

The African Digital Agri-Food Landscape: Digital Solutions and Standards



**Driving EU-African Trade
by Food Chain Innovations**

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A STARTING POINT

The African continent holds a crucial position in the global agri-food systems, with over 60% of the global arable land and a fast-growing population that is dependent on agriculture, agri-food systems play an essential role in the continent's growth. The expected population increase, reliance on food imports and the effects of climate change showcase the external challenges and the importance of building resilient agri-food systems to ensure sustainable economic development. In this context, the agri-food products are not only a means of household food consumption in Africa but are increasingly traded within intra-African and continental markets, particularly with the EU, and thus are a source of income for households, businesses, and nations. Digital agricultural transformation represents a shift in the governance, social organisation and institutional structure of agri-food systems, and is a key enabler for improved trade, productivity and market access. Yet structural challenges, such as a fragmented digital African landscape and a lack of comprehensive academic research and insights into digitalisation in Africa hinder sustainable uptake among the African Union.

This brochure summarises the key findings of the report D3.1, synthesising the current state of knowledge, capabilities, and digital solutions adopted in Africa, in line with the ambitions of the African Continental Free Trade Area (AfCFTA) to establish a continent-wide free trade zone and the priorities of the AU-EU partnership.

METHODOLOGICAL APPROACH

The African Digital Landscape report offers a broad overview of the current state of digitalisation relevant to trade in African agricultural and agri-food products. The report addressed the current knowledge gap in the state of digitalisation to support trade in the African context. The analysis draws conclusions based on a wide range of reputable sources including documents and databases from the African Union (AU), EU, Food and Agriculture Organizations of the United Nations (FAO). Additionally, the digital state was examined in the African tea and cassava value chain, alongside the adoption of Global Standards (GS1) in Rwanda.

ROLE OF DIGITAL TRANSFORMATION IN AFRICA'S AGRI-FOOD SYSTEMS

The adoption of digital agri-food solutions has significant potential to improve multiple stages in the agri-food chain. ·

- **Production Level (P):** tools such as digital extension services and mobile advisory services enhance farmer decision-making, productivity and market access.
- **Processing & Compliance (P&C):** adoption of food safety & traceability standards improve food safety, traceability and compliance relevant for trade. These benefits lead to improved market access for African producers willing to export their food produce.
- **Trade (T):** digitalisation of information exchange among all actors is a critical component in trade; digitalisation and standardisation streamline these processes. Access to continent-wide and high value external markets, which are a key source of revenue, is negatively affected when the necessary information, documentation or certification cannot be provided or made available in time.



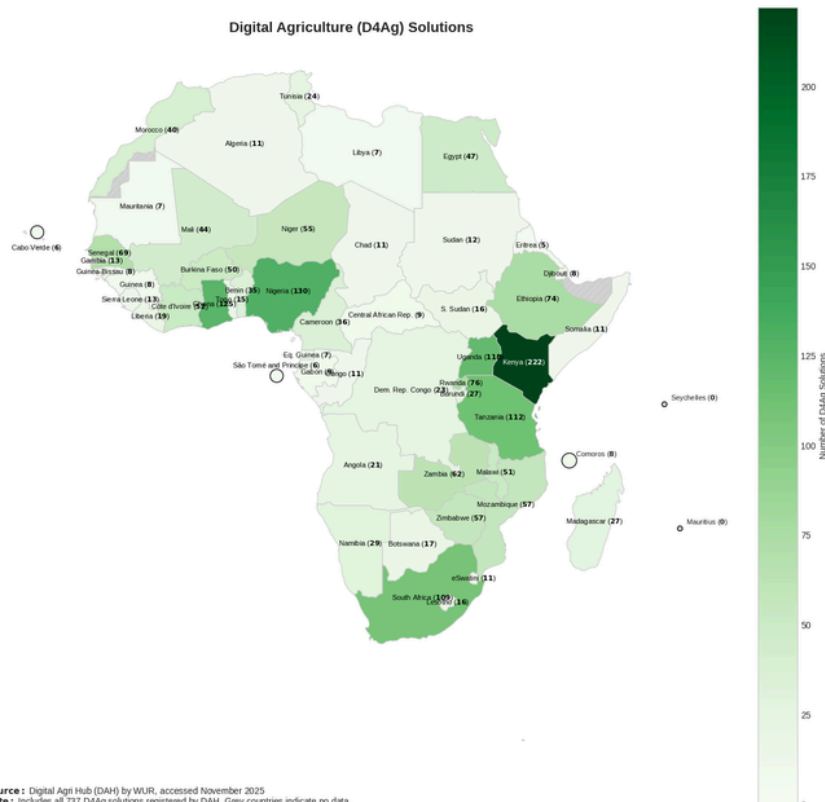
Landscape, Rwanda, photographed in 2025

There are several digital agri-food solutions present in Africa, divided across five main categories (with potential overlap of offerings). An overview of the number of digital agri-food solutions across Africa is presented at the bottom of this page.

