

## CONCEPT NOTE

# DIGITAL CLIMATE SMART AGRICULTURE (DCSA) SANDBOX

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## CONTEXT

**Climate change is an urgent challenge facing millions of smallholder farmers who grow 80% of the food for the developing world.** Because 95% of agriculture in Sub Saharan Africa is rainfed, smallholders are highly vulnerable to changes in weather. Climate change is already causing yield declines for staple crops, crop failures due to drought and flooding, and a proliferation of pests and disease, often in new geographies, all exacerbating food insecurity and rural poverty. We know from the [International Panel for Climate Change 2021 report](#) that if we don't take action to reduce global emissions significantly by 2030, we cannot avoid catastrophic climate change; that is 9 years – or 9 growing seasons of arable crops, to rapidly scale up climate smart agriculture.<sup>1</sup> To tackle this challenge and to adapt to rising temperatures, we must change the way we farm globally.

**Despite the severity of the challenge, the agriculture sector is not fully equipped to adapt to or innovate solutions for climate change services or pivot existing products to the climate change reality.** Emerging solutions require support to re-calibrate to new developing markets and the agriculture sector as whole needs the technical and financial support to incorporate climate change to offer appropriate, affordable, and farmer-centric products and services that help smallholder farmers (SHFs). According to the [Climate Policy Initiative](#), only 1.7% of global climate finance goes to investments in smallholder farmers to support their adaptation.<sup>2</sup> With these challenges, you would imagine there would be several initiatives, innovation hubs and financial accelerators to support digital climate smart agriculture products and service development – yet there are none in the smallholder farmer context that are specifically dedicated to this challenge.

***That's why, as Mercy Corps AgriFin embarks on its next 4 years of programming, the digital climate smart agriculture agenda is front and centre in its goal to increase 5 million farmers' productivity, incomes and resilience across Ethiopia, India, Kenya, Nigeria, Uganda, and Tanzania.***

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1. <https://www.ipcc.ch/report/ar6/wg1/>

2. <https://www.climatepolicyinitiative.org/publication/climate-finance-small-scale-agriculture/>

**Without digital climate smart agriculture efforts that respond to climate change, smallholder farmers who are already 70% of the world's poor, will find it impossible to improve their incomes, productivity, and resilience.** But despite the immediate climate related challenges farmers' face today, the digital agriculture ecosystem faces several constraints that prevent it from building and delivering solutions that match the scale of the problem. This is due to:

## WHAT IS DIGITAL CLIMATE SMART AGRICULTURE (DCSA)?

Digitally enabled products, services & organizations that aims to support climate smart agriculture activities with mitigation, adaptation and productivity solutions in the face of a changing global climate

1. **Technology transfer barriers:** Many digital climate smart agriculture technologies for addressing climate change have been proven for commercial farming operations and developed world platforms, not emerging markets or smallholder farmer contexts.
2. **Technology gap:** In some cases, there is a technology gap with no relevant provider, solution or software where early-stage innovation has yet to meet the needs of changing agricultural systems.
3. **Limited awareness and capacity:** Farmer facing organisations are actively asking for digital solutions that can support farmers with climate related challenges, but are often unaware of solutions, the potential providers, and their efficacy with their core customer base – smallholder farmers.
4. **Lack of early-stage investment and direct farmer financing:** The pipeline of digital climate agriculture providers is relatively underdeveloped and underinvested, leading to limited choice, competition, innovation, and scale pathways.
5. **Adoption gap:** There is an adoption gap with organisations who serve farmers and farmers themselves of cutting-edge digital tools, climate-smart approaches, and products.
6. **Data:** There is a lack of high quality, real time, field level data required to power intricate climate solutions through machine learning, AI and database-based systems.

**We know from AgriFin's impact research on Safaricom's Digifarm that SHFs prefer bundled solutions that provide services across the value chain on one platform – from digital input credit to learning.**<sup>3</sup> Many AgriFin partners would like to add climate-focused products to those bundles, but they are largely untested. To address these challenges, AgriFin will develop a "DCSA Sandbox" to accelerate the testing and proliferation of market ready digital climate smart agriculture (DCSA) solutions. Many partners would like to add climate-smart approaches to their service bundles but are concerned products are largely untested.

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3. <https://www.mercycorpsagrifin.org/2021/05/26/the-impact-of-digifarm-on-smallholder-farmers/>

## THE DCSA SANDBOX

**Goal:** To bring to market cutting edge, high quality digital climate smart agriculture products and services and to accelerate their deployment to smallholder farmers on the frontlines of climate change.

