

INNOVATION DAY

at IFAD '22



INGREDIENTS FOR INNOVATION: THE EMERGING DIGITAL AGRICULTURE REVOLUTION IN KENYA





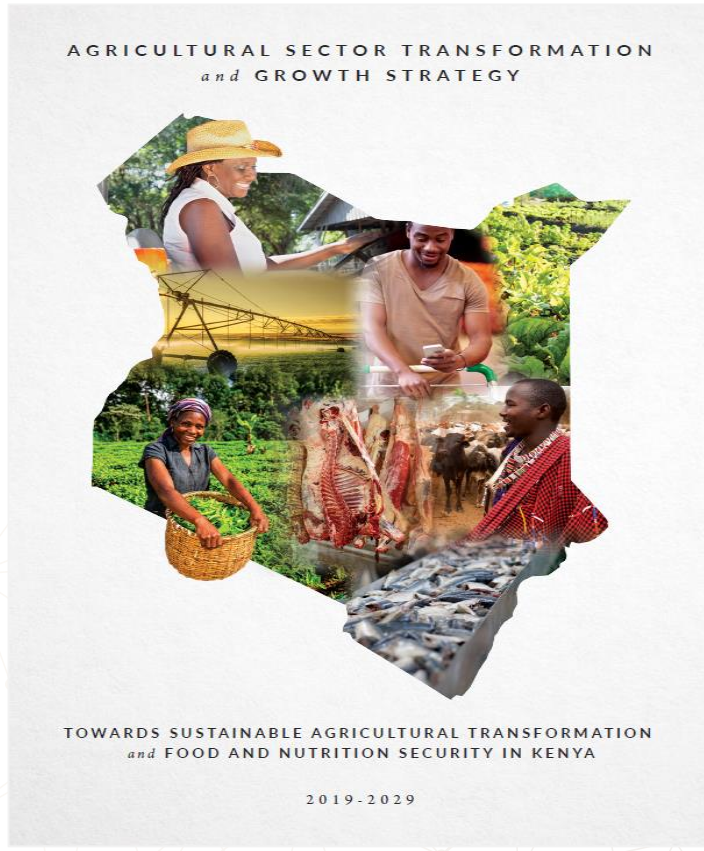
Digital Transformation in Agriculture

Pathways to Digital Interventions –
Perspectives for More & Better Data for
Transformation

Thule Lenneiye
ATO Coordinator



The Data & Digital Innovation of Kenya's Agriculture Sector Data is anchored on the 10-year ASTGS, which aims to support 100% food security



ASTGS anchors and targets for first 5 years

Increase small-scale farmer incomes¹ of ~3.3mn households and impact ~15 mn² Kenyans

Increase food available year-round by unlocking > 500,000 acres of agricultural production and agro-processing across priority value chains (~KES 400Bn GDP boost across economy)

Boost household food resilience especially for the most vulnerable (~ 4mn during emergencies, 1.3mn chronically):

- **reduce by 100%** the number of **food insecure Kenyans**
- **reduce the cost of nutritious food**

A vibrant, commercial and modern agricultural sector that supports **100% food security in the context of devolution** by ensuring access and availability of nutritious food, at affordable prices for entire population

The ASTGS identified 9 flagships to drive these outcomes. Detail follows

¹ Over the past ~10 years, incomes have grown 35%, below the pace required to meet SDG goal of doubling incomes between 2016-2030. If incomes are 145k today (~KES 400/day), without transformation in 5 years should grow to 170k (~KES 465/day) based on historical trends. Transformation is estimated to contribute an incremental ~30% to 230k (~KES 625/day) | ² Assumes ~4.5 people per household

ASTGS Flagship 8



Enabler FLAGSHIP 8 seeks to strengthen research and innovation and launch priority digital and data use cases to drive better decision-making and performance management.



The main activities to achieve this would include among others the Creation of an enabling environment for research and innovation with clear linkages between data, research and innovation.



To ensure that agriculture continues to play its critical role in socio-economic development, there is need for Data to provide insights and innovative technologies for overcoming challenges along the value chains and increase productivity.



Similarly, agricultural research and data is necessary for re-engineering agricultural systems to ensure resilience during emergencies such as COVID-19.

Rationalization for Data & Digital Interventions



The ASTGS flagships must overcome 3 big challenges to ensure the right research, innovation and data is available to guide decision-making:

Low investment in research and innovation space in agriculture, including big data and advanced analytics (AA)

Poor access to useable and shareable data;

Insufficient demand for quality analyses to support evidence-based decisions on performance management, monitoring and evaluation, research and policy



A more targeted approach to research and innovation will improve data collection, data analysis and ultimately create more links between research and action on the frontline and informed decision making.



Digital Strategy – 7 Digital Use Cases

ASTGS Anchor Digital use cases to champion until 2023, in line with ASTGS

Increase SSF income



- 1 Accelerate farmer registration and target eligible farmers with e-incentives, using digital tools and analytics to improve tracking, and payment direct to providers¹
- 2 Improve farmer practices (e.g., input use) by providing farmers with customized e-extension that incorporates current and predictive data (e.g., agro-weather analytics, pest/disease trends, prices)

Boost household food resilience



- 3 Monitor emergency food reserve stocks with digital tools (e.g., 1D barcodes); then improve overall national Food Balance Sheet (FBS) data to determine future quantity of stock to buy (e.g., use satellite data, predictive analytics on production, trade, climate)
- 4 Make more dynamic trade and price stability decisions using the digital Food Balance Sheet & an Early Warning System (EWS) for food price inflation
- 5 Improve value chain selection with an agricultural land optimization model² that responds to specific outcomes (e.g., job creation, GDP contribution), and incorporates climatic expectations & resilience data

Cross-cutting support



- 6 Drive M&E with a dashboard to streamline data collection, and verification of ~10 transformation KPIs³ linked to the use cases
- 7 Establish standards and protocols for a shared data platform to facilitate more evidence-based interventions across all players⁴

Digital tools alone are insufficient to solve all the challenges identified on prior page. But they will support more holistic solutions (see ASTGS flagships)

1 Use case should start focused on existing farmer profiles from on-going government programs (e.g., KCSAP, NARIGP), as complete more holistic Huduma and National Census process for farmer registration | 2 Integrate yield, weather / climate and soil data | 3 For example, yield by commodity by location, compared to target | 4 Should start with government agencies (e.g., ZIAMIS in Zambia), then expand to development partners and private sector players as establish data interoperability standards and protocols