- 1 **Digital Extension services (P + P&C):** services assisting farmers in distributing valuable information to adopt better practices and support in decision-making processes (e.g., iCow, SOWIT).
- 2 **Digital Financial Service (P + T):** financial services and goods provided via digital channels, including smartphones (mobile money), the Internet, and other electronic devices (e.g., M-PESA, MoMo).
- 3 **Digital Market Linkage (T):** play an important role in connecting smallholder farmers to potential buyers, high-quality farm inputs, production and post machinery (e.g., Hello Tractor, Mkulima Young).
- 4 **Supply Chain Management (P + P&C + T):** coordinates all activities within the agri-food value chain, from production to purchase by the end-consumer (e.g., eProd).
- 5 **Digital Farm Management Tools (P + P&C):** assist farmers in various agricultural processes, including planning, monitoring and managing farm operations (e.g., One Acre Fund).



Rwanda, horticulture company, photographed in 2025



DEVELOPMENTS AFRICAN DIGITAL AGRI-FOOD LANDSCAPE

Continental initiatives such as Agenda 2063 and the African Continental Free Trade Area (AfCFTA) classify digitalisation and standardisation in agri-food trade systems as key drivers towards economic transformation. These frameworks aim to:

1. Improve trade information exchange
2. Strengthen food safety/quality compliance
3. Enhance food security
4. Increase international competitiveness

While trade agreements with the EU remain modest, the AfCFTA and other continental initiatives (Comprehensive Africa Agriculture Development Programme CAADP and the Digital Economy for Africa DEA4A) present opportunities to boost intra-African trade, currently accounting for ~20% of total agri-food trade. With the sector expected to grow to a 3 trillion-dollar sector by 2030, constraints hinder its progress.

1. Low value additions
2. Low productivity
3. Dependence on food outside Africa.

Significant progress in recent years has been made in improved internet and mobile connectivity, supporting digital agri-food solutions on the continent. However, there remains a high usage gap, and inconsistent, fragmented regulatory implementation, hindering full realization of digital transformation benefits. Nevertheless, the growing adoption of digital innovative technologies, such as mobile platforms & market information systems for the agricultural sector, underlines the current technological uptake and offers new opportunities to address the challenges the sector is facing, bringing socio-technical transformation opportunities that fall in line with the continent's commitments.



*Plantation, horticulture company,
Rwanda, photographed in 2025*



*Tea processing company, Rwanda,
photographed in 2025*

NATIONAL DEVELOPMENTS

In recent year, many countries have developed digital strategies and trade systems. However, there are large regional differences in Africa's digital trade environment.

North Africa: has a further developed regulatory environment, but contains a more restrictive trade environment, limiting digital cross-border trade (e.g., Egypt's well-developed Nafeza National Single Window, alongside regulatory constraints on transparency and institutional arrangements affecting digital trade).

Sub-Saharan Africa: contains more open trade environments, but these are often characterised by regulatory gaps, particularly in digital data governance (e.g., Angola's strong performance in adopting paperless trade principles recently, but currently lacks a regulatory framework for the integration of electronic customs to enable cross-border digital trade).

The UN Trade Digitalisation Index 2024 (TDI) result highlights a global trend of relatively low cross-border paperless trade (interoperability between countries trade systems) implementation, with higher scores in domestic implementation of paperless trade. However, Africa perform below the global average on this front.

UN TRADE DIGITALISATION INDEX

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Key regulatory challenges according to UN's Regional Digital Trade Regulatory Environment (RDTII), include:

- Fragmented and inconsistent digital governance frameworks and commitments
- Gaps in binding rules enabling digital trade rather than high policy-induced cost
- Low adoption of international frameworks on e-commerce and signatures

Despite the continuous improvements in SSA in digital trade facilitation measures (2025: 62%), the continent fall behind the global average (71%). Nevertheless, LDCs (Least developed countries) and LLDCs (Landlocked Developing Countries) have made significant progress between 2023 and 2025 on trade facilitation integrations.

High trade cost and uneven regional development on digital trade facilitation (paperless and cross-border paperless trade) highlight the need for targeted domestic investments and political will to commit to continental frameworks.



Cattle Farm, Rwanda, photographed in 2025



Landscape, Rwanda, photographed in 2025

LOCAL DEVELOPMENTS

At the local level, increased internet access, digitalisation uptake (e.g., mobile phone, digital services) has brought the emergence of new tools and solutions for the agri-food sector such as mobile-based advisory services, fintech and digital market information system/supply chain management.

There is a notable shift from generic digital tools – low-cost information exchange – towards more farm-specific and data-driven solutions, showcasing improved datafication and data-driven decision-making relevant for trade. Despite the emergence of new digital agri-food solutions (D4Ag), many smallholder farmers face barriers, including:

- **Limited digital literacy** (e.g., 12 of 20 countries lowest digital skills were in Africa, *WB 2023/BCG, 2022*)
- **Digital gender divide** (e.g., women are 32% less likely to use mobile services compared to men, *GSMA 2023*)
- **High connectivity costs** (e.g., median average monthly cost 2GB mobile internet of 4.2% GNI compared to 2% target UN, *UNESCO ITU 2025*)
- **Inadequate infrastructure** enabling digitalisation (e.g., access to internet of 23% rural households vs 57% urban SSA, *UNESCO ITU 2025*)
- **Lack of access to credit** (e.g., only 95 of 900 surveyed African banks provide finance to smallholder farmers, *CTA 2019*)



Despite steady progress on digital adoption, social and technical barriers hinder its effectiveness, with infrastructure, digital literacy and unsustainable business models preventing uptake.

