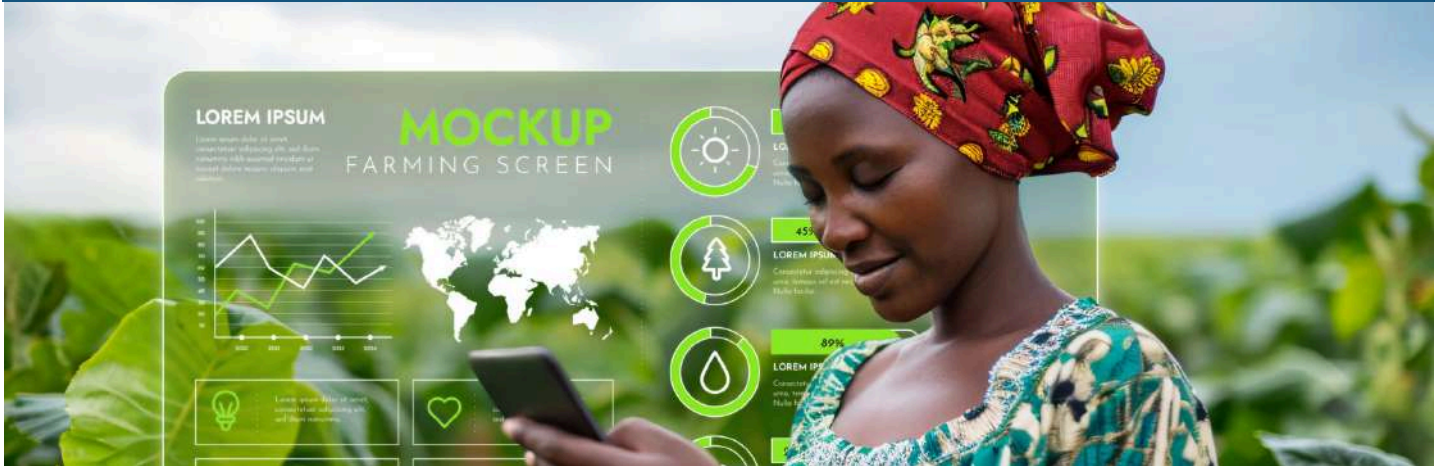


TECHNOPOLICY AFRICA

The Official Newsletter of the African Technology Policy Studies Network (ATPS)



THEME

Unlocking Africa's Raw Materials for Industrial Growth and Global Competitiveness



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The Public Health Impact of Natural Disasters: Lessons from California Wildfires for Africa

Globally, natural disasters present serious threats to ecosystems, economies, and public health. Of these, wildfires are growing more common and devastating as a result of climate changepg 4

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Agro-Waste to Taste: Developing nutritious and delicious food products from wasted cashew apples

Recent statistics show that, Ghana produces about 85,000 metric tonnes of nuts annually culminating to an estimated 1.2 million metric tonnes ... pg 9

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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 the capacity for STI knowledge generation, dissemination, and use for sustainable development in Africa.

Overall Objective:

To build Africa's capability 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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I am delighted to share a message with you marking the launch of the 26th edition of the *Technopolicy Newsletter* during this first quarter in 2025. This issue comes at a pivotal moment for the African Technology Policy Studies Network (ATPS), building on decades of impactful work where we are now embracing new opportunities to advance science, technology, and innovation (STI) across Africa.



Prof. Crispus Kiamba
Chairman, ATPS Board of Directors

The past year has been marked with remarkable progress, driven by the unwavering dedication of our team and the visionary leadership of our Executive Director, Prof. Nicholas Ozor. Together, we have deepened our commitment to addressing Africa's most pressing challenges, from food security, energy access, and climate resilience to responsible and equitable access to emerging technologies such as the artificial intelligence technology.

I extend my sincere gratitude to our members, partners, governments, and stakeholders for your invaluable collaboration. Your support has enabled ATPS to amplify local voices, strengthen policy frameworks, and foster inclusive growth and development in STI. Whether through funding, expertise, or advocacy, your contributions are the bedrock of our success.

Looking ahead, we face both opportunities and challenges. Yet we remain optimistic. With your continued partnership, the ATPS will continue to turn ideas into actions, policies into progress, and challenges into catalysts for change.

As we move forward in 2025, let us remain united in our mission to leverage STI for a sustainable, equitable, and prosperous Africa. Together, we will ensure that innovation is not just a tool for growth but a force for transformation.

Thank you for your trust and commitment. May this year bring us closer to the future we envision; a future where technology uplifts all Africans, and where evidence-based policies pave the way for inclusive development.



Prof. Nicholas Ozor
Executive Director, ATPS

As we come to the end of the first quarter of 2025, I am filled with optimism and excitement about the transformative journey ahead for the African Technology Policy Studies Network (ATPS). This quarter marks not just a new beginning but a moment of profound opportunity to advance our mission of leveraging science, technology, innovation, and policy for equitable development in Africa.

Building on the groundbreaking work of our initial project tagged **“Managing Organization (Hub) for Responsible Artificial Intelligence for Agriculture and Food Systems (AI4AFS) Innovation Research Network in Africa”**, which piloted ten (10) AI tools and innovations to address food security and equity, we are now embarking on the next phase of this important initiative tagged **AI4AFS+**. The first phase revealed both the immense potential and the persistent challenges of scaling AI innovations in Africa’s agricultural landscape. Issues such as the lack of robust frameworks for monitoring responsible AI, biases embedded in data and models, and equitable benefit-sharing mechanisms remain formidable obstacles.

With **AI4AFS+**, we are addressing these challenges head-on. This phase will rigorously evaluate the tools developed in Phase I, scaling those with the greatest impact. Proposals from our latest call for funding have been received, reviewed, and grantees already selected for the Phase II of the AI project which is being supported with grants from the International Development Research Centre (IDRC).

Equally transformative is our new partnership with the IDRC on the project **“Reimagining the Research for Development Landscape of West and Central Africa (RISE-WECA).”** This initiative confronts the systemic inequities and rigid frameworks that have long limited the impact of traditional research approaches in West and Central Africa.

RISE-WECA seeks to dismantle these barriers by centering local knowledge systems and capabilities, fostering inclusive partnerships, and creating research ecosystems that address the complex, interconnected challenges facing the region.

While we embrace new horizons, our ongoing initiatives continue to make strides. The project on **“Strengthening the National Research and Innovation Funding Agencies in West Africa (SRIFA)”** has made significant impacts in all the six (6) participating West African countries namely: Burkina Faso, Côte d’Ivoire, Ghana, Nigeria, Senegal, and Sierra Leone. Six (6) contextualized Policy Briefs that address the research and innovation funding spaces in the six participating countries respectively have been published. New National Research and Innovation Councils as well as the accompanying research funds have been established in Sierra Leone and Ghana, while efforts to establish a council and fund for Nigeria is currently underway. Councils in Burkina Faso, Côte d’Ivoire, and Senegal continue to improve their capacities through our interventions in fundraising and grant management; capacity building of the science systems, policymaking in STI, quality assurance, and monitoring, evaluation and learning within the science systems in their countries.