Digital Transformation Roadmap

Data Integration

- Unified data platform
- Data governance framework

Reporting

- Data driven decision making supported by analytics and reporting

Information Security

- Data and security policies
- Access control management

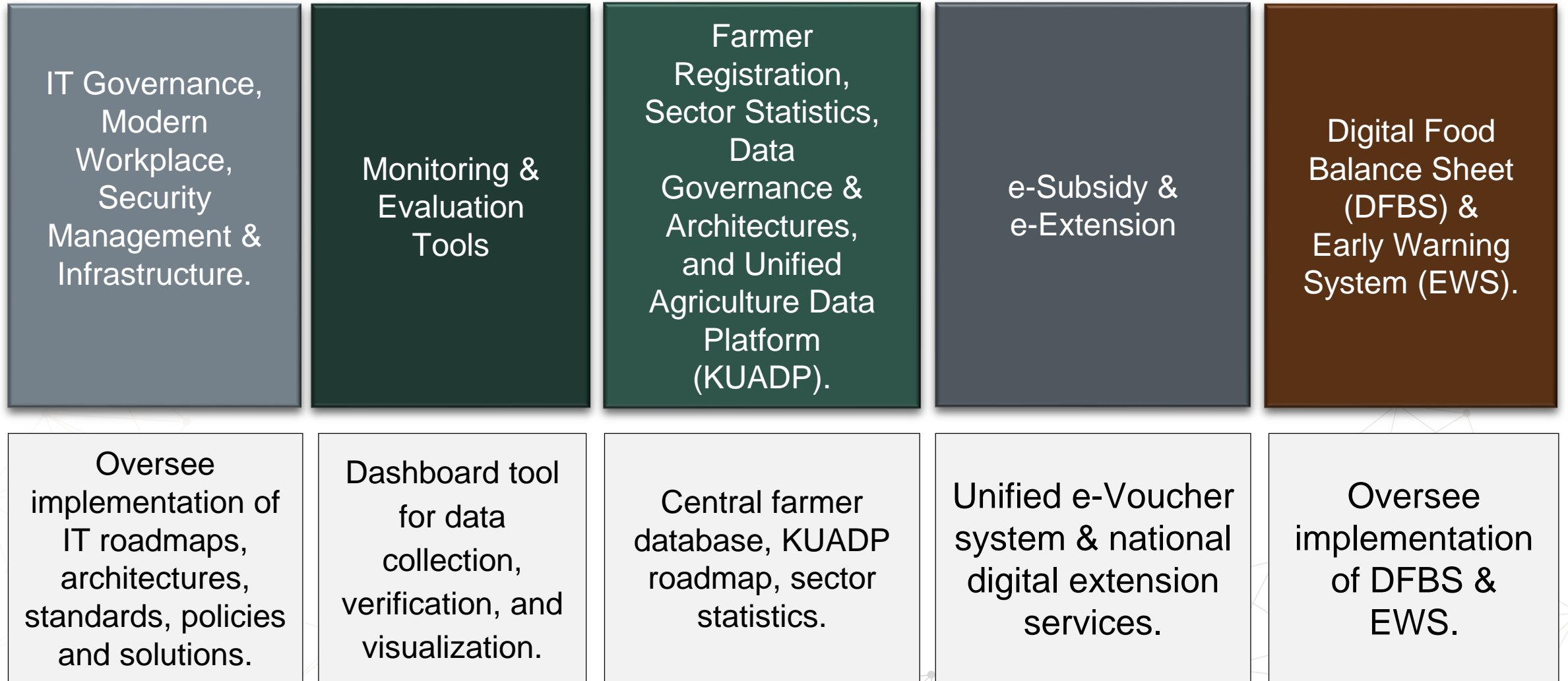
Infrastructure

- Utilization of modern infrastructure & equipment

Capacity Building & IT Governance

- Setup digital transformation team (DTC)

Digital Transformation Committee



Data Governance Framework

DATA GOVERNANCE FRAMEWORK PILLARS

Key Considerations

- Data Governance Council
- Data Privacy by Design
- Data Protection and Security Guidelines
- Data Protection Impact Assessment -DPIA
- Data Catalog, flow mapping, monitoring processes



Deliverable 1: COVID-19 FSWR engaged & coordinated ~50 stakeholders; KUADP brings this same model for coordination to Data & Digital Innovation

Development partners and NGOs



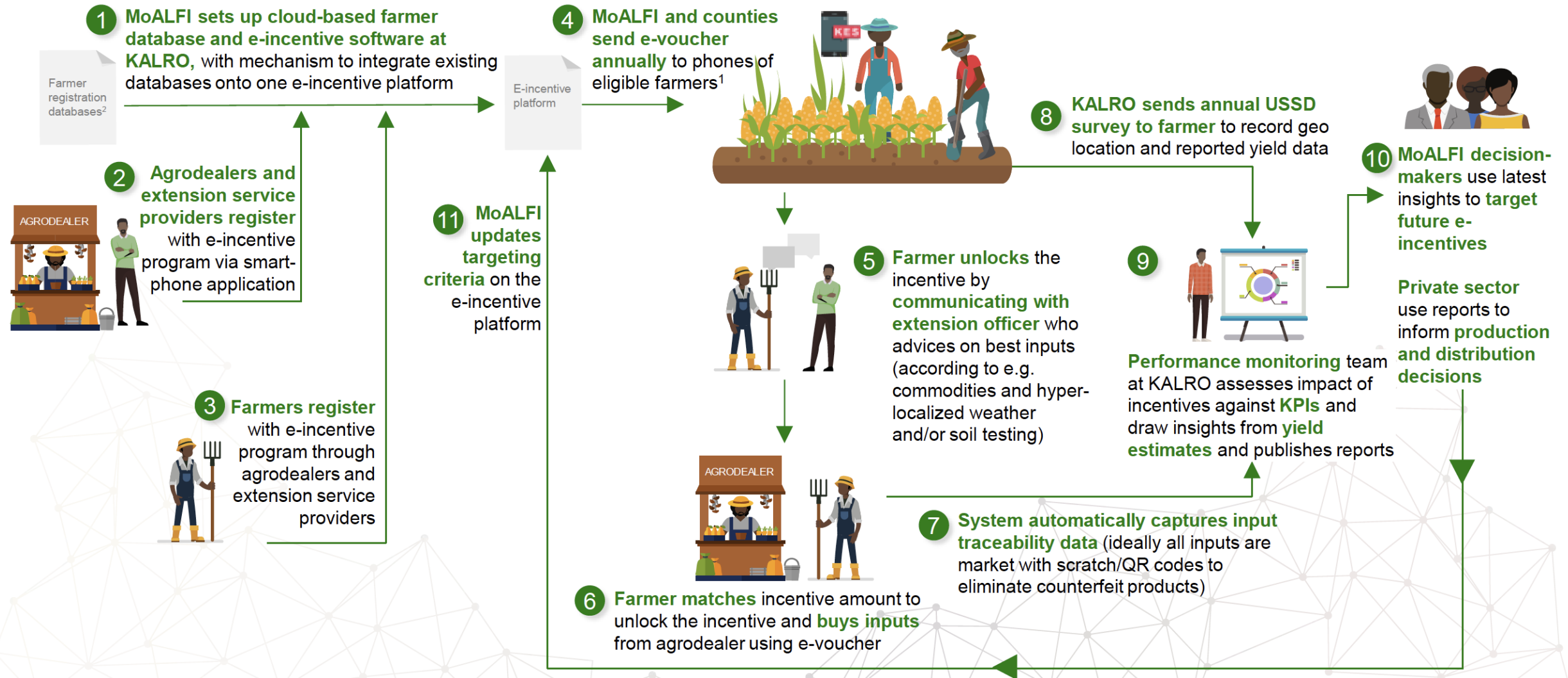
Private sector players



Government agencies and Associations



Deliverable 2: E-Voucher Programme



1 Eligibility criteria may include e.g. farmers with <0.5Ha land, <KES 150,000 income per year
 2 E.g. KCEP CRAL and E-input subsidy (DigiFarm) programs
 3 See proposed partnership framework

Deliverable 3: The Kenya Integrated Agriculture Management Information System (KIAMIS)



Vision

An information management platform based for provision of value add services.



Key Modules

Farmer Registration



E-Voucher



E-Extension



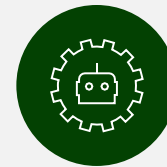
Agricultural Statistics



Food Security & Early Warning



Others



Key enablers

County enumerators

Unified subsidy system

Devolved extension

Routine data collection

Data & Models

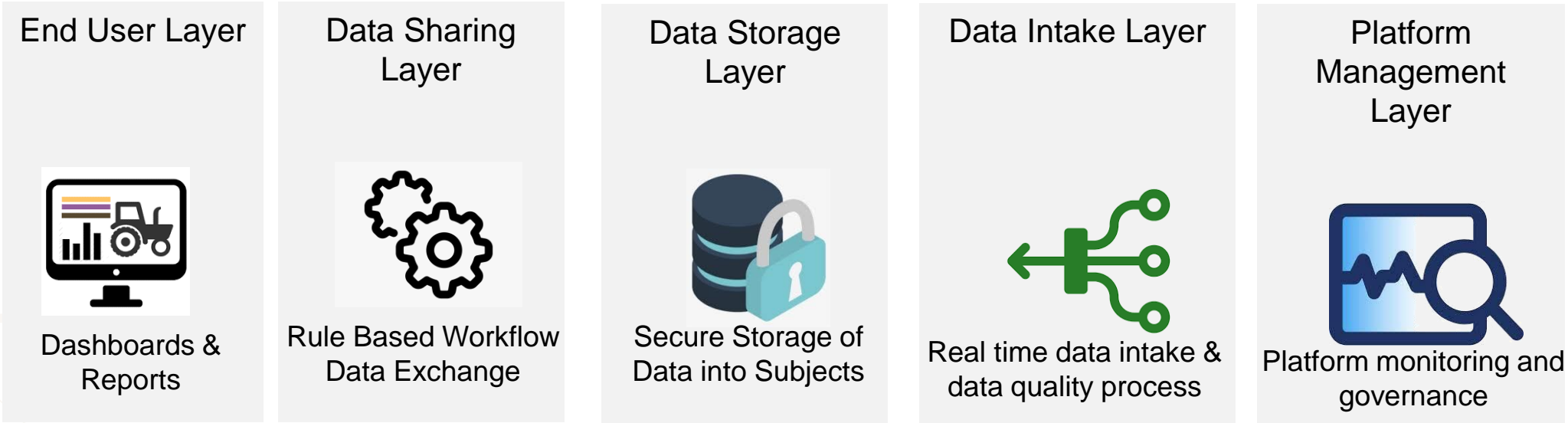
Deliverable 4: Kenya Unified Agriculture Data Platform (KUADP)



