DATA-DRIVEN AGRICULTURE

The Future of Smallholder Farmer Data Management and Use

More than 500 million smallholder farmers worldwide play a significant role in local, regional, and global food production and provide dietary diversity of food supply. Mobile technology, connected services, and data-driven decision-making are changing how smallholder farmers are identified, understood, and supported.

DIGITAL FARMER PROFILES: THEN AND NOW

A digital farmer profile is a profile that can capture comprehensive data on a farmer and their farm. It can be accessed seamlessly by multiple service providers such as financial service providers, input suppliers, agro-processing and farmer cooperatives.

The types of service providers currently most commonly collect data on the farms of smallholder farmers are as follows: finance, marketing, and government agencies. In the future, other providers such as agro-processors and farmer cooperatives will also play a role.

DATA CAPTURE, ANALYSIS AND USE

Digital data capture is the starting point for developing a digital farmer profile ecosystem. Leveraging the three methods of data capture below increases the accuracy of profiles.

1. **Passive Mobile Data**
   - Farmers need to make decisions in real-time. The aggregation of information from their own data, remote-sensing data, satellite and weather information from their profile data, and other sources can make this possible. Big data is one promise that can bring fragmented data, information from their profile data, remote-sensing data, satellite and weather data together to support a farmer's ecosystem.

2. **Active Mobile Data**
   - Today, farmers provide data to service providers in exchange for support services in the future. Tomorrow, farmers might monetize their own data.

3. **Manual Data**
   - All service providers should consider how to make sure data is being shared post-project.

DATA GENERATORS: SERVICE PROVIDERS

Different types of service provider can be categorized into four main models:

1. **NGO / GOVERNMENT COMMERCIAL PROVIDERS**
   - These are service providers who work with NGOs and GOVTS to collect data and support smallholder farmers.

2. **RESEARCH ENTITIES**
   - These are service providers who work with research entities to collect and support smallholder farmers.

3. **DONORS & INVESTORS**
   - These are service providers who work with donors and investors to collect data and support smallholder farmers.

   - These are service providers who work with other service providers to collect data and support smallholder farmers.

DATA AND REVENUE FLOWS

Changing methods of data capture are giving rise to new configurations within service provider models.

**DATA AND REVENUE FLOWS**

- **NGO / GOVERNMENT**
  - Input suppliers, agro-processors and farmer cooperatives.

- **COMMERCIAL**
  - Financial service providers, input suppliers, agro-processors and farmer cooperatives.

**USING API TO BUILD A digitally connected ecosystem**

An API (Application Programming Interface) is used to provide a pathway to farmers' financial sustainability and protect their privacy.

- **What farmer archetypes have been created by programs and can these be more flexible for other entities?**
- **What is the policy and legal environment for data sharing, consumer protection and privacy?**
- **How is data shared and post-project?**
- **What can be the utility of the data assets for the farmer and for donors and investors?**
- **What investments by USAID and other donors can support the development of digital ecosystems for farmers?**

For additional information digital agriculture technologies, including farmer profiles, please visit www.usaid.gov/digitalag

For the table of contents and list of acronyms, please visit the end of this document.