Additionally, in line with the project on **“Building the Capacity of Selected sub-Saharan African Countries to Effectively Measure Progress in their Nationally Determined Contributions’ Implementation Using Tracking Tools and Indexes”**, progress continues on the development of the Online NDC Index Platform. This platform will enable sub-Saharan African countries to assess progress in their climate actions, fostering accountability and data-driven decision-making to meet global commitments.

Each of these projects underscores our commitment to incremental yet transformative progress, building bridges between innovation, policy, and society to ensure that no community is left behind.

As we move forward, ATPS remains steadfast in its mission to drive transformative change through science, technology, and innovation. Our recent achievements and ongoing projects underscore our unwavering commitment to fostering responsible AI, strengthening research ecosystems, supporting agricultural adaptation, and advancing climate action across Africa.

We extend our gratitude to our numerous donors, partners, stakeholders, and supporters for their continued collaboration and belief in our vision. Enjoy this edition of the ATPS Technopolicy Newsletter, and we look forward to engaging with you in our shared mission to transform Africa’s STI landscape.

The Public Health Impact of Natural Disasters: Lessons from California Wildfires for Africa



Kayode Matthew

The contributor Kayode Matthew is a researcher, clinician, and public health specialist dedicated to uncovering the biological mechanisms behind chronic diseases such as cancer, as well as the societal and environmental factors that shape public health on a global scale.


Globally, natural disasters present serious threats to ecosystems, economies, and public health. Of these, wildfires are growing more common and devastating as a result of climate change. With disastrous effects on the environment and human health, California has been at the forefront of wildfire issues.

Although there haven't been as many wildfires in Africa, the region is increasingly at risk of natural disasters made worse by deforestation, desertification, and global warming. African countries can learn practical lessons from California's experience in reducing and managing the negative effects of natural catastrophes on public health.


The Devastating Impact of California Wildfires

The devastating Camp Fire of 2018, which claimed 85 lives and destroyed over 18,800 structures, forcing thousands of inhabitants to relocate, is one of the most notable examples of California's extraordinary wildfire issues (Fadadu et al., 2021).



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This incident is representative of a larger pattern, as the California Department of Forestry and Fire Protection (Cal Fire) projected that by 2020, more than 4.3 million acres have burned in California, resulting in damages estimated at \$12 billion (Wang et al., 2020). Among the many causes of California's rising wildfire frequency and intensity is climate change, which has made wildfire-friendly conditions like dryness and high temperatures worse (Wang et al., 2022; Keeley & Syphard, 2021).

These wildfires have significant and varied health effects, especially when it comes to air quality. There are major health concerns associated with the fine particulate matter (PM2.5) that wildfires emit into the atmosphere. According to research, smoke from wildfires is more harmful to respiratory health than PM2.5 from other sources, which increases the number of people who visit the ER for respiratory ailments (Aguilera et al., 2021; Heaney et al., 2022). For example, in 2021, exposure to wildfire smoke increased ER visits for respiratory conditions including asthma by 25%, according to the California Air Resources Board (Aguilera et al., 2021; Heaney et al., 2022). These health effects disproportionately affect vulnerable groups, such as children, the elderly, and pregnant women (Heaney et al., 2022; Davies et al., 2018).

Moreover, the psychological toll of wildfires cannot be overlooked. Prolonged exposure to disaster trauma has resulted in significant mental health issues among survivors. According to the California Department of Public Health, approximately 40% of wildfire survivors reported experiencing symptoms of PTSD, depression, or anxiety (Fadadu et al., 2021; Davies et al., 2018). This highlights the need for mental health support in communities affected by wildfires, as the psychological impacts can be as devastating as the physical destruction caused by the fires.

In addition to air quality and mental health, wildfires also pose risks to water quality. The contamination of water supplies with hazardous chemicals, including heavy metals and toxic runoff, can have long-term health implications, particularly for marginalized communities that often rely on untreated water sources (Wang et al., 2022). These communities frequently face heightened exposure to wildfire risks due to inadequate housing and lack of resources for evacuation and recovery (Davies et al., 2018). The intersection of environmental hazards and social vulnerability underscores the urgent need for targeted interventions to support these populations in wildfire-prone areas.

The devastating impact of wildfires in California is evident not only in the immediate destruction of property and loss of life but also in the long-lasting health consequences for affected communities. Addressing these challenges requires a comprehensive approach that includes improving air quality, providing mental health support, ensuring safe water supplies, and addressing the needs of vulnerable populations.

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The African Context: A Growing Threat

Africa is not immune to the increasing risk of wildfires, droughts, floods, and other natural disasters. The 2022 Nigeria floods, which displaced over 1.3 million people and caused 600 deaths, highlighted the public health challenges of natural disasters in Africa. Similarly, localized wildfires in parts of South Africa, Kenya, and the Sahel have disrupted ecosystems and livelihoods.

While Africa's current wildfire risk may not rival California's, several underlying factors—such as deforestation, urban sprawl, and weak disaster preparedness—could amplify future risks. Moreover, the public health systems in many African nations are often ill-equipped to handle the cascading effects of such disasters.

Key Lessons for Africa



California's experience offers a roadmap for African nations to strengthen resilience against natural disasters and their public health impacts. California uses cutting-edge technologies such as satellite imagery, AI-driven analytics, and drones to detect and track wildfires in real-time. African governments can adapt these technologies to monitor bushfires, floods, and droughts. Countries like South Africa are already exploring satellite-based wildfire detection systems, but regional collaboration could enhance effectiveness.

Natural disasters place immense pressure on healthcare systems. Hospitals need disaster response plans, including mobile clinics and field hospitals, to handle increased patient loads during crises. Training healthcare workers in disaster medicine and trauma care is also essential.

Mental health is often overlooked during disaster recovery in Africa. Community-based mental health programs, telemedicine platforms, and culturally appropriate counseling can address the long-term psychological impacts of disasters.

Public awareness campaigns are critical for disaster preparedness. Communities must be educated on fire safety, evacuation procedures, and first aid for respiratory issues caused by smoke inhalation. Countries like Nigeria and Ghana could integrate disaster preparedness into national health campaigns. Poor land-use practices exacerbate wildfire risks in many African countries. Governments must prioritize reforestation, sustainable agriculture, and controlled burning programs to reduce fuel for wildfires.

South Africa's Working for Fire program is a notable example of successful wildfire management that could be replicated elsewhere.

Disaster response strategies must prioritize vulnerable groups, such as women, children, the elderly, and low-income families. For example, providing free respiratory masks during wildfires or offering subsidized access to healthcare for displaced communities can reduce health inequities.

Call to Action: A Continental Strategy for Resilience

Africa's vulnerability to natural disasters is increasing due to climate change and population growth. Governments, NGOs, and international partners must act collectively to build resilience. The African Union should establish a continental disaster management framework, pooling resources for early warning systems and emergency response. Governments can collaborate with tech companies to develop affordable wildfire detection and health monitoring technologies. Local communities must be empowered to take ownership of disaster preparedness through education and training programs. By learning from California's challenges and adopting proactive measures, African nations can protect lives, reduce health disparities, and ensure sustainable development in the face of climate-induced disasters.