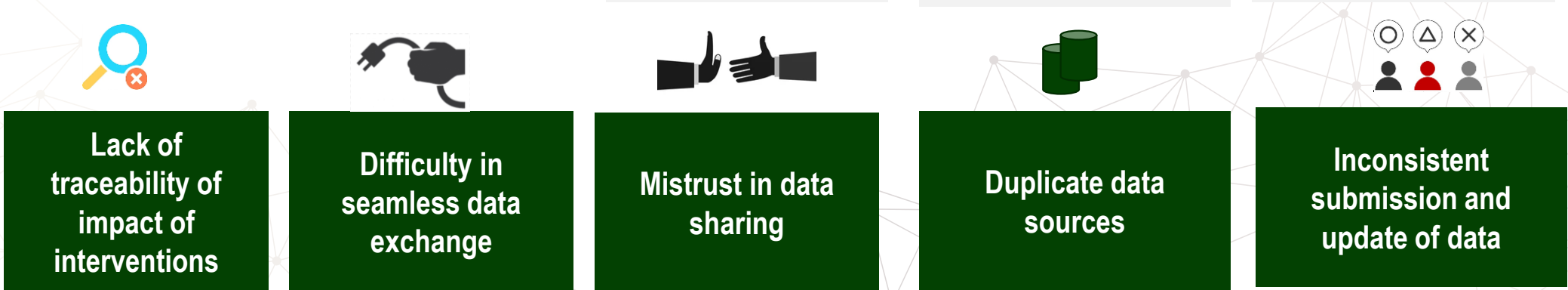
Principles

Customer-Centric | Adaptable | Secure | Smart | Automated | Simple | Governed

Design



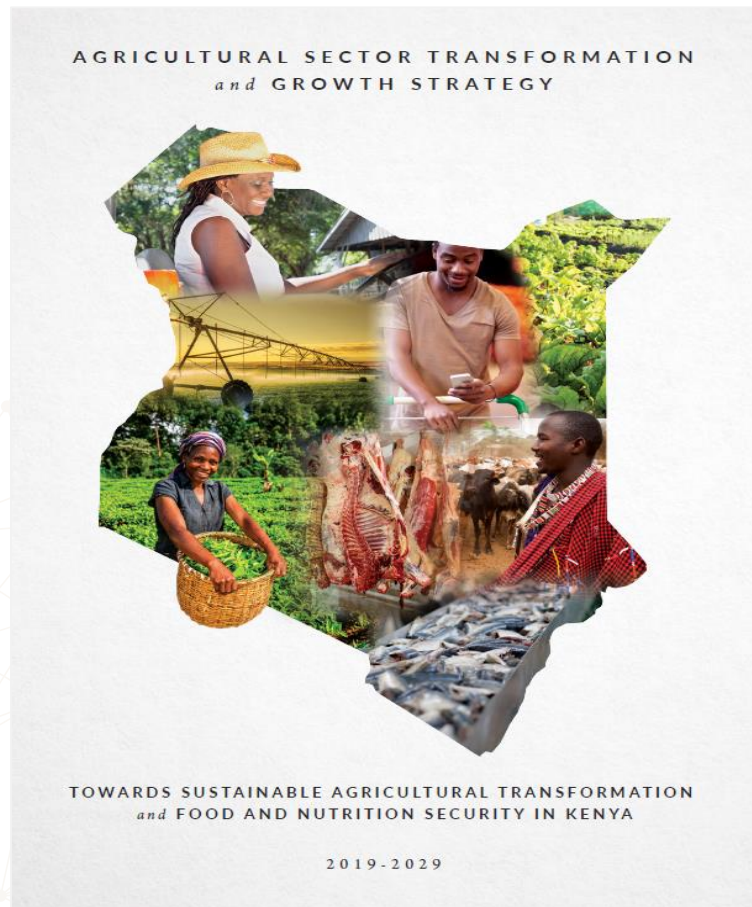
Pain fixed



Building Resilience in Ag Data & Digital Interventions:– What we Have Learned and What Needs to be Done



Challenges & Solutions



Skills



Current level of skills are limited; both retooling & increased collaboration with the private sector required

Support the development of national data systems, statistical capacity, and digital skills that enable countries to meet and monitor their priorities

Enabling Environment



Steering Committees are temporary, there needs to be a more comprehensive enabling environment with our ICT counterparts & Private Partners

National data strategies for collaboration on agri-food system data, including guidelines for data sharing and use, legal mandates, and the roles and responsibilities of different actors in the data value chain

Collaboration/ Partnerships



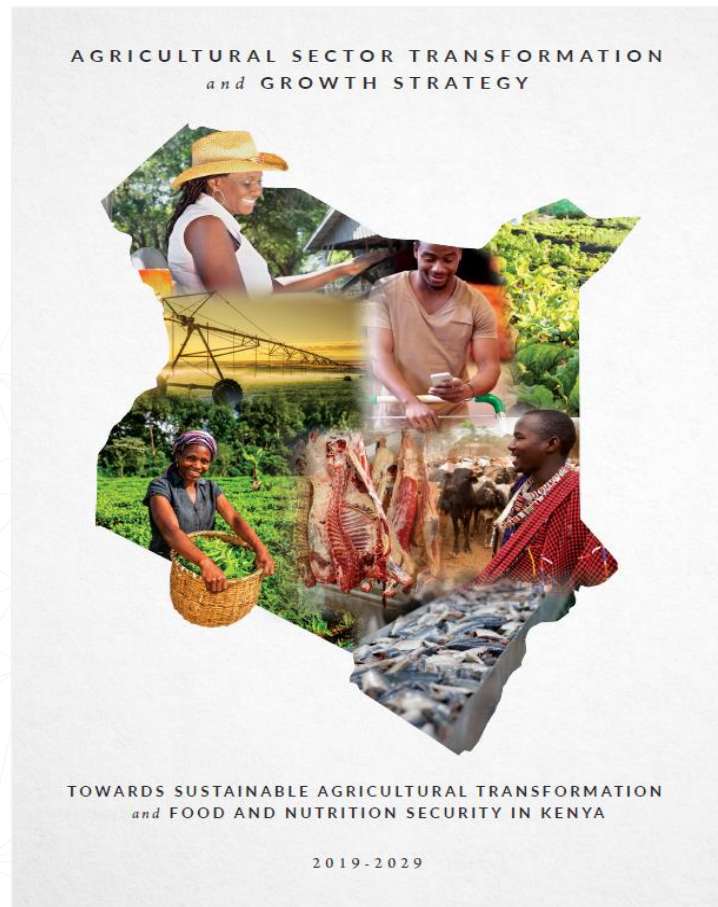
Longer term Partnerships and Collaborative interventions are required to support continued digitization & data automation within the sector

An inclusive and multi-stakeholder approach that strengthens data governance and sharing, and establish mechanisms for feedback on data quality and dissemination mechanisms that ensure that information produced on agri-food systems meets users' needs

Building Resilience in Ag Data & Digital Interventions:– What we Have Learned and What Needs to be Done



Challenges & Solutions



Innovation



Deploy more flexible engagements to allow for through-flow of innovations & innovators to and within Government

Sustainability



Resource availability and realigning of budgets towards creating a robust digitally enabled work environment conducive for a Data Driven policy development

Alignment of data collection and capacity strengthening activities by development partners with countries' priorities

Explore options for improving donor harmonization on results-monitoring frameworks to avoid duplication and facilitate coordination

Awareness among senior decision-makers within their organizations at the national and county levels on the value of data and the benefits of investing in robust national data and statistics systems



Thank You!



