



# Green and Digital Technologies: Are They Really Transforming Youth Employment in Africa's Agriculture?



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## Green and Digital Technologies: Are They Really Transforming Youth Employment in Africa's Agriculture?

A sustainable and [digitally-enabled agricultural transformation](#) – enacted by the [Fourth Industrial Revolution \(4IR\)](#) and the [transition to green economies](#) – is heralded for its potential to drive change across Africa's agricultural sector. It could potentially improve the livelihoods of African smallholders, help farmers mitigate climate change, increase productivity and nutrition, and foster sustainable agribusiness models that create inclusive, decent and new employment opportunities for young Africans along the value chain, especially if paired with [digital skills development](#). However, there is [no clear evidence that digital technologies in agriculture](#) do affect young people's career choice, or if and how green and digital technologies actually create decent youth employment in agriculture. Moreover, the foresight analysis '[What is the future for youth in Africa's agri-food systems](#)' reveals that most young people in Africa will continue to be engaged in informal roles within the food value chain, which generally offer low income and are viewed as very demanding with little social prestige. This has resulted in a widespread [negative perception](#) towards farming among young people, which in turn affects the viability of the whole agricultural sector.

The [INCLUDE knowledge platform](#) and the [Challenge Fund for Youth Employment](#) (CFYE) launched a third phase of their research partnership on [Green Jobs and the Future of Work](#) to critically examine the potential and the challenges related to equitable participation of young people in employment opportunities at green and digitally-enabled agribusinesses.

**Research Question: How are agribusinesses using digital and green technologies to create green and decent jobs for youth in Africa.**

This research takes an action-oriented approach, actively involving various stakeholders—youth, the private sector, and civil society—in the research process, in order to distill lessons learned and best practices to support agribusinesses in facilitating youth employment. Given the private sector's key role in promoting youth employment in agriculture, the research was initiated by means of a kick-off meeting with around 20 colleagues from CFYE, their implementing partners, and agribusinesses across Africa. Their insights provided a clearer understanding of the digital and green technologies in use, the barriers and drivers they face, and validated the research questions.

**i** For more information, contact [INCLUDE](#) and follow [INCLUDE](#) and [CFYE](#) on their social media channels.



## What are the green and digital technologies used by agribusinesses?

Broadly speaking, both green and digital technologies in agriculture refer to innovations that promote sustainability and efficiency across the agricultural value chain.

Digital technologies can be defined as “technologies, innovations, and data to transform business models and practices across the agricultural value chain and address bottlenecks in, inter alia, productivity, postharvest handling, market access, finance, and supply chain management so as to achieve greater income for smallholder farmers, improve food and nutrition security, build climate resilience and expand inclusion of youth and women.”

### Examples of digital technologies

Due to the broad range of digital agriculture innovations in low and middle-income countries (LMICs), literature classifies digital technologies in different categories based on their areas of usage, such as: advisory and information services, market linkages, financial access, supply chain management and macro agricultural intelligence.

**i** Websites like the Digital Agri Hub, developed by Wageningen University & Research, monitors and lists different innovative digital agricultural solutions per country.

Participants in the kick-off meeting provided examples of digital technologies they came across in practice and identified different use cases, such as innovations designed to tackle specific agricultural challenges (e.g. satellite imagery for field analysis), smart and innovative tools that improve productivity and efficiency in farming (e.g. leaf lab testing for fertilizer efficiency, sensors for water and energy optimization), and business facilitators, such as online marketplaces for B2B exchanges, fintech for easier access to loans for youth and supply chain management tools.

Green technologies, on the other hand, help address key environmental challenges such as climate change, biodiversity loss, and pollution. These technologies include climate adaptation practices, renewable energy solutions (e.g., solar-powered irrigation), and sustainable farming techniques like agroforestry and recycling solutions. Their goal is to minimize agriculture’s environmental impact while enhancing resilience and sustainability.

During the kick-off session, green technologies were defined as eco-friendly practices and methods that promote environmentally sustainable farming, which also includes tools to strengthen youth with modern and sustainable farming skills and technologies that enhance access to land, such as technologies that support accessing funds to facilitate land ownership and sustainable land use. This highlights how green technologies can help to address barriers to youth inclusion in agriculture, like limited access to land, finance, knowledge, and skills.

Looking at both types of technologies and the broad array of categories of examples shows that green and digital technologies assist agricultural actors, including agribusinesses, in various ways to boost productivity efficiently and sustainably while fostering climate-friendly and inclusive practices, and that there is a considerable amount of overlap between them.



## Drivers and barriers affecting the use of digital and green technologies for youth employment

Both the [drivers and barriers](#) for the adoption of digital and green technologies in agriculture are well known. Drivers include political momentum, increased financing for entrepreneurship, climate mitigation, improved productivity and profitability, and enhanced food security.

On the other hand, barriers include limited internet connectivity, lack of awareness, insufficient funding opportunities, and a shortage of relevant knowledge and skills around the use of new technologies. Moreover, the challenge of attracting youth to agriculture is [well-documented](#), with challenges such as restricted access to land and finance, poor working conditions, low wages, and a lack of social prestige deterring their interest.

However, the literature lacks an analysis of the drivers and barriers that affect agribusinesses' implementation of digital technologies specifically focusing on the job creation potential for youth. For example, it would make sense if access to finance would support agribusinesses to implement digital technologies but it is unclear if this also creates youth employment at this specific business.

### Key Drivers & Barriers: Insights from kick-off participants on using digital and green technologies to create youth employment in agribusinesses


#### Drivers

- **Offline Accessibility:** Technologies that function without constant internet access are suitable for youth in rural areas.
- **Awareness:** Raising awareness among youth about how technology can improve their work and livelihoods.
- **Community Engagement:** Collaborating with local communities and promoting technology adoption through trusted figures like community leaders and ambassadors.
- **Financial Support:** Access to financial resources that enable youth to invest in technology and innovation.
- **Labor Market Transparency:** Using technology to increase visibility of industry benchmarks for salaries, education, and training, helping youth understand potential career paths.

#### Barriers

- **Skills Mismatch:** Insufficient education and skill levels among youth hinder effective technology adoption.
- **Limited Awareness and Availability:** Low knowledge of and access to relevant technologies, particularly in rural areas.
- **High Employee Turnover:** Agribusinesses face challenges in retaining employees, with the risk of losing training and education investments when workers leave.
- **Seasonal Work:** The temporary nature of much agricultural work limits long-term employment prospects and investment in technology and training.
- **Lack of Supportive Policies:** Absence of policies or economic incentives to promote the use of digital and green technologies among youth in agriculture.

Kick-off session participants emphasized the importance of understanding how young people perceive, engage with, and experience job opportunities in agribusinesses that use digital technologies. For instance, how do these technologies impact recruitment and job retention, and what best practices can agribusinesses adopt to better include youth, women, and rural subsistence farmers in the evolving agricultural sector?

 As a result, this research continues to focus on how agribusinesses use digital and green technologies to create green and decent jobs for youth in Africa, while considering young people's perspectives on these technologies and agribusinesses using them. Moving forward, the research will involve expert interviews with researchers, civil society actors, and youth representatives and two case studies to identify lessons learned and best practices from leading agribusinesses in Africa using digital and green technologies for youth employment.