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Digital Government

AGRICULTURE

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Introduction to Digital Government in Agriculture

Digital technology has transformed most aspects of people's public and private lives, and it's also driving immense change for governments. Governments are using digital technologies to set measurable administrative goals, improve public service delivery, make data-driven decisions, enact evidence-based policies, ensure greater accountability and transparency, and engage with the public.

What does digital government look like in the Agriculture Sector?

Digital government looks different across sectors. Broadly, it is how governments use digital technology to **manage** internal systems and processes, **deliver** services, and **engage** with stakeholders. In the agriculture sector,¹ digital technology can provide real-time and tailored information to farmers, increase farmers' access to financial services, and enable collaboration among agricultural stakeholders.² Overall, integrating digital technologies into the sector creates opportunities for better data collection and analytics, more effective information dissemination and feedback, and deployment of innovations across the agriculture value chain.

“Digital government” is the use of digital technologies as an integrated part of government strategies.

USAID developed the [Digital Government Model](#) to help USAID staff and partners understand and engage with the goals and components of digital government.

¹ Digital technologies in agriculture include mobile devices, satellite, Geographic Information systems (GIS), sensors, soil diagnostic tools, and the Internet of Things (IoT), among others.

USAID's Digital Government model can be applied to the agriculture sector:



MANAGE: Systems and processes related to managing the daily work of government. Since 2018, Kenya has been steadily digitizing land records, leading to the launch of the National Land Information Management System (NLIMS) in 2021. The NLIMS aims to improve land governance and achieve food and nutrition security by identifying and monitoring land and natural resources use.³



DELIVER: Platforms to allow stakeholder access to government services. In Peru, the Ministry of Agriculture operates a government-led agricultural digital marketplace, which is free to use and connects smallholder farmers to final consumers to sell their agricultural products.⁴



ENGAGE: Platforms for stakeholders to contribute to policies and processes. In Tanzania, the digital crowdsourcing platform “UshauriKilimo” allows farmers and agriculture value chain actors to ask for advisory extension services via web or mobile phone.⁵

Digital Government Trends in the Agriculture Sector

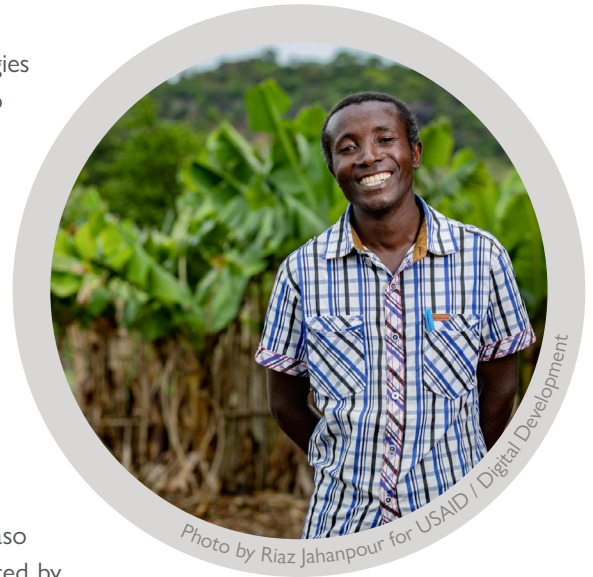
As digital technologies evolve, the following key trends are at the intersection of digital government and the agriculture sector:

Early warning systems. Governments are leveraging digital technologies that provide real-time, actionable agrometeorological information tailored to specific locations and conditions, and devising and implementing successful agricultural disaster management and early-warning systems to support the agriculture value chain.⁶ For instance, the USAID-supported Famine Early Warning Systems Network (FEWS NET) is a digital platform that provides weather data, analysis, and projections to government agencies around the globe, allowing them to take action to prevent food insecurity and protect agricultural production and livelihoods.⁷

E-wallets and e-vouchers. Increased access to financial tools like e-wallets in rural communities helps farmers secure savings, make transactions, and find affordable insurance and risk management tools. Meanwhile, e-voucher systems such as the one employed by the Burkina Faso Ministry of Agriculture and Hydro-agricultural Development — and supported by the Alliance for a Green Revolution in Africa (AGRA)— subsidizes fertilizer and other modern agricultural inputs for local farmers.⁸

ICT-enabled extension programs. Programs powered by information and communications technologies (ICT) allow governments to amplify the reach of extension services that strengthen the capacity of farmers. These programs connect farmers to agronomic best practices, improved seed and fertilizer technologies, and financial literacy services. AGRA works with government extension agencies in 11 countries across Africa to address their shortage of extension agents by identifying and training self-employed, village-based advisors (VBAs) to perform these functions.⁹ The VBAs then provide extension services to smallholder farmers in-person and by using ICT-enabled technologies such as animated explainer videos. E-learning platforms also enable the provision and access of extension services by government agencies to farmers. For example, in Trinidad and Tobago, the Ministry of Agriculture's Extension, Training and Information Services (ETIS) Division launched live online plant clinic sessions on Facebook to support farmers during the COVID-19 lockdown.¹⁰

Digitization of land records and ownership documents. Record digitization adds clarity to land tenure and property rights between governments and citizens, improves land governance, and supports economic opportunities for farmers. The