Kenya World Bank Agriculture Portfolio

June 27, 2022



Structure of the Presentation

- **Progress Overview - The Portfolio, Scale and Initiatives**
 - Productivity Enhancement
 - Research – Extension Linkage
 - Data and Digital
 - Market Linkages
 - Community institutions and Mobilization

Portfolio

778 Million USD
All 45 rural
counties

National Agricultural & Rural Inclusive Growth Project (NARIGP) : 200 Million USD, Covers 21 counties

Kenya Climate Smart Agriculture Project (KCSAP) : 250 million USD, covers 24 counties

Emergency Locust Response Program, Kenya (ELRP) : 78 Million USD, Covers 15 Counties

National Agriculture Value Chain Development Project (NAVCDP): 250 million USD, Cover 26 counties

1.1: Productivity Enhancement

1.2 Million Farmers mobilized into approx. 50,000 Farmer Groups (15 to 25 farmers) across 19 value chains in 45 rural counties

19,000 Farmer Groups (approx. 350,000 farmers) have already received nearly **10 Billion KSH of Investments in the form of Micro Projects**

Hybrid Extension Architecture consists of County Technical Teams, External Service Providers (NGOs and other agencies) and Community Extension Workers (called *Lead Farmers/Community Facilitators – 22,000 of them*)

300 investments at the county level related to NRM, SLM, Water and market infrastructure with the objective of enhancing productivity & market linkages

1.2 Research Extension Linkages- Investment at KALRO

- **900 Technologies Innovations and Management Practices (TIMPS) across 19 value** chains are ready for upscaling. 252 additional TIMPS are being validated and 140 likely to be released. These have been fully digitized and several of them are being disseminated to the counties
- **Nearly 10,000 Trainer of Trainers** have been provided with training
- **Aspiration is that each of the 1.2 million farmers** need to be provided with TIMPs training
- Implementation of the **51 adaptive research projects (Crops Livestock, NRM, Socio- Economics) is on** in 24 counties and 286 wards. Hosted by **462 CIGs with a membership of nearly 20,000 farmers.**
- **250 CIGs are undertaking commercial seed production** across 4 value chains namely Potato, Banana, Tomato and Finger Millet
- **2300 MT of early generation seed/certified seed** has been produced which will significantly improved seed availability among farmers.
- A total of **90 scholarships (54 MSc and 36 PhD) have been awarded** under the component.

1.3 Market Linkages

- Common Interest Groups are being linked to Producer Organizations that are providing market linkages
- **Investment of nearly 800 million KSH into 325 Producer Organizations** to mobilize new members and federate CIGs/VMGs to the Producer Organizations completed.
- **Expected Investment of 1.5 Billion KSH to nearly 250 POs for Enterprise Development Plans** to enable them access to:
 - Investments for processing and market infrastructure
 - Working capital
 - Institutional strengthening
- These **POs are emerging as community owned commercial entities that are providing agribusiness services** and market linkages for farmers across value chains.

1.4 Big Data Platform & Other ICT Applications

With support from World Banks' investment project, Kenya Agriculture and Research Organisation (KALRO) has developed the **Big Data Platform & the Kenya and Agricultural Observatory Platform (KAOP)**

Kenya Big Data Platform

Kenya Ag Observatory

Desert Locusts warning and response

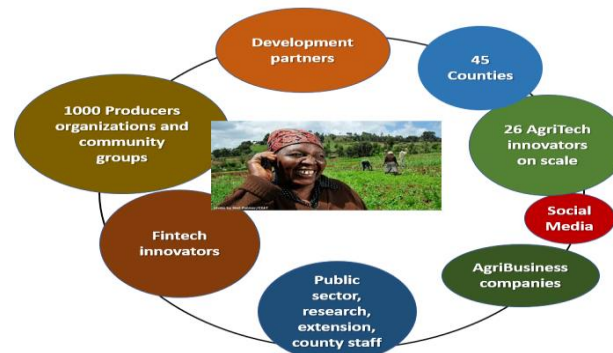
Farmers Digital Registry and Farm Geotagging

1.1. million Farmers Digital Registry
A digital database including geo tagging of the farms

Digital Food Balance Sheet



One Million Farmers Platform



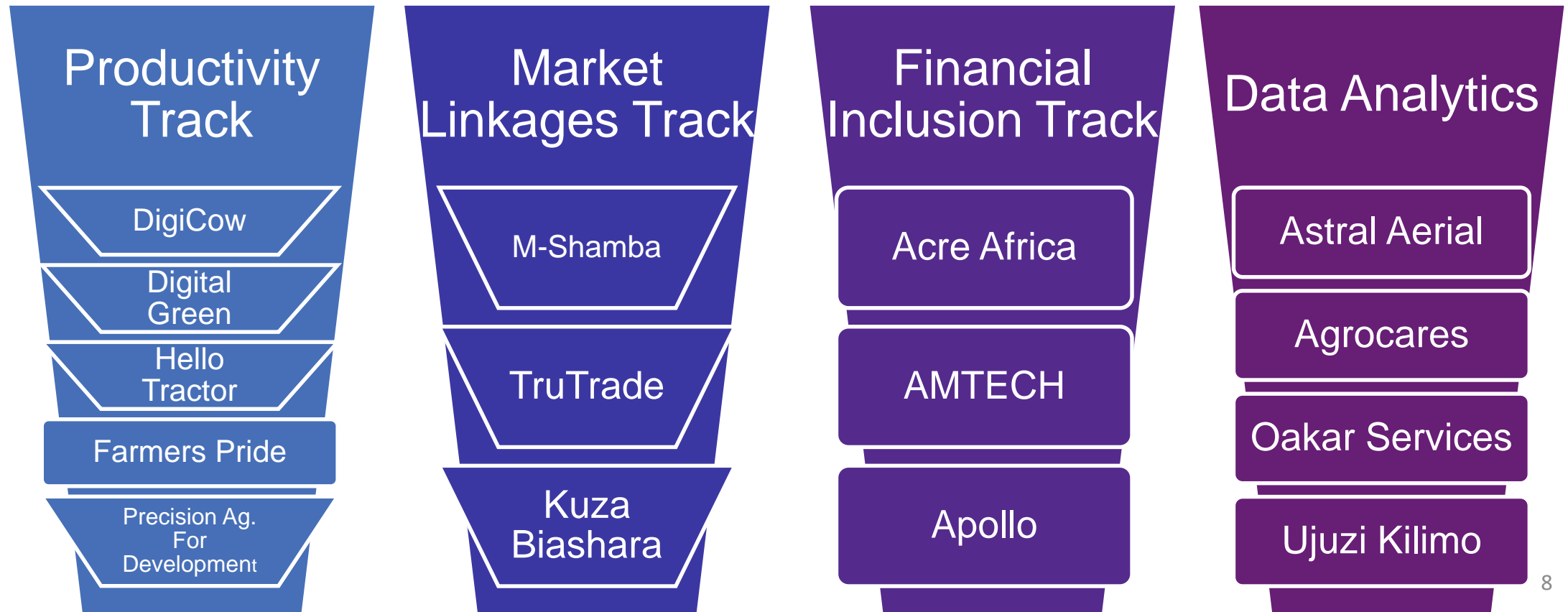
Digital e-voucher system



World Bank is also providing technical support to the e-voucher roll out, digital food balance sheet and other applications of the ICT

1.4 One-Million Farmer Platform (OMFP) - Current Cohort Members & scale

- One Million Farmer Platform launched in April 2019 through an innovation challenge and facilitated partnerships between **16 County governments and 14 Agriculture Tech Start ups /Innovators** and County Government
- **Currently 27 AgTech start ups** and innovators providing Data-driven Digital Agriculture solutions and services through partnerships **with 26 County Governments**
- **Reached 300K Farmers achieved to date using digital tools through the platform** in under one year.