Key adoption drivers consist of:

1. Addressing infrastructure constraints
2. Developing user-centred digital literacy programs and solutions
3. Socially embedded policy frameworks.

Adoption of global standard (e.g., GS1, HACCP, EDI, UN/CEFACT) offers cost-benefits, vendor independence, and long-term scalability. A leap-frog approach – skipping intermediate steps - of open-source solutions can accelerate and provide long-term ecosystem viability support if supported by harmonising policies across the continent.



Landscape, Rwanda, photographed in 2025

MOVING FORWARD

The African Digital Landscape D3.1 report offers a holistic overview of the digital landscape of the African agricultural sector, that will inform STREAMING work packages, upcoming deliverables and support evidence-based recommendations aiding to accelerate the African agricultural transformation.

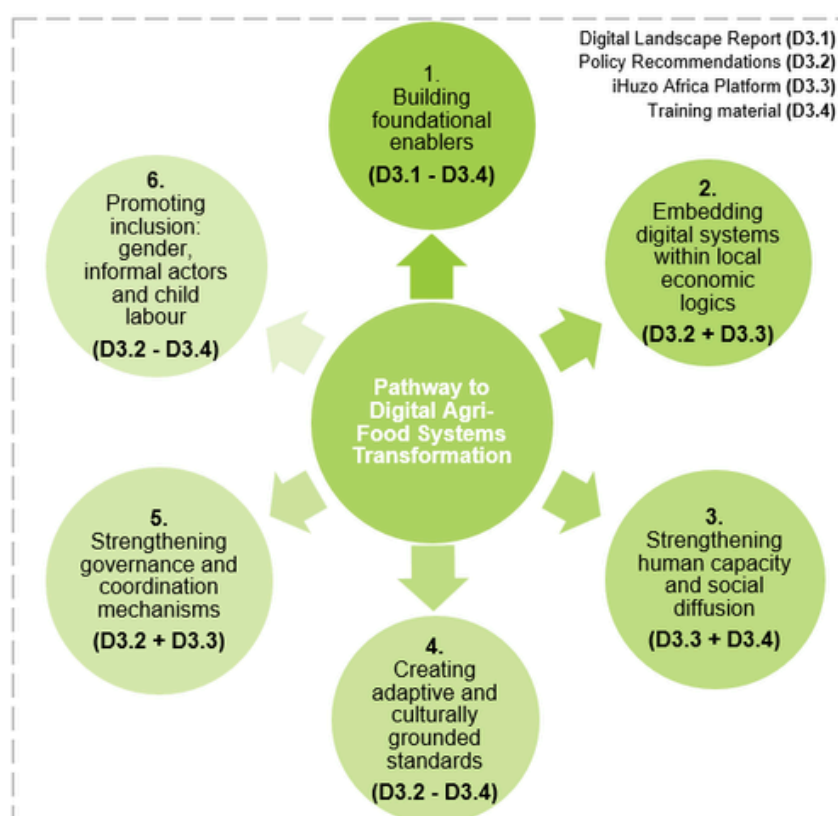


Figure 1: Conclusions D3.1

The report will provide insights into the follow-up deliverables of WP3, namely:

- African Digital Trade Ecosystems
- Development digital innovation platform
- Creation of capacity-building/global standards on learning/training material supporting farmers in digitalisation & trade practices



ABOUT STREAMING

The EU project **STREAMING** (*Sustainable Trade Regimes with Europe and Africa through Mapping Innovation, New Technology and Growth Mindset*) brings together partners from Europe and Africa to develop digital solutions for sustainable trade and traceability in food value chains. The project is funded under Horizon Europe and runs from February 2025 to July 2028. With a total budget of around €4.45 million, an international consortium of 15 partner organisations in 11 countries is working together – including the Bundesverband IT-Mittelstand e. V. (BITMi) as the German partner.

Specifically, the project aims at:



STREAMING project aims to develop strategies for fair, healthy, and environmentally sustainable food systems across the continent. By fostering connections between basic research and practical implementation,



STREAMING seeks to promote innovation and entrepreneurship among various target groups, including women, researchers, students, and farmers.



The project aims to bridge academia-industry gaps and promote the adoption of sustainable practices and technologies in African food trade systems. Additionally, with a focus on policy analysis and recommendation.



The project aims to inform trade policies in Africa and Europe, with an emphasis on removing non-tariff barriers to trade and enhancing resilience against external challenges such as climate change. By integrating stakeholder perspectives, empirical research, and innovative solutions.

CONTACT

STREAMING - Sustainable Trade
Regimes with Europe and Africa through
Mapping Innovation, New-technology and
Growth-mindset



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