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THE CASE FOR SCALING: HARMONIZED DIGITAL FERTILIZER & AGRONOMIC SOLUTIONS (HaFAS), ETHIOPIA

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Ethiopia's agriculture sector, a cornerstone of its economy, employs over 70% of the population, but is hampered by generic fertilizer advice and a \$1.1 billion USD annual fertilizer import bill. Yet, an innovative digital tool offers a solution - the Harmonized Digital Fertilizer and Agronomic Solutions (HaFAS), integrates advanced data to deliver precise, site-specific fertilizer and agro-advisory recommendations. The innovations' bold ambition to reach 6.85 million farmers by 2040 (including 2.05 million women and 2.74 million youth), would boost national cereal production from 31.6 million to 140 million metric tons and enhance food security and economic resilience.



The Challenge: Unlocking Ethiopia's Untapped Agricultural Potential

- **Suboptimal Fertilizer Use:** Generic recommendations lead to misapplication, wasted inputs, and low nutrient use efficiency.
- **Potential Crop Yield Gaps:** due to inefficient practices.
- **Climate Vulnerability:** necessitates adaptive advice.
- **Advisory Service Disparity:** Women farmers have 41% less access.



The Innovation: HaFAS – A Precise, Evidence-Based Digital Solution

- **Core Tool (LAFA):** Unifies disparate digital solutions (NextGen Fertilizer Advisory System, LANDWise) into a coherent, modular platform.
- **Data-Driven Precision:** Leverages national soil databases, remote sensing, and on-farm trials for precise, localized recommendations.
- **Multi-Channel Accessibility:** Designed for broad reach via dashboards, chatbots, IVR, mobile/web apps, and SMS.
- **National Alignment:** Directly aligned with Ethiopia's Digital Agriculture Roadmap 2032 and national strategies.



A Demand-Driven Solution: Responding to Local and National Needs

- **Validated Effectiveness:** Field validations in 2024 with 1,570 farmers confirmed its utility, increasing yields and farmer profits.
- **Proven Track Record:** Constituent tools (NextGen, LANDWise) have documented success in enhancing farmer productivity and profitability.
- **Governmental Alignment:** Strong alignment with Ethiopia's Digital Agriculture Roadmap 2032 signals robust governmental demand.
- **Addressing Critical Gaps:** HaFAS directly meets an unmet demand for precise, localized agronomic advice.



A Compelling Economic Case: High Efficiency Gains and Returns on Investment

- **Exceptional ROI for Farmers:** The LANDWise tool (a component of HaFAS) shows optimal ROI, with net profits of \$10.0, \$12, and \$30 for teff, wheat, and sorghum, respectively, per \$1.0 invested.
- **Substantial Farmer Profit Gains:** Smallholder farmers using HaFAS framework realized overall profit gains from \$183 to \$665 per hectare per season, alongside yield increases of 16% to 53% (across teff, wheat and sorghum).
- **Improved Nutrient Use Efficiency:** from 32% to 45%.
- **Projected National Economic Impact:** A 10% adoption rate among wheat and teff producers alone is projected to generate \$27.6 million annually for Ethiopia.



Scaling Pathways and Partnerships: Collaborative Impact at Scale

- **Short-to-Medium Term (by 2031):** Develop 5 distinct advisories; increase on-farm performance to over 90%; expand coverage to 6 crops.
- **Long-Term (by 2040):** Achieve full Scaling Ambition targets to reach 6.85 million farmers (50% of fertilizer users for cereals), including 2.05 million women and 2.74 million youth, boosting national cereal production from 31.6 million to 140 million metric tons.



Investing in Resilience: Funding & Sustainability

The long-term vision is a sustainable financial model where HaFAS service costs are embedded into agricultural input prices, reducing reliance on external funding. The investment and resource requirements to take this innovation to scale include:

- **Financial Investment:** from public sector partners for piloting and early scaling.
- **Operational & Maintenance Capacity:** human and infrastructure resources needed to keep the digital services running and supported.
- **Feedback & Monitoring Systems:** user feedback and tracking performance data.
- **Partnership Frameworks:** to foster and strengthen stakeholder collaboration
- **Enabling Policy Environment:** to ensure necessary policy and regulatory support.
- **Digital Content & Platform Development:** Technical teams, data scientists, agronomists for creating new advisories and continuously improving the platform.
- **Data Collection & Integration:** management of various datasets.
- **Extension & Dissemination Capacity:** Trained personnel and tools to integrate digital advisories into existing agricultural extension systems and deliver to farmers on the ground.



Dynamic Partner Ecosystem:



Research & Development:

ICRISAT, Alliance Bioversity International
CIAT, CGIAR
(innovation, tool development, validation).



Public Sector:

Ministry of Agriculture, EIAR, National Platform MELIA (financial support, strategic oversight, policy, extension integration, data management).



Private Sector:

LEERSHA, OCP, Ethiopian Agricultural Business Corporation (EABC)
(Input/Tech/Service Providers for bundled inputs, platform contributions, data, business model investment).



Local Level Actors:

Extension Agents, Farmers (on-the-ground dissemination, training, validation).



Future Partnerships:

Private businesses entering the extension service arena, telecom providers like Ethio Telecom and Safaricom for digital infrastructure, and financial institutions for credit and insurance services



Transform Ethiopia's Agricultural Sector

HaFAS is a powerful, data-driven solution uniquely positioned to transform Ethiopia's agricultural sector. It offers proven economic returns for farmers—generating up to \$30 net profit per \$1 invested and \$183-\$665 profit/hectare—alongside significant potential yield increases of 16-53%. This initiative is poised to reach 6.85 million farmers and elevate national cereal production to 140 million metric tons by 2040.

With a validated solution, clear economic benefits, and a robust partnership ecosystem, HaFAS is ready for expansion. This innovation represents a strategic opportunity to support a future where Ethiopian farmers thrive, food security is enhanced, and sustainable agricultural growth becomes a reality. Contact Gizaw Desta for more information (D.Gizaw@cgiar.org)