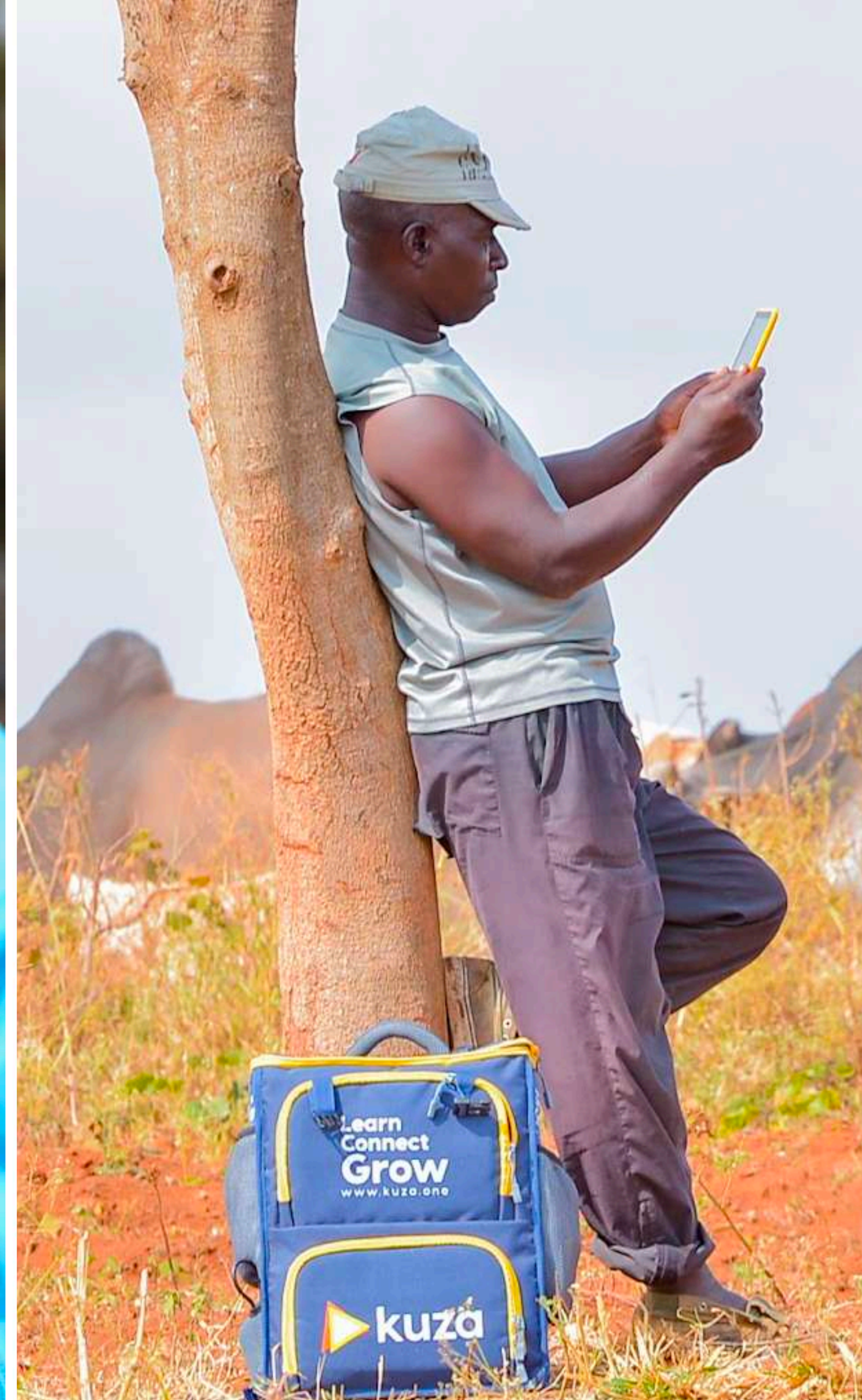


1.5 Community Institutions – Ensuring Sustainability

- **620 Community Driven Development Committees** (CDDCs – One in every project ward) that have been established and registered with dedicated bank accounts.
- **These CDDCs are expected to last beyond the project period** and ensure that project farmers can continue accessing a range of input services and financial services extension and market linkages.
- **Creation of a SACCO within every CDDC** (process only initiated recently) to enable access to financial services for farmers
- **556 Producer Organisations** (POs- at least typically 10 in every project county) established/ strengthened.
- These POs will ensure market linkages, input services and extension services with modern HR architecture

Thank You





revolutionizing

the resilience of
smallholder farmers through
Digital Agripreneurs

Sriram Bharatam
Founder & Chief Mentor

Sri@Kuza.One

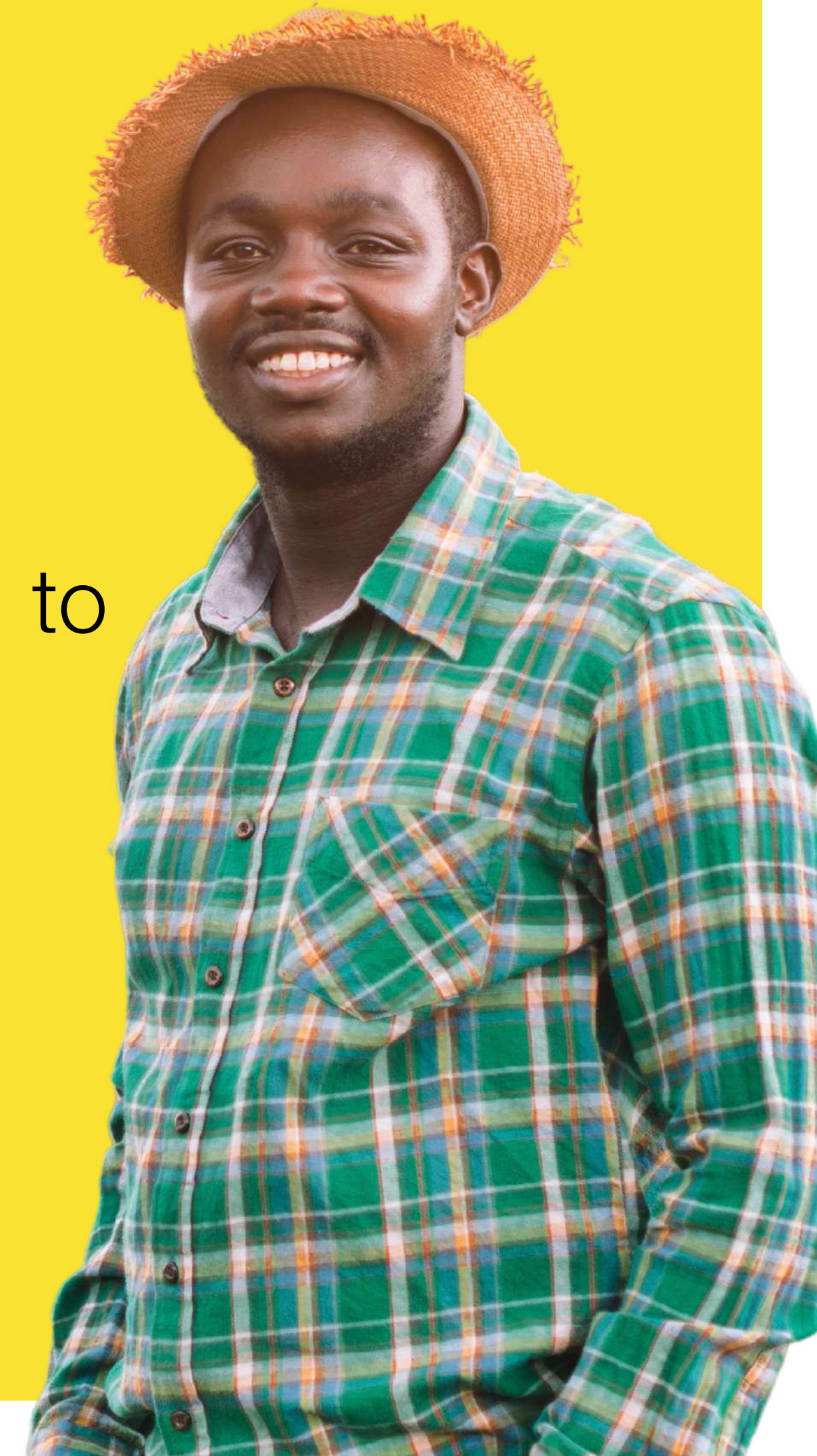


www.kuza.one





Creating opportunities for
Youth, Women & Small business owners to
Learn, Connect & Grow @Scale.