Final Thought

Natural disasters are inevitable, but their impacts can be mitigated through foresight, preparation, and collaboration. The California wildfires provide a sobering reminder of the importance of robust public health systems, environmental stewardship, and disaster resilience. For Africa, the time to act is now.

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Agro-Waste to Taste: Developing nutritious and delicious food products from wasted cashew apples



Francisca Aba Ansah



Prof Charles Tortoe



Alberta Agyepong

Written by **Francisca Aba Ansah** 1,2 Ph.D. a research scientist at the Council for Scientific and Industrial Research - Food Research Institute, **Ms. Alberta Achiaa Agyepong** 2 a MPhil. Food Science and Technology student at the Department of Agro-processing Technology and Food Bioscience, CSIR-College of Science and Technology, and **Prof Charles Tortoe** 1,2 is Chief Research Scientist and Director of the Council for Scientific and Industrial Research-Food Research Institute and Associate Professor of the CSIR-College of Science and Technology.

Around the globe, large quantities of cashew apples are wasted and allowed to rot leading to negative environmental impacts from decaying apples (Figure. 1).

Recent, statistics show that, Ghana produces about 85,000 metric tonnes of nuts annually (Danso-abbeam et al., 2021); culminating to an estimated 1.2 million metric tonnes of cashew apples of which less than 5% is used.

However, wasted cashew apples are rich in nutrients like vitamins, minerals, amino acids, dietary fibre and antioxidants, making them important for dietary deficiency issues related to fruit consumption and food security in especially, Africa.



Figure 1: Cashew apples left to decay after de-nutting

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Ghana, together with most West African countries, is among the major producers of cashews, alongside Brazil, India, and Vietnam. However, cultivation, especially in Africa, is mostly for nuts, leaving the nutritious fruits to rot.

Why are cashew apples underutilized despite the benefits and availability?

Myths surrounding the consumption of cashew apples have contributed to its underutilization. A common one in Ghana is that, consuming cashew apples alone or with milk is lethal and can kill within few minutes of consumption. However, this has been disproved by several research studies (Dedehou et al., 2016; Sousa et al. (2021). Demonstrating that cashew apples are safe to consume and eating with milk is not harmful. Though mixing cashew apple juice with milk may lead to coagulation of proteins from tannins, it does not kill (Poornakala et al., 2020); rather this natural function could be explored for yoghurt making.

Another reason for its low usage is related to its astringent taste, limited knowledge, perishability, and inadequate processing facilities. However considering the important nutrients it provides processing options that reduces the astringent taste, enhance its shelf stability using basic kitchen equipment while enhancing usability has been explored through a recent study.

Creating innovative Food products from Cashew apples

A recent study in the Bono region of Ghana, where majority of cashew apples are produced has identified several innovative ways to use the produce effectively (Ansah et al., 2025 unpublished). One highly preferred product is cashew apple juice (Figure 2), enjoyed for its refreshing taste and nutritional benefits. Other product processed in the area are ethanol and preserved juices, providing options for products with longer shelf lives. However, alternative options have been explored to extend the shelf-life of cashew apple to juices without preservatives while the residue (Figure 3), which is often discarded or minimally used as animal feed has been fortified into nutritious meat products leaving no waste behind from cashew apple processing.

The residual fibers from juice extraction offer a fibre-rich ingredient in developing plant-based meat alternatives, which is particularly appealing in today's market, given the growing demand for sustainable plant-based option. Additionally, the use of the residual fiber serves as valuable dietary supplements supporting gut health and overall well-being.

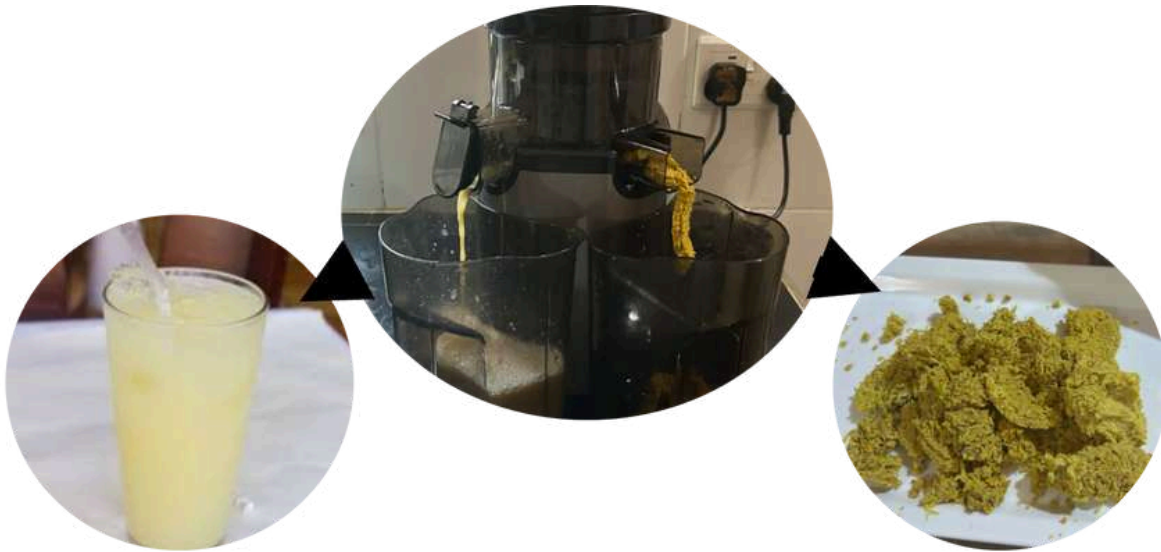


Figure 2: Cashew Apple

Figure 3: Cashew Apple residual

The Council for Scientific and Industrial research with funding from the International Development Research Centre (IDRC) through the Ministry of Environment Science and Technology (MEST) has developed several juice blends and plant-based meat products from cashew apples in close consultation with farmers, processors and consumers. These include cashew apple fibre sausages (Figure 4), kebabs and burgers (Figure 5) which have been rated acceptable through a consumer acceptability test among vegetarians and regular meat consumers.



Figure 4: Cashew apple



Figure 5: Cashew apple fibre burger patties

Health and Safety Implications for use of Cashew apples for Food products

Cashew apples have low pH which makes them less prone to pathogen contamination when processed. In addition, the antimicrobial and antioxidant activity of cashew apple juice have been tested by several authors with good inhibitory activity against pathogens (Bhagirathi and Asna 2018; Naka et al., 2019). Cashew apple juice have also been found to reduce total cholesterol level in rats (Asmawati, 2019).

Besides, these, the cashew apple fibre produced after juice extraction contains a good number of bioactive compounds (Sucupira et al., 2020); and has been shown to have anti-diabetic and antioxidant properties (Aslam et al., 2024). Also, cashew apple and its residual fibre has been successfully used in bakery products, confectionaries and beverages (Aslam et al., 2024).