USAID Land for Prosperity (LFP) project is working with the Government of Colombia to digitize more than 610,000 property registration files in order to foster rural economic development.¹¹

SERVIR Hindu-Kush Himalaya Activity

SERVIR is a joint knowledge-sharing initiative by USAID, NASA, and the International Centre for Integrated Mountain Development (ICIMOD), helping government agencies use satellite data to track weather events critical to food and water security. Specifically, SERVIR’s geospatial information system (GIS) applications map out the type, area, conditions, and projected yields of major crops. In Bangladesh, Nepal, and Pakistan, the information provided by SERVIR helps government agencies predict extreme weather and assess impacts after a disaster. When Cyclone Amphan hit Bangladesh in 2020, SERVIR provided the national government with crucial data to help manage to assess the cyclone’s aftermath and its impacts on displaced farmers.¹²

Key Barriers in the Agriculture Sector

The following barriers inhibit opportunities and innovation for digital government, impacting the management of systems and processes, delivery of services, and engagement of stakeholders in the agricultural sector:

Weak connectivity and infrastructure. Many low and middle-income countries (LMICs) lack basic digital infrastructure and agriculture data collection tools.¹³ This inhibits meaningful connectivity¹⁴ and the ability to deploy digital government solutions in the agriculture sector, particularly among smallholder farmers.¹⁵ Additionally, many LMICs lack sufficient electricity connectivity, which is essential for the delivery of digital services.

Unclear or fragmented data ownership, privacy, and protection.

The proliferation of digital technology, advances in remote sensing technologies,

and citizen science initiatives increase agricultural

agencies’ ability to gather data on farmers’ activities

(e.g., land or product use). Weak data governance

arrangements can raise concerns from farming communities about the regulatory environment governing data collection or ownership, and subsequently how public authorities share, use, and reuse their personal or commercially sensitive data.¹⁶ These concerns may reduce farmers’ willingness to adopt digital solutions and enter into data-sharing arrangements, inhibiting solution deployment.

Low levels of digital literacy. Insufficient digital literacy can limit the uptake of digital government services in agriculture. Digital literacy affects stakeholders who use and provide digital government services. This includes government staff who support the agriculture sector as well as marginalized populations and smallholder farmers in rural communities who may not have access to, the ability to use, or trust in digital devices.¹⁷



15 Examples of data collection tools include farmer registries; soil maps; and weather, agronomy, pest, and disease surveillance. Examples of digital hardware include drones, satellite/GIS, sensors, and soil diagnostic tools.



Other Digital Government in Agriculture Resources:

- » [USAID Bureau for Resilience and Food Security Digital Strategy Action Plan](#)
- » [Digital Agriculture at USAID](#)
- » [USAID Digital Financial Services for Agriculture Guide](#)
- » [USAID Feed the Future Developing Local Extension Capacity \(DLEC\)](#)
- » [FAO and ITU, E-agriculture Strategy Guide](#)
- » [World Bank, ICT in agriculture – Connecting smallholder farmers to knowledge, networks and institutions](#)
- » [FAO, Success stories on information and communication technologies for agriculture and rural development](#)
- » [OECD, Digital Opportunities for Better Agricultural Policies](#)
- » [McKinsey & Company, How digital tools can help transform African agri-food systems](#)

FOR MORE INFORMATION, please contact the IPI/ITR Digital Societies and Governments team (digitalsocieties@usaid.gov) and the RFS digital team (digitalag@usaid.gov).

- 2 [Digital innovations and the growing importance of agricultural data | OECD iLibrary.](#)
- 3 [Kenya unveils the National Land Information Management System | FAO in Kenya | Food and Agriculture Organization of the United Nations.](#)
- 4 [Agricultural “Platforms” in a Digital Era: Defining the Landscape | Feed the Future.](#)
- 5 [e-Agriculture Promising Practice: UshauriKilimo.org: web and mobile phones for extension services in Tanzania | FAO.](#)
- 6 [Digital Technologies for Climate Action, Disaster Resilience, and Environmental Sustainability | ADB.](#)
- 7 [Famine Early Warning System | FEWS NET.](#)
- 8 [Revised Electronic Voucher System Brings Transparency to Agricultural Subsidy Programme | AGRA.](#)
- 9 [Extension Strategy | AGRA.](#)
- 10 [Empowering smallholder farmers to access digital agricultural extension and advisory services | FAO.](#)
- 11 [RED - Land for Prosperity | U.S. Agency for International Development.](#)
- 12 [Satellite Data Bolsters Food Security and Climate Resilience in South Asia | Feed the Future.](#)
- 13 [Emerging technology trends: Artificial intelligence and big data for development 4.0 | ITU.](#)
- 14 [Meaningful Connectivity — unlocking the full power of internet access | A4A.](#)
- 16 [OECD Food, Agriculture and Fisheries Papers | OECD iLibrary.](#)
- 17 [OECD Food, Agriculture and Fisheries Papers | OECD iLibrary.](#)

USAID’S DIGITAL STRATEGY

USAID’s [Digital Strategy](#) was launched in April 2020 with the goal of supporting USAID partner countries through their digital transformations. It aims to improve measurable development and humanitarian assistance outcomes through the responsible use of digital technology and to strengthen the openness, inclusiveness, and security of partner country digital ecosystems.