Focus Areas



Agriculture



600,000
Farmers Network

4,000
Agripreneurs



Health

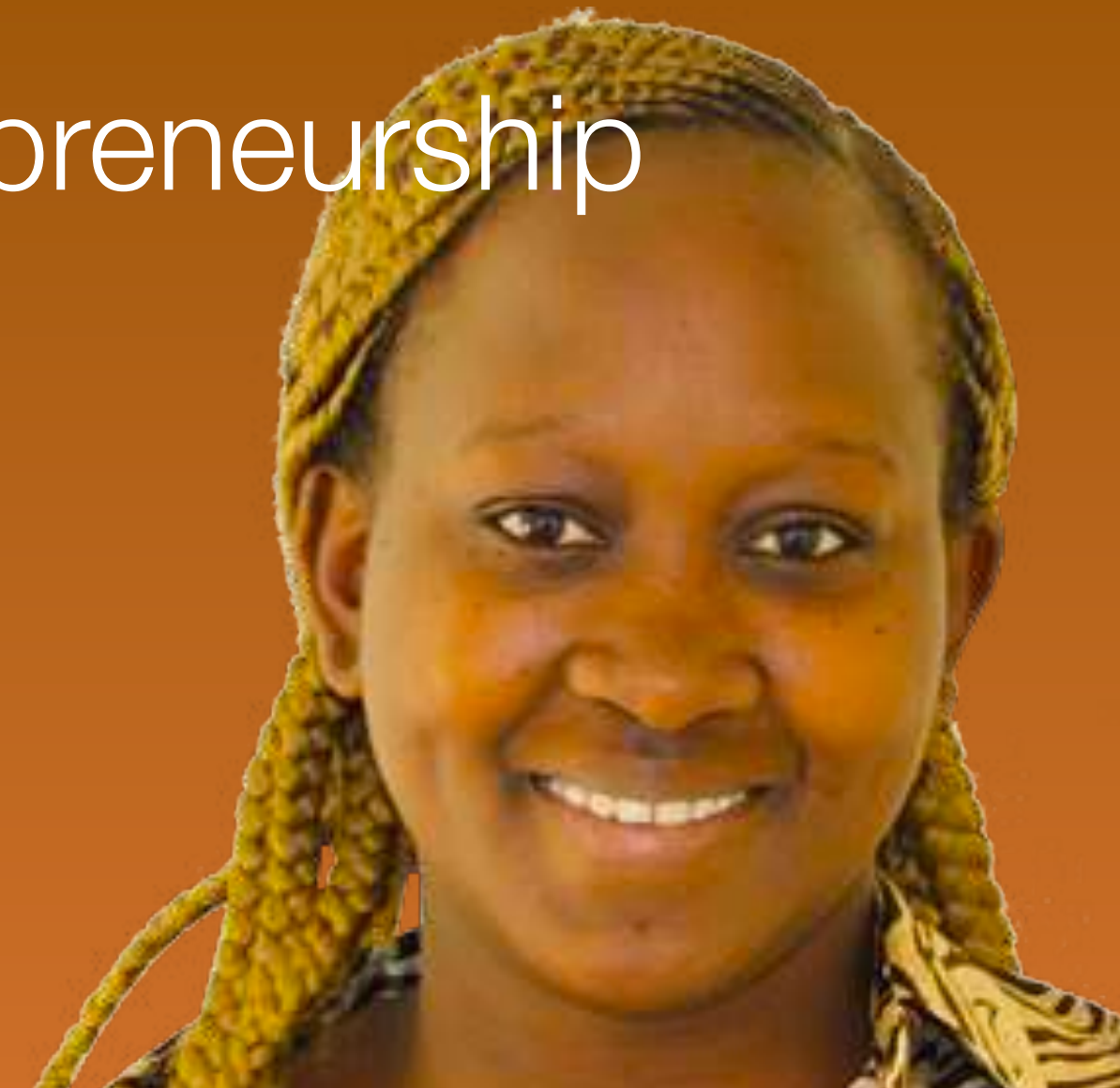


3,700,000
Care Seekers

1,000
Health Workers



Micro Entrepreneurship



314,000
Youth

229,600
Women



“Lack of rural opportunities is forcing Youth to become Entrepreneurs by default not by design.”

Lenah Mwangi
28 years, Kenya

Challenges of Smallholders

- Poor public extension services
- Access to quality inputs & credit
- Access to markets

Joseph Ngugi
70 years, Farmer



Joe Kamau
MNC Executive

Challenges of Service Providers

- Dependable channel for extension
- Supply & Demand forecast
- Supply chain Traceability





Digital Extension Services



Micro Learning
Digital content to provide technical and leadership skills.

10,000+ bite-sized HD video content in 10 languages covering 40 crops, livestock, social and business skills.



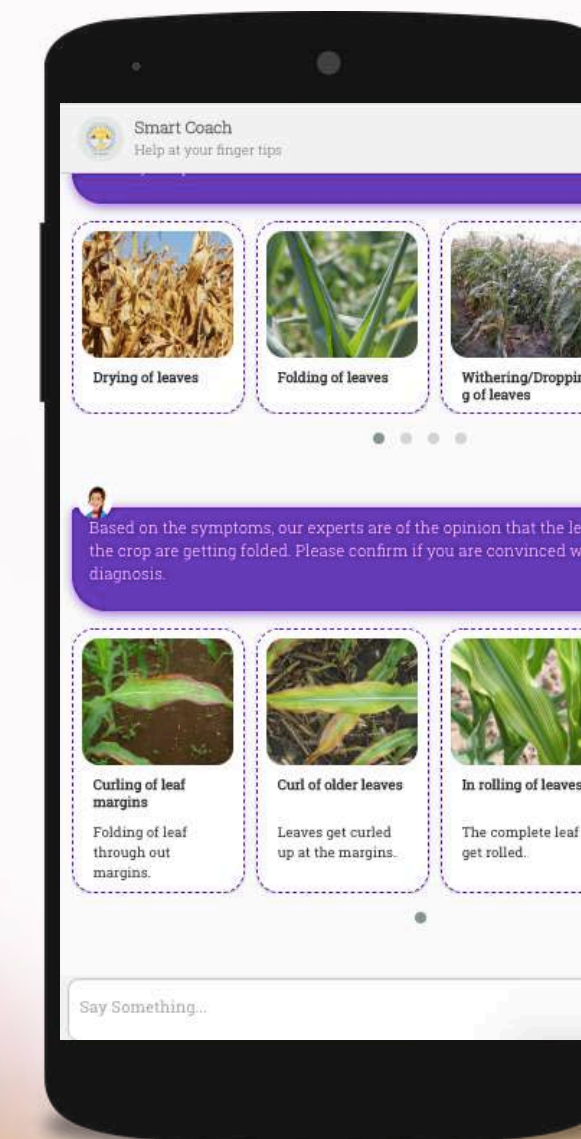
Micro Distribution
Portable digital kits to provide advisory & transaction services.

Agripreneurs provide on-demand rural advisory & info. services to smallholder farmers in remote locations with low or no access to internet & other infrastructure.

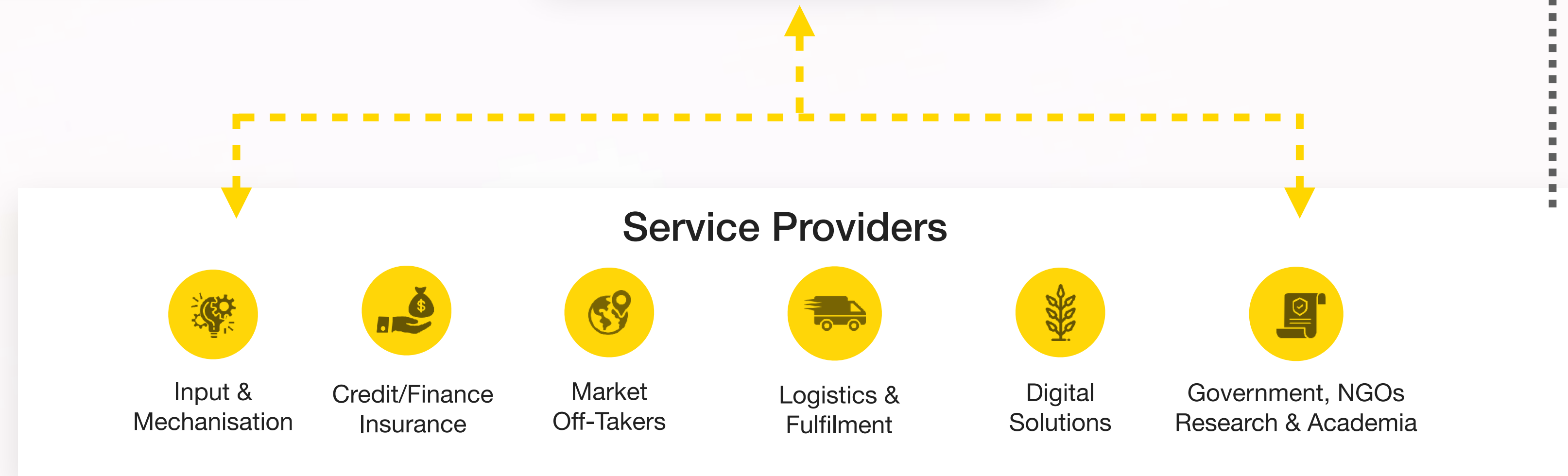


Micro Mentoring
24x7 self service mentorship services across digital channels.

Conversational AI bots provide in-the-moment crop advisory & bite sized knowledge nuggets to farmers & their families in local languages / dialects.