Potential use of innovative food products

There is significant enthusiasm among the youth in the Bono region regarding cashew apple processing. A remarkable 92% of young farmers expressed interest in training programs on value addition. This presents a promising opportunity to boost youth employment, economic empowerment, and enhance gender inclusion, as women primarily dominate cashew apple harvesting and sorting.

Way Forward

Stakeholders, investors, and partners are invited to join us in unlocking the vast potential of cashew apples. Your involvement can help foster economic growth, enhance food security, and promote sustainable agriculture. Connect with us to explore how we can collaborate to innovate and promote sustainability in the cashew sector.

Together, let's transform waste into tasty food products, wealth, promote sustainable agriculture, and enhance food security!

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Can AI help prevent the next pandemic? Up close and personal: Bridging the Gap with Expert Medicine in African Villages




Written by Mamadou Youssouf Thiam, Expert in the digital economy, Founder, and Managing Director of FASO KA NU BE NE LA GROUP, dedicated to achieving development through digital transformation and economic innovation.

Mamadou Youssouf


With artificial intelligence (AI), we may be able to transform global healthcare for remote populations that lack access to expert medicine. This raises one of the most pressing concerns: whether AI can assist people without a diploma who live in African villages and prevent a pandemic.

Disease prevention and treatment remain a challenge due to the lack of sufficient qualified doctors in many rural communities in Africa. This gap can be bridged with the help of AI-driven tools like diagnostic apps or automated medical assistants, which can offer expert advice. For example, AI can learn symptoms, suggest treatment, and even recommend quarantine measures to stop the spread of infectious diseases.

If AI can prevent pandemic outbreaks, global health would be a game changer. The application of AI, machine learning, and big data can spot disease transmission patterns early on and thereby intervene quickly. AI-powered mobile clinics and telemedicine services can save lives in villages of Africa with scarce access to healthcare.

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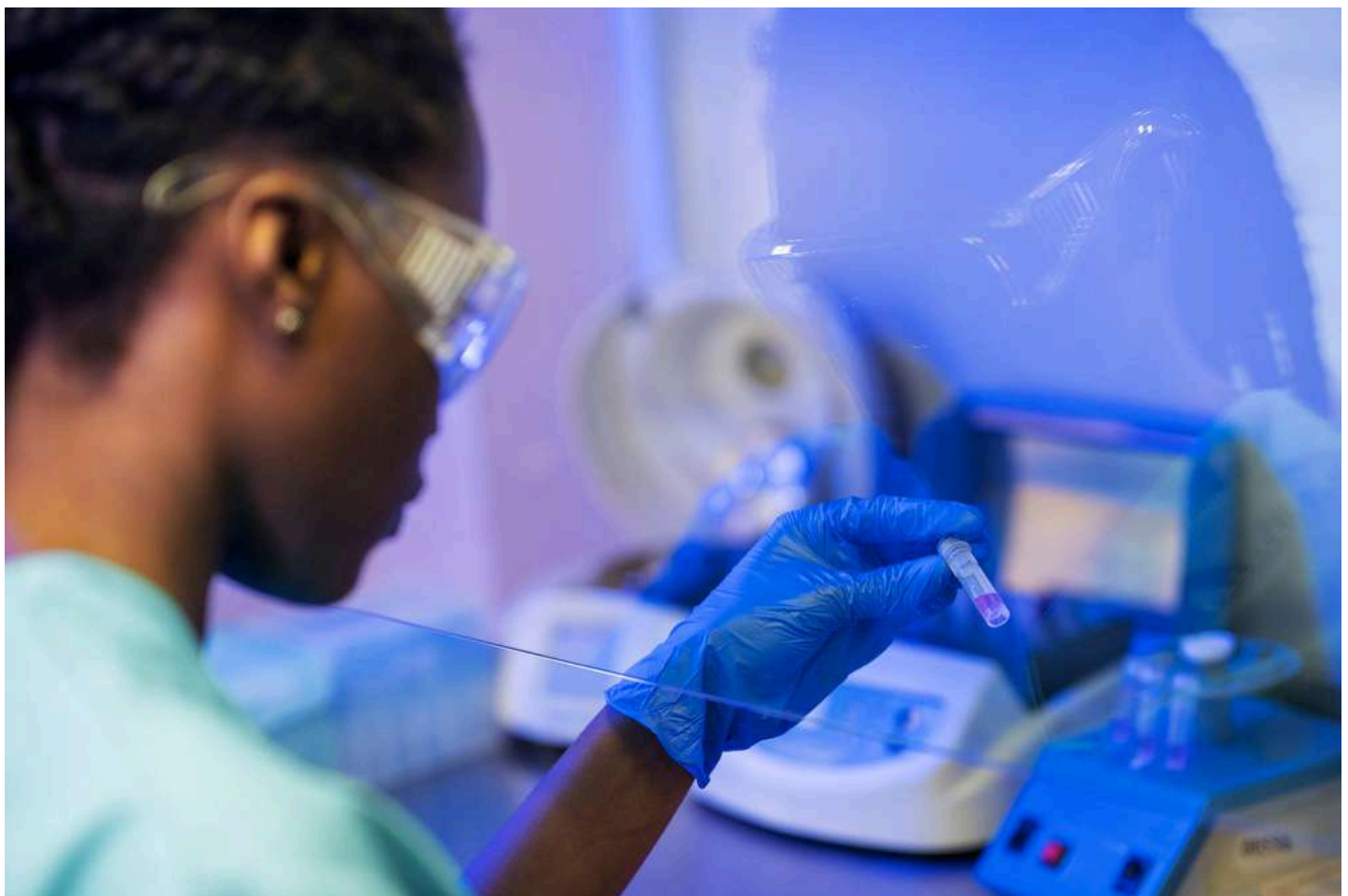
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These systems make it possible for local healthcare workers, even ones without a diploma, to diagnose and treat common illnesses properly.

In addition, AI can help plan and implement vaccination campaigns, predict where high-risk areas are, and plan distribution logistics. Mobile technology allows health alerts, symptom tracking, and virtual consultations without traveling long distances.

AI cannot replace expert human medicine, but it can support communities with this expert medicine and shrink the footprint of future pandemics. Investment in AI-driven healthcare solutions for the villages of Africa is not only a technological innovation but a humble stride toward universal healthcare. If we can let AI help prevent pandemics, the world needs to harness its full potential now.



Transforming Food Systems for Sustainable Development



Written by Dr. Esther Kamwendo is a renowned expert in agricultural economics and extension services based in Malawi. Her research focuses on leveraging technology and innovation to improve smallholder productivity and resilience. She serves as a consultant for international organizations such as the FAO and IFAD, advocating for evidence-based policy reforms in agriculture.

Dr. Esther Kamwendo

Abstract

Agriculture remains the backbone of many African economies, providing livelihoods to millions while contributing significantly to GDP. However, traditional farming practices have often been insufficient to meet the demands of a growing population amidst climate change, resource scarcity, and market volatility. In recent years, innovation in agriculture has emerged as a critical driver of transformation across the continent.

