**RRES Press Release 31st March 2025 Africa has an opportunity to deliver on net-zero agriculture**

***Youthful population and gender-responsive approach can help to drive change***

As the world grapples with climate change, Africa faces the pressing task of achieving net-zero agriculture. The continent must confront extreme weather events threatening food security while reducing emissions from livestock farming, rice cultivation, and fertilizer use. However, current policies supporting climate-smart agricultural practices require evaluation to ensure they effectively drive change, according to [a new commentary published this month in the journal *Sustainability Science*](https://link.springer.com/article/10.1007/s11625-025-01666-y).

Africa is home to over one billion people across 55 nations and stands at a critical juncture as its population is expected to more than double by 2050. This rapid growth presents both significant challenges and immense opportunities for sustainable development, particularly in the agricultural sector, which employs 65% of the continent’s workforce and contributes nearly a third of its GDP.

“The road to net-zero agriculture is not without obstacles,” said Rothamsted’s Dr Theo Akpensuen, one of the authors of the commentary. “There is insufficient data, weak policy enforcement, financial constraints, and low awareness levels. All of these hinder progress. Erratic rainfall, regional conflicts, and climate-induced migration further exacerbate the situation. However, Africa’s vast arable land, youthful workforce, and growing renewable energy sector provide a foundation for transformative change.”

To navigate these challenges, Africa must secure climate funding and bolster regional partnerships, say the authors. Strengthening climate information services, adopting inclusive and gender-responsive policies, and investing in innovative technologies will be crucial. The development of climate-resilient crops and alternative energy sources will play a key role in reducing agriculture-related emissions.

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Additionally, early warning systems and sustainable livelihood programs will need to be expanded to help manage climate-induced migration, ensuring that vulnerable populations can adapt to shifting environmental conditions. By tackling these challenges head-on while leveraging its strengths, Africa has the potential to build a resilient and sustainable agricultural system, setting a precedent for climate action worldwide.

Modern technologies such as precision farming, advanced irrigation systems, and data-driven decision-making tools can significantly increase productivity and sustainability. However, their adoption in Africa has been slow due to several interrelated factors including high cost, and a lack of infrastructure and training.

Social change may also present some challenges, say the authors.

“Traditional farming practices, which have been passed down through generations, can be deeply ingrained and resistant to change,” said Dr Akpensuen. “Additionally, the socioeconomic conditions of many smallholder farmers, characterized by poverty and limited access to markets and credit, can hinder the adoption of new practices that require initial investment.”

A new generation of farmers is eager to embrace sustainable practices such as agroforestry, organic farming, and conservation tillage. Education and training programmes tailored for young farmers can emphasize these methods, which contribute to carbon sequestration, soil health, and biodiversity. By prioritizing education on sustainable agriculture, youth can effectively contribute to achieving net-zero goals. Equally important will be empowering women, who make up the bulk of Africa's agricultural workforce. Ensuring their participation in climate decision-making and providing access to resources and technology will be crucial for achieving progress.

Although the current understanding of greenhouse gas (GHG) emissions in sub-Saharan Africa is limited, the region’s potential as both a source and a sink of GHGs is substantial. By addressing these issues holistically and engaging stakeholders at all levels, Africa can move towards a more sustainable agricultural future that balances resource use with environmental stewardship. These challenges and limitations can be addressed through the following suggested pathways to achieve net-zero agriculture in Africa.

“With strategic investments and policy reforms, Africa’s agricultural sector can transform into a model of sustainability, ensuring food security and economic stability for future generations,” added Dr Akpensuen

Publication

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