AUC programmes in areas where we have a competitive advantage such as STI Policy Research, Policymaking and Advocacy; Capacity Building, Training and Sensitization; Knowledge Brokerage, Management and Commercialization; and Intra-Africa and Global Collaboration and Partnerships.

Stars in Global Health Request for Proposals

This call for proposals seeks bold ideas that address the human health impacts of climate change in low- and middle-income countries. These innovative solutions are expected to address the adaptation gaps and build resilience against the effects of climate change on the human health and wellbeing of underserved communities. Solutions should consider the fact that older adults, women, young people, Indigenous peoples, people with disabilities, LGBTQI+ individuals, and other traditionally underserved and minority groups are most vulnerable to the health impacts of climate change in many contexts. Successful proposals will be awarded seed grants of up to CAD \$150,000 for a period of up to 18 months to develop and test the proposed innovation. This aims to award approximately 30 seed grants in this round, of which a minimum 60% will be those implementing in sub-Saharan Africa (SSA). Organizations incorporated in Canada or a low- or middle-income countries are eligible to apply.

Further details on this can be found here <https://www.grandchallenges.ca/programs/stars-in-global-health/>

Danida Fellowship Centre Call for Applications 2023 – Phase 1

Under the theme “Development under conditions of climate change”, The Ministry of Foreign Affairs/ Danida (MFA) invites applications from Danish research institutions for grants related to development research with partners in the Global South.

The application round consists of two phases. Phase 1 is the first step of a process in which applicants submit an application presenting the project idea leading to prequalification. Phase 2 is the submission of a full application by those selected in Phase 1 (“prequalified”).

The MFA is committed to promoting equal opportunities for all and diversity in all its aspects. Therefore, interested parties from all backgrounds regarding ethnicity, religion, gender identity, age, or disability status are encouraged to submit research applications. The total allocation available for development research funding in 2023 is approximately DKK 200 million. Funding is conditional on approval by the Danish Parliament of the 2023 Finance Bill.

In 2023, the following countries are eligible for research applications: Bangladesh, Burkina Faso, Ethiopia, Kenya, Niger, Palestine, Somalia (incl. Somaliland), Tanzania and Uganda. These countries are all countries where Denmark engages in expanded development cooperation.

Further details on this can be found here <https://dfcentre.com/research/calls/calls-for-applications-phase-1/>

IKI Call for Proposals

The International Climate Initiative (IKI) of the German Government has put out its 4th International Call for Proposals under the IKI Small Grants that is implemented by GIZ in accordance to its procedures.

Research projects with strong implementation component with a clear focus on one or more of the following areas are called upon.

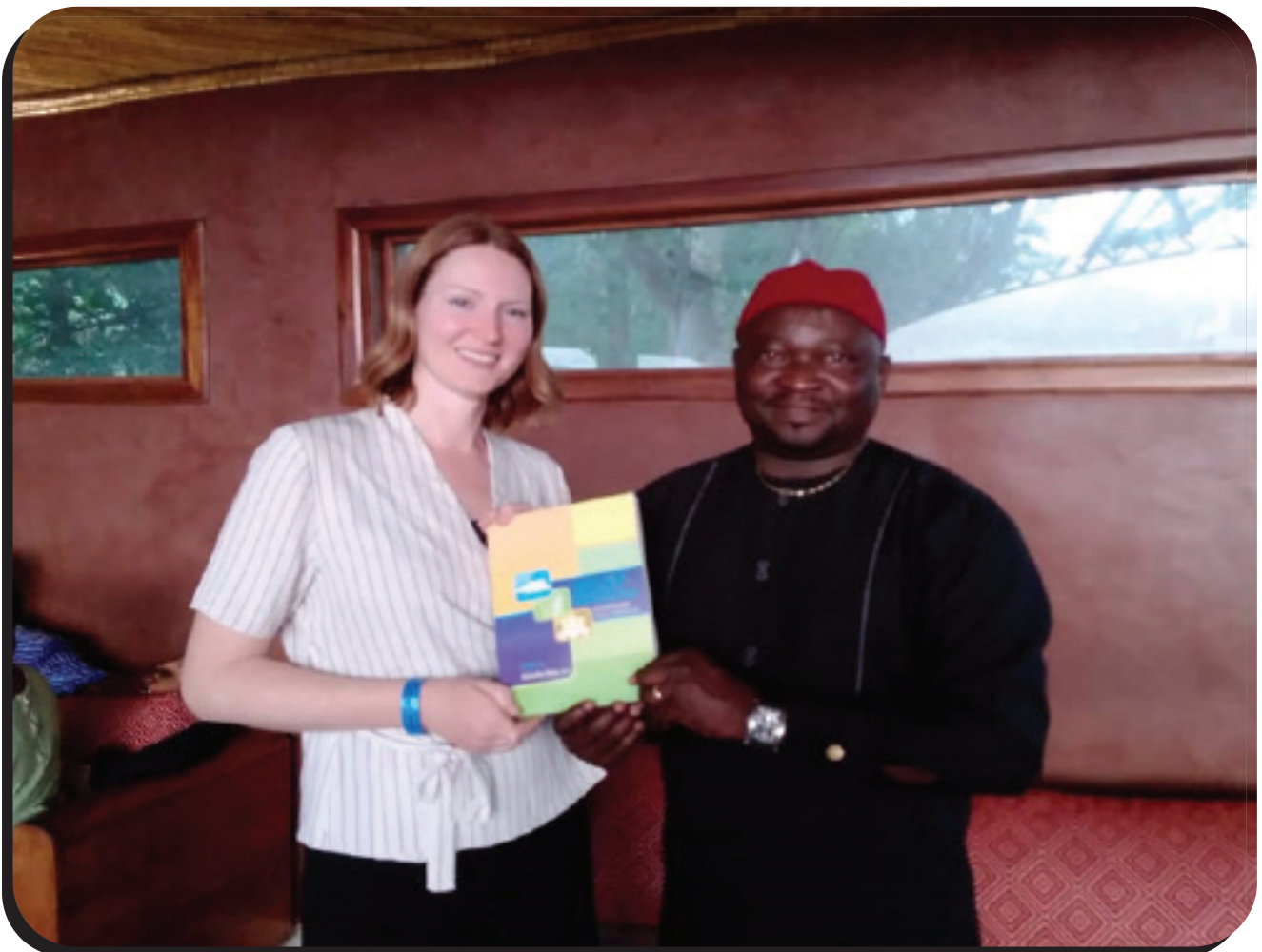
1. Mitigating greenhouse gas emissions
2. Adapting to the impacts of climate change
3. Conserving natural carbon sinks/REDD+
4. Conserving biological diversity