This article explores the current state of agricultural innovations in Africa, their impact on productivity, sustainability, and food security, with a focus on case studies from various countries. It also examines challenges hindering widespread adoption and proposes strategies for fostering an enabling environment for innovation.



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Introduction

Africa is home to approximately 60% of the world's uncultivated arable land, yet it imports over \$35 billion worth of food annually (FAO, 2022). The paradox underscores the need for transformative approaches that leverage technology and innovative solutions to unlock the continent's agricultural potential. Innovations in agriculture encompass a wide range of interventions, including digital tools, improved seed varieties, precision farming techniques, renewable energy applications, and value chain enhancements. These advancements are reshaping how farmers interact with their environment, markets, and consumers.

This paper begins by defining innovation in agriculture before delving into specific examples of successful innovations across Africa. It then discusses the socio-economic impacts of these innovations, followed by an analysis of barriers to adoption. Finally, recommendations are provided to policymakers, researchers, and practitioners for scaling up agricultural innovation on the continent.

Defining Innovation in Agriculture

Innovation in agriculture refers to the development and application of new ideas, technologies, or processes that enhance productivity, efficiency, and sustainability in farming systems. Unlike technological advancement alone, which focuses narrowly on tools and equipment, agricultural innovation encompasses broader changes in knowledge, skills, institutions, and policies (Pretty & Bharucha, 2014). For instance, introducing drought-resistant crop varieties represents a biological innovation, while mobile apps that provide real-time weather updates exemplify digital innovation.

In Africa, where smallholder farmers dominate the sector, innovation must be context-specific and inclusive, addressing the unique needs and constraints faced by rural communities. This requires collaboration between governments, private sector actors, research institutions, and farmer organizations to co-create solutions tailored to local realities.

Case Studies of Agricultural Innovations in Africa

1. Digital Technologies for Smallholders

Digital innovations are revolutionizing agriculture in Africa by bridging information gaps and improving access to services. Platforms like Esoko in Ghana and iCow in Kenya use SMS and mobile apps to deliver timely advice on pest management, fertilizer application, and market prices. A study conducted in Tanzania found that farmers using Esoko increased their yields by 15% compared to those relying solely on traditional methods (World Bank, 2021).

Another notable example is Twiga Foods, a Kenyan startup that connects small-scale farmers directly to urban retailers through a mobile-based platform. By eliminating middlemen, Twiga reduces post-harvest losses and ensures fair pricing for both producers and consumers. Such models demonstrate the power of digitization in creating more efficient and equitable supply chains.

2. Climate-Smart Agriculture

Climate change poses significant threats to African agriculture, characterized by erratic rainfall patterns, rising temperatures, and increased frequency of extreme weather events. To mitigate these risks, climate-smart agriculture (CSA) has gained traction as a holistic approach combining sustainable practices with innovative technologies.

For example, Malawi's Conservation Agriculture Project promotes minimum tillage, crop rotation, and organic mulching among smallholder farmers. These practices improve soil health, conserve water, and reduce greenhouse gas emissions. Similarly, Ethiopia's Soil Information System (SIS) uses satellite imagery and ground data to map soil fertility levels, enabling targeted fertilizer recommendations that optimize input use and minimize environmental degradation.

3. Biotechnology and Genetic Improvement

Advances in biotechnology offer promising opportunities for enhancing crop resilience and nutritional quality. Genetically modified (GM) crops such as Bt maize and cowpea have shown resistance to pests and diseases, reducing reliance on chemical pesticides and boosting yields. Nigeria became the first country in West Africa to commercialize GM cowpea in 2019, resulting in a 20-30% increase in production for participating farmers (NABDA, 2020).

Furthermore, biofortified crops like orange-fleshed sweet potatoes (OFSP) and iron-rich beans are being promoted across sub-Saharan Africa to combat micronutrient deficiencies. Programs implemented by HarvestPlus in Mozambique and Uganda have reached millions of households, improving dietary diversity and public health outcomes.

Socio-Economic Impacts of Agricultural Innovation

The adoption of innovative practices in agriculture has yielded substantial benefits for African societies. Economically, it has boosted farm incomes, created jobs along the value chain, and stimulated rural economies. According to the African Development Bank (AfDB), investments in agricultural innovation could generate up to \$1 trillion in annual revenue by 2030.

Socially, innovation contributes to food security and poverty alleviation by increasing availability and affordability of nutritious foods. Women, who constitute the majority of smallholder farmers, stand to gain disproportionately from gender-sensitive innovations that address their specific challenges, such as limited access to credit and land ownership rights.

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Environmentally, sustainable innovations help preserve natural resources, mitigate climate change, and promote biodiversity. For example, agroforestry systems integrating trees with crops and livestock sequester carbon, improve water retention, and enhance ecosystem services.

Challenges Hindering Widespread Adoption

Despite its potential, the diffusion of agricultural innovation in Africa faces several obstacles:

- **Limited Access to Finance** : Many farmers lack capital to invest in new technologies due to high upfront costs and poor financial inclusion.
- **Infrastructure Gaps** : Weak connectivity, inadequate storage facilities, and unreliable electricity hinder the effectiveness of digital and mechanical innovations.
- **Policy and Regulatory Barriers**: Unclear regulations around GM crops and digital data privacy stifle innovation ecosystems.
- **Capacity Constraints**: Insufficient training programs limit farmers' ability to adopt and adapt to new practices.
- **Cultural Resistance**: Traditional beliefs and norms may discourage acceptance of unfamiliar technologies.

Addressing these challenges requires coordinated efforts at national and regional levels to create an enabling environment for innovation.

Recommendations for Scaling Up Agricultural Innovation

To accelerate the adoption of agricultural innovations in Africa, the following strategies are proposed:

- 1 Strengthen Public-Private Partnerships (PPPs): Collaborations between government agencies, private companies, and civil society organizations can pool resources and expertise to develop scalable solutions.
- 2 Invest in Research and Development (R&D) : Increased funding for agricultural R&D will foster the creation of locally-relevant technologies and improve existing ones.
- 3 Enhance Digital Literacy : Training programs targeting rural populations should emphasize practical skills in using digital tools for farming operations.
- 4 Promote Gender Equity : Designing innovations with women's needs in mind will ensure they benefit equally from technological advancements.
- 5 Harmonize Policies : Regional bodies like the African Union (AU) should work towards harmonizing regulations governing agricultural innovation to facilitate cross-border trade and knowledge exchange.

Conclusion

Innovation in agriculture holds immense promise for transforming Africa's food systems and achieving the Sustainable Development Goals (SDGs). From digital platforms to climate-resilient crops, the continent is witnessing a wave of creativity and ingenuity driven by necessity and opportunity. However, realizing this potential requires overcoming structural barriers and fostering an inclusive innovation ecosystem. As demonstrated by success stories from Malawi, Kenya, Nigeria, and beyond, when given the right support, African farmers can lead the way toward a prosperous and sustainable future.