---▶ Money
▶ Value





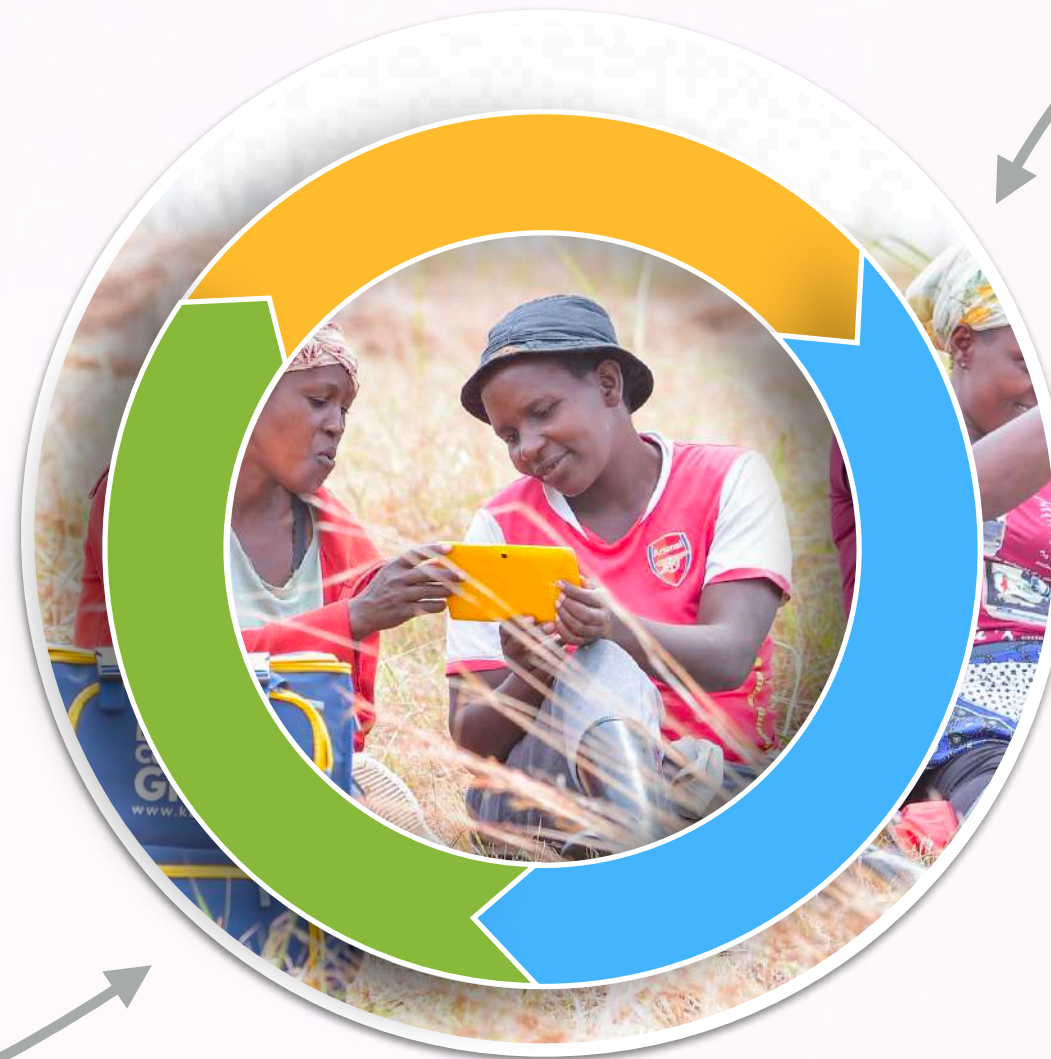
MANDELA
WASHINGTON
FELLOWSHIP
FOR YOUNG AFRICAN LEADERS



1
Build
Individual
Mastery



2
Develop
Community
Capacity



3
Grow
Network
Strength





750,000

Small Farmers
05 countries

\$25m

Marketplace
Transactions

153,321

New Jobs
Created

Kuza's last-mile Network of Youth Agripreneurs is growing Exponentially.



2022

4,000
Agripreneurs



2020



2018



2017



2016



Agripreneurs Income Streams



Sale Of Inputs Seeds, Fertilizers, Pesticides, Herbicides Etc.,



Aggregation of Farm Produce



Specialized Services Like Soil Testing, Mechanization Services, Spraying, Threshing, Harrowing.,



Aflatoxin Testing



Quality Control For Moisture Content Testing



Post-Harvest Handling Services



Sale Of Other Products Like Tarpaulins, Hermetic Bags Etc.,



Financing Credit

When people adopt technology, **they do old things in a new way.**



Robert Mwangi
Lare, Nakuru
Bio Fertilisers



Adam Muriithi
Leshau Pondo, Nyandarua
Spraying as a Service



Lenah Mwangi
Njoro, Nakuru
Input Shop



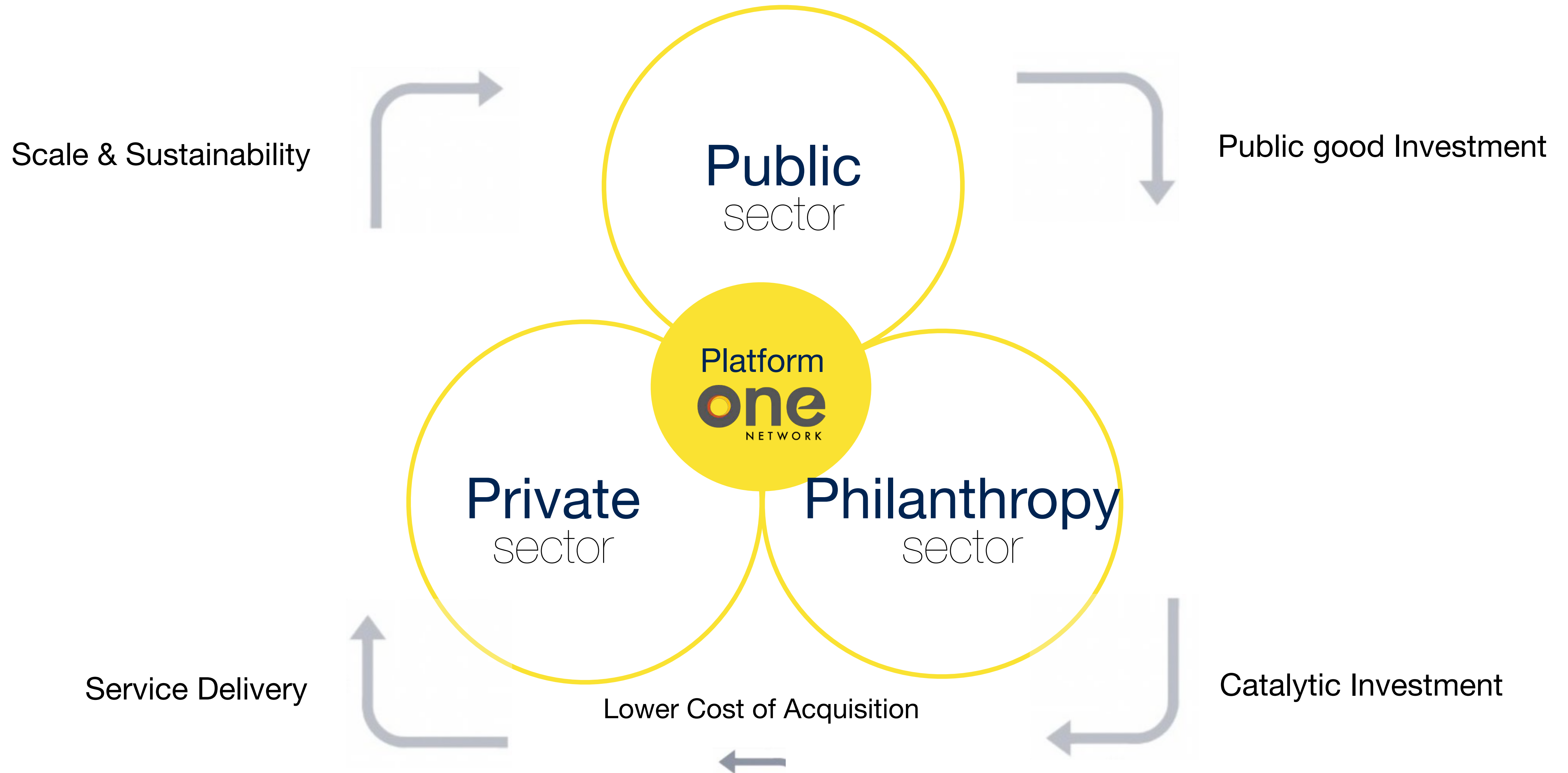
Joseph Ndirangu
Mau Narok, Nakuru
Apical Cutting

