

DATA-DRIVEN DIGITAL AGRICULTURE



WORLD BANK GROUP
Agriculture & Food



FOOD SYSTEMS
2030



The global food system is complex, fragmented, and unable to meet the challenges facing society. Despite significant increases in output, the system is inefficient and wasteful, with abundance and hunger existing side by side. At the heart of these failures is a lack of equal and adequate access to information among farmers and within markets, where inflexible systems promote high transaction costs. Improved access to data and analytics, alongside digital technology, can help connect the world's 570 million farms to 8 billion consumers, reducing inequality and global hunger.



Our goal is to encourage the use of data, digital technology, and innovation to transform the agri-food system. Improving the collection and use of data and harnessing the power of digital tools will enable smallholders to increase efficiency and promote equity. Data-driven digital agriculture improves crop yields, reduces waste, supports transparent price discovery, lowers costs, strengthens resilience, and decreases harmful emissions. We support data collection for policy action, and public and private investment for results, to promote inclusive agriculture.



We are working to expand the frontier of financing and expertise for digital agriculture. Our multidisciplinary team builds on the convening power of the World Bank to bring data, analytics, and investment together for impact. Our network of thought leaders, innovators, public sector leaders, CEOs, startup founders, and researchers share knowledge, advice, and expertise to ensure that the global food system reaches its potential. To date, we have supported the design and implementation of 53 projects across 36 countries, amounting to about \$1.15 billion in lending.



The annual cost of land degradation is about **R300 billion** and agricultural pollution is on the rise.



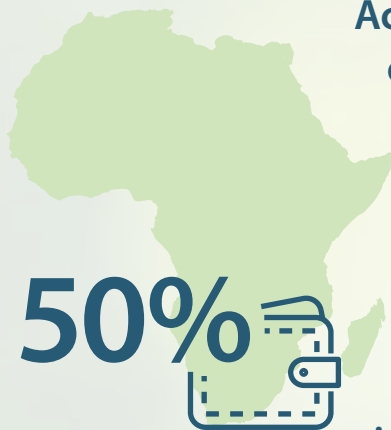
Digitally enabled traceability could reduce food losses by up to

30 million tons annually.

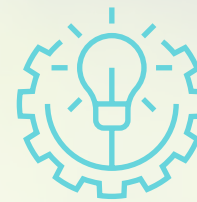


Food that is harvested but then allowed to spoil or is otherwise wasted occupies land equal in size to China, consumes about 25 percent of all water used in agriculture, and accounts for

8% of global greenhouse gas emissions



Across Sub-Saharan Africa, consumers spend about 50 percent of their disposable income on food—much higher than consumers in developed countries. At the heart of this problem is an inefficient supply chain and fragmented retail markets.



Given that 4.6 billion people use the internet, and 5.2 billion own mobile phones, there is vast potential for agriculture to combine the power of data-driven analytics and digital technology to create new markets.





Data-driven digital agriculture can improve every element of the agri-system value chain and create **better links** between farms and consumers.

Unlike previous technological revolutions in agriculture, which began on farms, the digital agriculture revolution is being sparked at multiple points along the agri-food value chain. The change is driven by the ability to collect, use, and analyze **machine-readable data** about nearly every aspect of food production and distribution.



Data is power. Tools that collect, store, and share data along the agricultural value chain can contribute to exponential **income growth**, better decision-making, enhanced products and services, and greater efficiency, productivity, and profitability.

Digital agriculture can influence society in three main ways (the triple Es):



Economic efficiency through access to multiple markets, lower costs through improved price discovery, buyer-seller matching, and improved quality control.



Equity through the inclusion of smallholders and marginalized populations.



Environmental sustainability by reducing food waste, improving resource management, and promoting environmentally friendly practices.



Several risks associated with digital agriculture need to be managed:



Digital divide—some farmers cannot access the internet—or do not know how to use it.



Data governance—data can be exposed or misused.



Limited competition—there are concerns that digital markets will increase digital power and filter profits to a few service providers.

The World Bank has a **strong knowledge and resource base**. Our Global Knowledge and Learning Platform has expanded with 66 webinars and many learning events for various clients and partners.



Successful digital agri-food technology projects include:



Kenya: The One Million Farmer Platform, a data-driven digital initiative, helps over 1 million farmers enhance their productivity, profitability, and resilience. To date, 900 technologies, innovations, and efficient management practices across 19 value chains have been digitized and are being disseminated across Kenya, with 300 county-level investments creating market linkages and improving productivity.



India: The Maharashtra Project on Climate Resilient Agriculture is working to improve the resilience and profitability of smallholder farmers. The project's direct benefit transfer portal and app helps farmers apply for grants. To date, more than 1.1 million farmers have registered and \$280 million has been disbursed. The project's capacity-building app has scheduled more than 70,000 events and registered more than 1 million participants for training and stakeholder events.