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Joe Lohose, Technical Advisor and CEO with Experience in Off-grid energy, Renewable Energy Development, and Project Management



Joe Lohose

Joe Lohose is an accomplished Senior Technical Advisor for the USAID funded Power Africa Empowering East and Central Africa (EECA) and CEO of Tech Power Services in Congo. He has extensive experience in off-grid energy, renewable energy development, and project management across Africa. He has proven expertise in leading large-scale energy initiatives, securing funding, advocating for policy development, and driving sustainable growth in challenging environments. Adept at building relationships with governments, investors, and energy companies to advance clean energy solutions and economic growth in emerging markets.

Q Can you share your background and what inspired you to work in the energy sector?


A I was born in a rural area in the eastern part of the DRC, where communities face significant energy challenges and are often marginalized due to economic and social factors. Growing up without access to reliable energy deeply affected me, sparking a desire to contribute to the development of the rural energy sector in my country.

A vivid memory from my childhood is the darkness and flickering light in our home, as we had no electricity. I relied on a kerosene lamp to do my homework at night, and that experience has continuously motivated me to address energy access issues in rural communities.

In 2018, I decided to leave my comfortable position as an electricity provider in Uganda and returned to the DRC to become a green minigrid developer. My goal was to help improve energy access for millions of Congolese people.

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“We all have different motivations for entering the emerging off-grid energy sector, but for me, it is rooted in personal experiences and a strong desire to improve the quality of life for Congolese people,” says Joseph Lohose.

Q What is the core idea behind your initiative to address conflict and inequality through energy access in Masisi District, Eastern DRC?

A The core idea behind this initiative is to address the critical issue of restoring sustainable peace in Masisi by providing rural communities with access to clean, affordable, reliable, and sustainable energy. By empowering women and youth, we aim to mitigate conflict while promoting economic development. Access to energy enables them to start income-generating activities such as salons, phone charging stations, and small shops, which contribute to their financial independence and community growth. The ultimate goal is to help the rural population of Masisi access modern energy, thus aiding in the eradication of armed conflict and strengthening resilience during peace and recovery efforts.

Q How does energy access contribute to restoring sustainable peace in conflict-prone areas?

A Energy access plays a pivotal role in restoring sustainable peace in conflict-prone areas by addressing both immediate needs and long-term development goals. In Masisi District, access to clean, reliable, and affordable energy helps to reduce dependence on dangerous or unsustainable sources like firewood, which often fuels conflicts over resources. Energy access empowers women and youth by providing opportunities for income-generating activities, fostering economic development, and improving livelihoods. By giving communities the means to start businesses such as salons, phone charging stations, and small shops, energy access contributes to stability and promotes social cohesion. This, in turn, can reduce the root causes of conflict, encourage cooperation, and support peacebuilding efforts.

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Q What are some key challenges you have encountered in implementing this initiative, and how have you overcome them?


A One of the key challenges we faced in implementing this initiative was the initial lack of infrastructure and the high costs associated with setting up sustainable energy solutions in rural and conflict-affected areas. To overcome this, we focused on designing affordable, small-scale energy solutions such as solar-powered microgrids that are adaptable to the local context. Another challenge was building trust within the community, especially in an area where years of conflict have led to a sense of distrust. To address this, we worked closely with local leaders, community members, and grassroots organizations to involve them in the process, ensuring their active participation and ownership. Additionally, we encountered challenges with financing, which we overcame by seeking partnerships with donors and organizations that shared our vision for sustainable energy and peacebuilding. These partnerships helped secure funding and provided necessary resources for scaling the initiative.

Q How do you ensure that the energy solutions provided are clean, affordable, and sustainable?

A To ensure that the energy solutions we provide are clean, affordable, and sustainable, we focus on using renewable energy sources, such as solar power, which are both environmentally friendly and cost-effective in the long term. We prioritize energy solutions that minimize carbon emissions and reduce the dependency on non-renewable resources. To make the solutions affordable, we design scalable and modular systems that can be implemented incrementally, which allows communities to start with small, affordable setups and gradually expand as they grow. We also offer flexible payment options and work closely with local stakeholders to ensure the solutions are tailored to the specific needs of the communities. In terms of sustainability, we emphasize local capacity-building, training community members to operate, maintain, and repair the systems, which ensures that the energy solutions can be managed locally without external support in the long term.

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Q Do you see the potential for scaling this initiative beyond the Masisi District?

A Yes, I believe there is significant potential to scale this initiative beyond Masisi District. The model we have developed is adaptable to other conflict-prone and rural areas across the DRC and in other regions facing similar energy access challenges. By leveraging local resources, such as community leaders, and promoting local ownership of energy projects, we can expand our reach and impact. Additionally, the growing demand for clean and affordable energy in rural areas makes this initiative scalable, and the success we've seen in Masisi provides a strong foundation for replication. Scaling will require continued partnerships with local governments, NGOs, and international donors, but I am confident that the model can be extended to other districts and regions to help improve energy access and contribute to peacebuilding efforts more broadly.


Q Your work contributes to Aspiration 1 of the AU Agenda 2063 on inclusive growth and sustainable development. How do you see your innovation shaping the future of energy access in Africa?

A My innovation directly contributes to Aspiration 1 of the AU Agenda 2063, which aims for inclusive growth and sustainable development across Africa. By providing rural communities with access to clean, affordable, and reliable energy, we are enabling them to participate more fully in economic activities, improving their standard of living, and fostering local resilience.

Energy access is a cornerstone of development—it drives education, healthcare, entrepreneurship, and economic productivity. Through renewable energy solutions like solar-powered microgrids, we not only mitigate the environmental impact of traditional energy sources but also create new opportunities for women and youth, empowering them to become active participants in the economy.

This initiative shapes the future of energy access in Africa by demonstrating that off-grid, decentralized energy solutions can be effective, scalable, and locally sustainable. It provides a model that aligns with Africa's development goals: achieving energy independence, creating local job opportunities, and driving economic growth from the grassroots level. Ultimately, by helping rural areas overcome energy poverty, we contribute to a more equitable, resilient, and sustainable Africa—a key element of the AU's vision for 2063.


What key lessons have you learned from this initiative that other innovators can apply?

 Community Engagement is Key: Involving the community from the outset is essential for success. Understanding their needs, challenges, and aspirations ensures that the energy solutions we offer are not just technically sound but also culturally and economically appropriate. This engagement also fosters a sense of ownership, which is crucial for long-term sustainability.

Patience and Persistence are Critical: Working in rural and conflict-prone areas requires time, patience, and a willingness to overcome challenges. Whether it's securing funding, building trust, or managing logistics, the road can be difficult, but persistence leads to transformative change.