**How:** A “sandbox” refers to a ring-fenced facility for software developers to develop products in a risk-free environment, and then to bring the effective products to market. In this case the “DCSA” sandbox will be a facility within AgriFin that will:

- 1. Landscape:** AgriFin will deploy its longstanding digital ecosystem development methodologies to fully landscape the DCSA space in each of its target markets, and find key DCSA innovators that could benefit from the sandbox. It will also identify. This will support core AgriFin partners (often the direct to farmer platform) to source value added service provider options for digital climate smart agriculture. AgriFin will invest in rigorous due diligence of these new DCSA innovators of their ability or potential to serve the target markets, core partners and farmers.
- 2. Contextualize and partner:** Sandbox innovators, some of whom provide technologies in different developed world contexts, and others who are struggling to scale in local contexts, will be introduced to markets, partners, and the smallholder farmer context via AgriFin brokerage. This activity will include capacity building of both AgriFin existing partners regarding the climate challenge and these new technology providers as AgriFin builds alliances that improve bundled service offerings.
- 3. Trial, Learn and Graduate:** AgriFin will support adaption and pilots through a fail-fast, design, test and learn methodology with the sandbox participants. Each engagement will include a lean impact or design assessment to learn what works and what needs further support. The promising sandbox innovations will aim to graduate to scale via further AgriFin support and partnerships. Learnings will be shared publicly and across AgriFin’s ecosystem.

## STRATEGIC PARTNERSHIPS

**AgriFin works across our network of 150 farmer-facing partners and leading academic research and design institutions in the climate and technology including NASA, CGIAR, Wageningen University, Pennsylvania State University PlantVillage, International Water Management Institute, and the World Resources Institute.** These partners will play a key role in sourcing and advising the Sandbox climate innovators. They will also be important learning partners. Investors, such as the Acumen Fund ARAF facility and Mercy Corps Ventures, will provide on ramps to new sources of investment for participants in the Sandbox, with follow up through conventional AgriFin programming with the Bill and Melinda Gates Foundation, the Bayer, and Walmart Foundations and GIZ.

## AGRIFIN'S CAPACITY TO IMPLEMENT

**Mercy Corps AgriFin embraces the concept of digital technology as a critical driver of scaled services to the world's smallholder farmers – the most underserved population in the world.** Since 2012, Mercy Corps AgriFin programming has worked to increase farmer productivity, incomes, and resilience by supporting breakthrough innovations leveraging technology, data, financial services, and smart-farming solutions, focused on building sustainable food systems while driving gender inclusion.

**AgriFin is an ecosystem-based program that works through three primary activities:**

- 1. Supporting leading innovators:** Since 2012 AgriFin has supported more than 150 private and public sector partners in Africa – to deploy digital financial and information services via technical assistance, smart subsidies, and learning. These services now reach more than 16 million smallholder farmers.
- 2. Building coalitions and partnerships:** AgriFin strategic partnerships in climate science, earth imaging and agronomy include NASA, NASA Harvest/University of Maryland, Pennsylvania State University/PlantVillage, Google X, CGIAR/CIAT, Wageningen University, the World Bank, Imperial College London, as well local and national government agencies such as ATA Ethiopia and KALRO in Kenya and our ecosystem of investors and direct service providers.
- 3. Distilling knowledge and learning:** In 2019 AgriFin developed our Digital Climate Smart Agriculture playbook to support concrete action around digital climate solutions. Our learning questions gather insights from three pillars: the client, institution, and ecosystem. They are informed by the collection of 'lean data' and indicators formulated with our core commercial partners around specific interventions to deliver digital solutions to smallholders. This allows both rapid iteration of digital services and sector learning from digital climate smart agriculture frontier solutions.

## EXPECTED IMPACT, REQUIRED RESOURCES

**The overall impact of the sandbox will be to accelerate high-quality DCSA solutions for smallholder farmers across AgriFin countries from 2022 - 2026, with the aim to rapidly improve smallholder farmers' incomes, productivity, and resilience in the face of climate change.** To effectively achieve that impact at scale will depend on the resources available to design adapt and test:

- 1. US\$1,000,000** – to support at least 4 DCSA sandbox engagements, focused on early-stage locally sourced technology innovations.
- 2. US\$5,000,000** – to support at least 10 DCSA sandbox engagements both early-stage localized and new, established global technology solutions – supporting technology transfer
- 3. US\$10,000,000** – to support at least 20 DCSA sandbox engagements both early-stage localized and new, established global technology solutions – supporting technology transfer

- *25% of the Sandbox budget will be dedicated to extensive monitoring, evaluation, and learning - to help partners understand which DCSA work for farmers, understand technology gaps and inform the sector about new DCSA solutions.*
- *In addition, the Sandbox operations will cost (staffing and hosting by AgriFin) 1 million USD over four years.*

**If you want to find out more about our work, or are interested in collaborating, please get in touch!**

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**AGRIFIN**

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