Further details on this can be found here <https://iki-small-grants.de/application/>

Let us have a visual look at what the team has been up to.



Dr. Nicholas Ozor, Executive Director ATPS speaking at the 8th Conference on One Health and Biosecurity, in Lagos Nigeria



Gillian Dowie, Senior Program Specialist, Education and Science, IDRC and Dr. Nicholas Ozor, Executive Director, ATPS at the AI4D Africa Implementation Committee Meeting in Somone, Senegal. Dr Ozor is seen presenting one of his books on Climate Change to Ms Dowie.



A taste of Nigeria delicacy. The team shares in a meal of Nigerian delicacies at the ATPS office



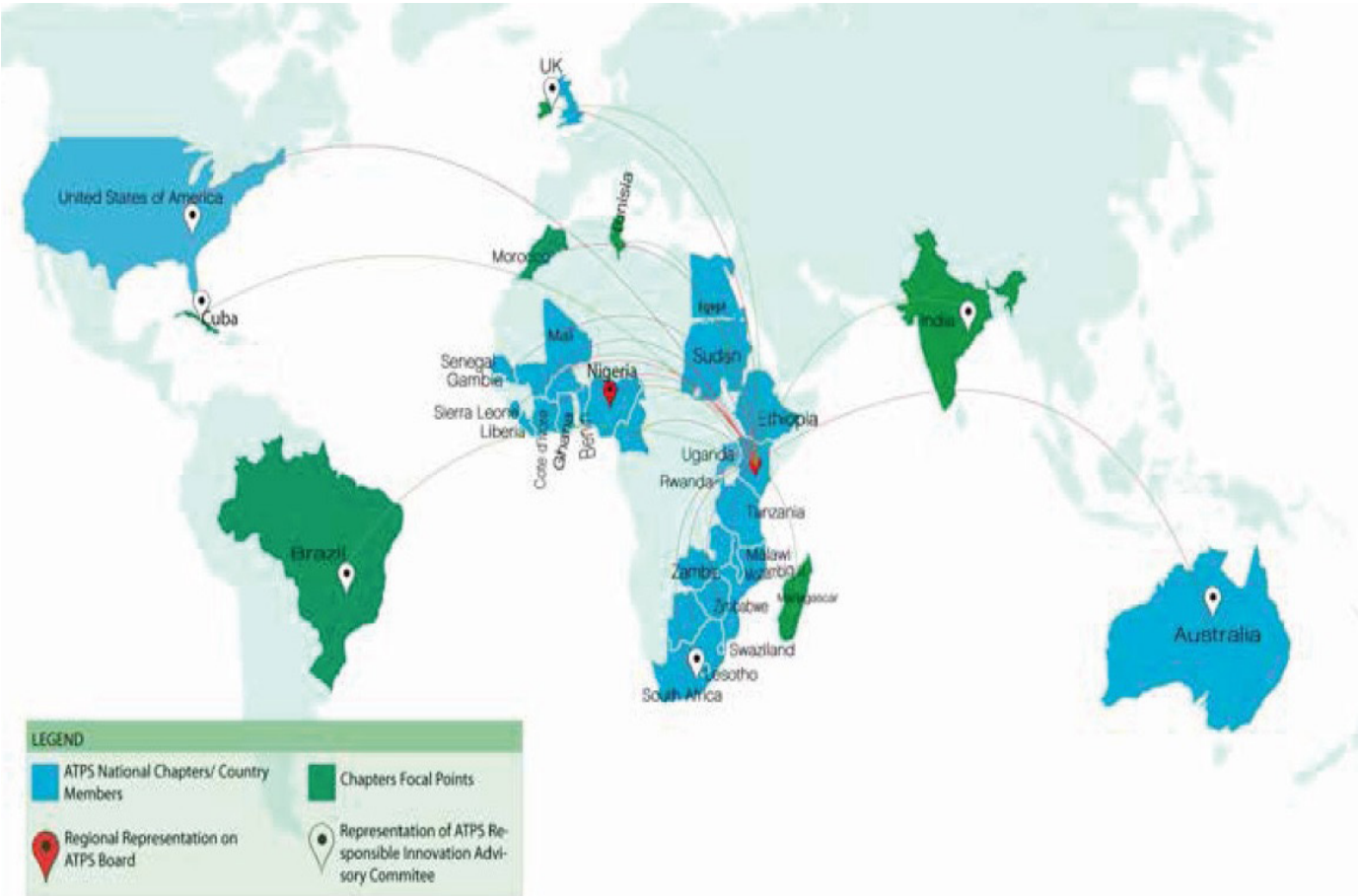
Nehemiah Ndinwa, ATPS Finance and Administrative Officer receives a welcome gift from the Chairman of the ATPS Board of Directors, Prof. Crispus Kiamba (Left)

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