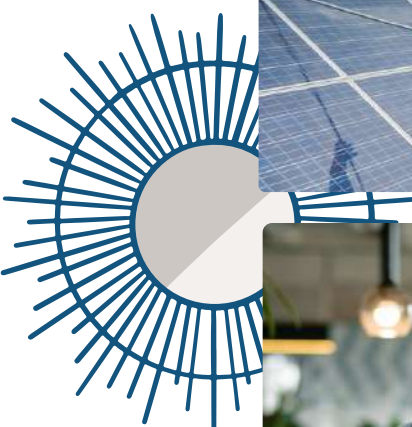
Holistic Approach to Development: Energy access is not just about providing electricity; it's about creating an ecosystem where people can leverage energy for broader development—be it through education, healthcare, or income generation. It's important to integrate energy solutions into the wider development goals of the community.

Final Thoughts

 Energy is not just a service; it is a catalyst for transforming communities and driving sustainable development. For policymakers, investors, and stakeholders, it is crucial to recognize that energy access is foundational to resilience—especially in rural and conflict-prone areas. When people have reliable, affordable, and clean energy, they can access education, improve their livelihoods, and become active participants in the economy. Energy empowers communities to withstand challenges, adapt to changing circumstances, and contribute to their own recovery and growth.

Investing in energy solutions, especially in off-grid and decentralized systems, can provide a powerful tool for peace-building, poverty reduction, and social cohesion. In areas where conflict has left deep scars, energy access can help stabilize and rebuild communities by fostering economic opportunities, reducing tensions, and improving the quality of life.

Policymakers must prioritize energy access as a key enabler of development, while investors should see it as a long-term opportunity that delivers both financial and social returns. Together, we can ensure that energy is not just a resource, but a force for change, transforming the lives of millions and building resilient communities across Africa.



Empowering Communities: Energy Solutions for Peace, Prosperity, and Unity




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ATPS Joins Forces with Global Partners to Drive Locally-led Climate Adaptation in Arusha Workshop

In a landmark effort to strengthen climate adaptation strategies and foster collaboration across continents, key stakeholders in climate resilience convened in Arusha, Tanzania, for the Step Change Learning Review Workshop. Hosted by the **Africa Research & Impact Network (ARIN)** in partnership with the **International Development Research Centre (IDRC)** from February 11-14, 2025, the workshop brought together representatives from eight projects spanning 19 countries in Africa, Latin America, and South Asia. Among the notable participants was the **African Technology Policy Studies Network (ATPS)**, represented by its Executive Director, Prof. Nicholas Ozor, and Eng. Prof. Joel Nwakaire, Project Officer for the ATPS-led project on **“Strengthening the Capacity of the Extension System to use Proven Knowledge and Technologies to Sustain Equitable Locally Led Adaptation Among Smallholder Farmers (SCALE)”**.

The workshop aimed to reinforce synergies among global actors working toward locally led adaptation (LLA) strategies. These strategies prioritize community-driven solutions that empower vulnerable populations, particularly smallholder farmers, to adapt to the adverse effects of climate change. By fostering collaboration between policymakers, researchers, and local communities, the event underscored the importance of inclusive approaches to climate action.



Eng. Prof. Joel Nwakaire participating in a panel discussion during the Step Change Learning Review Workshop in Arusha, Tanzania.



Prof. Nicholas Ozor engaging a participant during the Step Change Learning Review Workshop in Arusha, Tanzania.

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ATPS's participation highlighted its commitment to bridging the gap between scientific research and practical, community-driven solutions through the SCALE project. Funded by the International Development Research Centre (IDRC), SCALE focuses on strengthening extension systems as knowledge brokers to ensure smallholder farmers receive demand-driven, proven, and locally sustainable solutions.

The four-day workshop provided a platform for cross-project learning, strategic partnership building, and innovative knowledge brokering. Participants shared lessons learned from scaling up climate adaptation initiatives, explored ways to strengthen partnerships, and discussed methods for making climate knowledge more accessible and actionable.

A significant highlight of the event was a field visit to the Kikuletwa Catchment, where participants engaged with The Partnership for Sustainable Water Management (SUWAMA) and the GIZ Natural Resources Stewardship (NatuRes) Programme. This hands-on experience offered valuable insights into how locally driven water resource management can bolster smallholder farmers' resilience to climate variability.

For more information about ATPS and the SCALE Project, visit: <https://atpsnet.org/scale/>



ATPS Joins Groundbreaking Initiative to Strengthen Climate Journalism in Africa

The Reporting Climate Change in Africa project is set to transform climate journalism on the continent by fostering a more informed and engaged media landscape. This initiative supports the wider development of journalism and environmental civil society, creating opportunities for media professionals, organizations, and NGOs to amplify their voices in the public sphere.

As part of this effort, the African Technology Policy Studies (ATPS) participated in a workshop, represented by its Communication and Outreach Officer, Susan Aquila Mburu, on 21 February 2025, at the Agakhan University in Nairobi, Kenya. The workshop, which brought together key stakeholders from across the globe, underscored the importance of accurate and impactful climate reporting. The Reporting Climate Change in Africa project is a collaboration between Dialogue Earth, Wits Centre for Journalism Africa-China Reporting Project, Development Reimagined, and The China Global South Project.

ATPS remains committed to continuous learning and professional growth for its employees, ensuring they are equipped with the latest knowledge and skills to drive impactful change. By engaging in such initiatives, ATPS strengthens its capacity to support science-based climate communication, an area critical to influencing policies and driving action.



Susan Mburu, Communication and Outreach Officer for the ATPS attending the Reporting Climate Change Workshop on 21 February 2025, at the Agakhan University in Nairobi, Kenya

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Furthermore, ATPS has long championed climate action through its various projects and initiatives. From advancing responsible artificial intelligence in agriculture to supporting gender-inclusive solutions in climate resilience, the organization remains at the forefront of science, technology, and innovation for sustainable development. Participating in this workshop aligns with ATPS's mission to leverage knowledge-sharing platforms that enhance Africa's capacity to respond to climate challenges.

Through collaborations like the Reporting Climate Change in Africa project, ATPS continues to push the boundaries of impactful climate communication, ensuring that African voices are heard and that the continent plays a leading role in shaping the global climate discourse.

ATPS Executive Director Engages in Peacebuilding Dialogue at 2025 SVNP Regional Conference in Ethiopia

The African Technology Policy Studies Network (ATPS) Executive Director, Prof. Nicholas Ozor, participated in the 2025 SVNP Regional Conference, held on March 4th and 5th in Addis Ababa, Ethiopia. Co-hosted by the Institute for Peace and Security Studies (IPSS), the Wilson Center, and the Southern Voices Network for Peacebuilding (SVNP), the conference brought together policymakers, peacebuilders, and regional experts to address pressing issues of mediation and negotiation in the Horn of Africa.

The two-day workshop focused on fostering dialogue and advancing strategies for peacebuilding in the Horn of Africa, a region characterized by complex geopolitical dynamics. Participants engaged in in-depth discussions about the challenges and opportunities for mediation and negotiation in key countries such as Ethiopia, Somalia, and Sudan. These sessions highlighted the urgent need for targeted efforts in conflict resolution and long-term stability.

Prof. Nicholas Ozor played an active role in the conference, participating in workshops and panel discussions that explored innovative approaches to mediation and conflict resolution. His involvement underscored ATPS's commitment to promoting peaceful dialogues and sustainable solutions in conflict-prone regions. Notably, he contributed to the session titled "*Negotiation as a Tool for Peace in Ethiopia, Somalia, and Sudan*," which resonated strongly with ATPS's mission to support inclusive development through science, technology, and policy.

One of the standout moments for Prof. Ozor was the opportunity to exchange ideas with leaders and experts who have been directly involved in peacebuilding initiatives across the Horn of Africa. These interactions provided valuable insights into the unique challenges faced by each country, as well as the creative strategies being implemented to overcome them. By learning from these experiences, ATPS aims to enhance its own initiatives and contribute meaningfully to regional peacebuilding efforts.

The conference featured multiple keynote speeches and expert-led panels that deepened participants' understanding of how mediation and negotiation can drive long-term peace and stability. Additionally, the event served as a vital networking platform, enabling Prof. Ozor to engage in meaningful discussions with representatives from governments, NGOs, and peacebuilding organizations. These conversations laid the groundwork for potential collaborations and strengthened ATPS's network in the region.



The 2025 SVNP Regional Conference reinforced the significance of regional cooperation and dialogue in achieving peace in the Horn of Africa. Through his participation, Prof. Ozor gained invaluable insights into the intricacies of mediation processes and reaffirmed ATPS's dedication to promoting peace and stability in the region. Moving forward, ATPS will:

- Continue exploring opportunities for collaboration with IPSS and other regional peacebuilding organizations.
- Leverage lessons learned during the conference to inform ATPS's mediation and negotiation initiatives.
- Strengthen partnerships that align with our broader goals of advancing peaceful dialogues and supporting sustainable development.

This conference marks another step toward ATPS's vision of fostering equitable and inclusive growth across Africa. We remain committed to contributing to regional peacebuilding efforts and leveraging technology, policy, and innovation to create lasting impact.

Building Equitable and Sustainable Partnerships with Insights from the British Council Workshop

Prof. Nicholas Ozor, Executive Director of the African Technology Policy Studies Network (ATPS), attended a workshop hosted by the British Council in Accra, Ghana, from 10th to 11th March 2025. The workshop, focused on building equitable and sustainable international higher education partnerships, provided invaluable insights for enhancing the capacity of African higher education leaders.

The event brought together key stakeholders from African institutions, international organizations, and the British Council to discuss strategies for forming partnerships that are mutually beneficial, equitable, and sustainable. As global collaborations in higher education become increasingly important for sharing knowledge, resources, and networks, it is vital to base these partnerships on fairness, mutual respect, and shared benefits.

Key Workshop Insights

- 1. International Partnerships:** Successful international collaborations require fairness and mutual respect to ensure shared benefits and sustained impact. Participants agreed that equitable partnerships enable the co-creation of solutions that address global challenges while respecting local contexts.

2. **Equity and Sustainability:** Equity in partnerships means providing each partner with what they need based on their unique contexts, while sustainability ensures long-term benefits for all parties involved. Addressing power imbalances and fostering inclusive decision-making were identified as critical factors.

3. **Building Equitable Partnerships:** The workshop emphasized the importance of clear goal-setting and alignment before forming partnerships. Engaging partners through open communication and formalizing agreements with clearly defined roles and responsibilities were also highlighted as crucial steps.

4. **Maintaining Equitable Partnerships:** Participants discussed the need for ongoing communication, capacity building, and flexibility to adapt to changing circumstances, ensuring that each partner's contributions are valued and respected.

5. **Sustainability:** Sustainable partnerships require institutional commitment, resource sharing, and the ability to adapt to evolving situations. Establishing long-lasting relationships based on shared goals was deemed essential for impactful collaboration.



The workshop equipped Prof. Ozor with practical strategies to guide ATPS's approach to forming more inclusive and long-term partnerships. He expressed a commitment to applying these principles of equity and mutual benefit to ATPS's international collaborations. Additionally, Prof. Ozor established valuable connections with stakeholders from diverse institutions and organizations, further enhancing collaboration opportunities for ATPS.

By participating in the British Council Workshop on Building Equitable and Sustainable Partnerships, ATPS reaffirms its dedication to forming collaborative networks that promote fairness, respect, and long-term impact. As ATPS continues to expand its international engagements, the insights gained from this workshop will play a vital role in guiding its strategic partnership initiatives.

ATPS Climate Action Project Featured on Science Africa

The African Technology Policy Studies Network (ATPS) is proud to announce that our project, "Building the Capacity of Selected Sub-Saharan African Countries to Effectively Measure Progress in their Nationally Determined Contributions' Implementation Using Tracking Tools and Indexes," has been featured on Science Africa!

Funded by the African Development Bank Group (AfDB), this groundbreaking initiative is being co-implemented in partnership with the Pan-African Climate Justice Alliance (PACJA) and the West Africa Green Economic Development Institute (WAGEDI). The project aims to strengthen data-driven decision-making in African countries by equipping them with tracking tools and indexes that enhance transparency, accountability, and regional collaboration in climate action.

The recognition by Science Africa underscores ATPS's commitment to advancing Science, Technology, and Innovation (STI) for sustainable development across the continent. It also highlights our ongoing efforts to bridge the gap between policy and practice in climate governance.

To learn more about this impactful initiative, read the full feature on Science Africa here: <https://news.scienceafrica.co.ke/12-african-countries-to-benefit-from-climate-commitments-tracking-tool/>



THEME

Unlocking Africa's Raw Materials for Industrial Growth and Global Competitiveness



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- ◆ Strengthening local content and regional supply chains
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- ◆ Agro-industrial linkages and green value chains
- ◆ Strategic financing, AfCFTA opportunities & trade integration
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A renowned economist, development strategist, and industrial policy expert, Prof. Ike-Muonso has spent over two decades championing sustainable economic transformation across Africa. Under his leadership, RMRDC is spearheading bold reforms to reposition raw materials as engines of value addition, manufacturing, and inclusive prosperity. He is driving the continental conversation on how Africa can shift from raw material dependence to raw material dominance.

Prof. Nnanyelugo Martin Ike-Muonso

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Prof. Nicholas Ozor, the Executive Director of ATPS, poses for photos with other delegates during his participation in the 2025 SVNP Regional Conference, held from March 4th to 5th, 2025, in Addis Ababa, Ethiopia.



Prof. Nicholas Ozor poses for a photo with other delegates during his participation in the British Council Workshop on Building Equitable and Sustainable Partnerships held in Accra, Ghana from 10th to 11th March 2025

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Susan Mburu, the Communication and Outreach Officer at ATPS (standing at the front, far left), poses for a photo with fellow participants during the Reporting Climate Change in Africa workshop. The event took place on February 21, 2025, at Aga Khan University in Nairobi, Kenya.





Prof. Nicholas Ozor, Executive Director of ATPS, and Eng. Prof. Joel Nwakaire participate in the Step Change Learning Review Workshop, held from February 11-14, 2025, in Arusha, Tanzania.

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