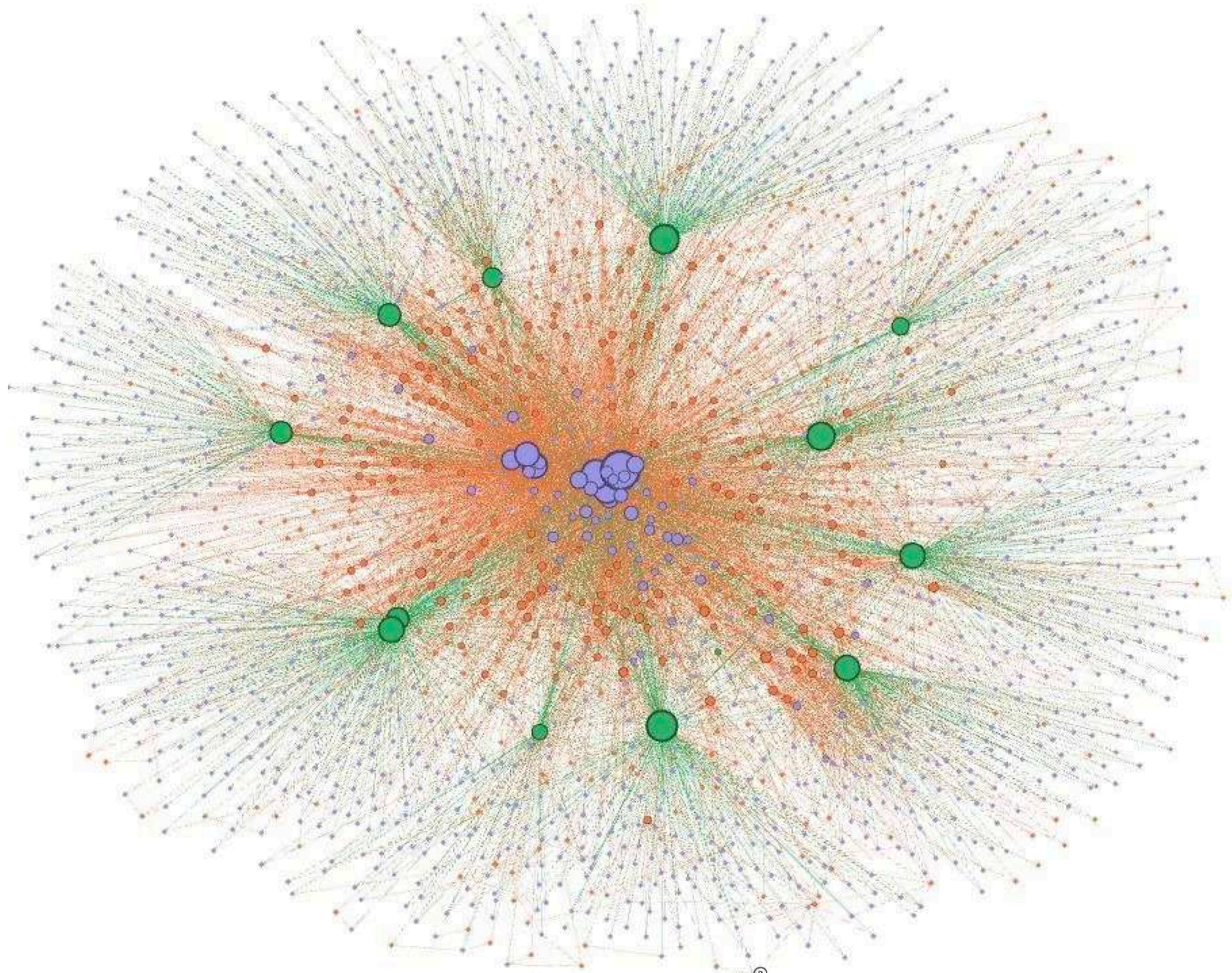


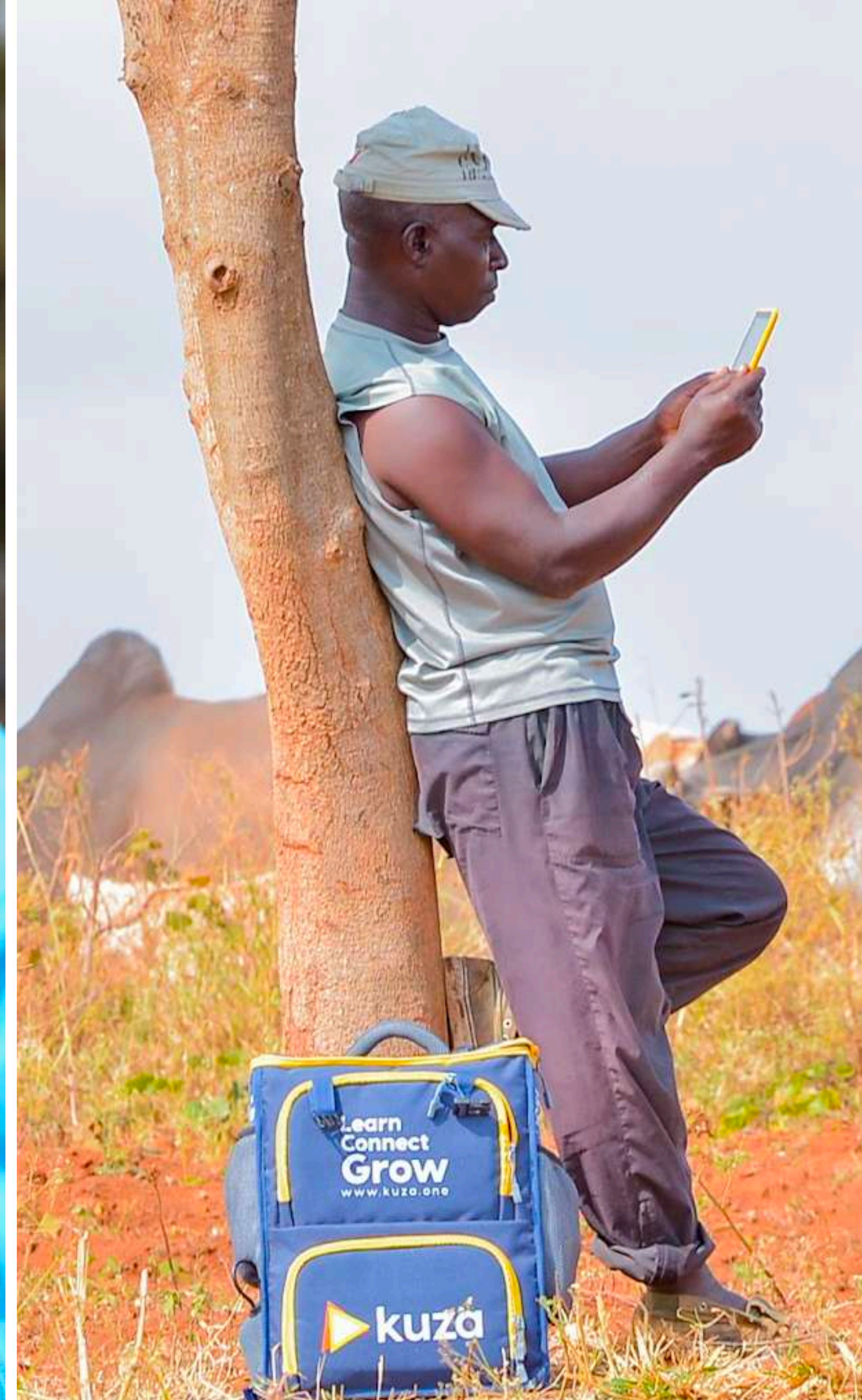
Daniel Kinyua
Tharaka Nithi
Ploughing & Ripping Services

When people **internalise technology**, they find new things to do.

4P Ecosystem Model for Scale & Sustainability







revolutionizing

the resilience of
smallholder farmers through
Digital Agripreneurs

Sriram Bharatam
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www.kuza.one



SYSTEMATIC LEARNING FOR INNOVATION

An Integrated Research Approach for Kenya



WORLD BANK GROUP

Dr. Michael Keenan
Rome Program on Jobs, Labor Mobility
and Sustainable Development

Presentation Objectives

1. To highlight the need for actionable, innovative, and systematic learning for the Digital Revolution
2. To present an example of how actionable learning can be applied to the Kenyan context

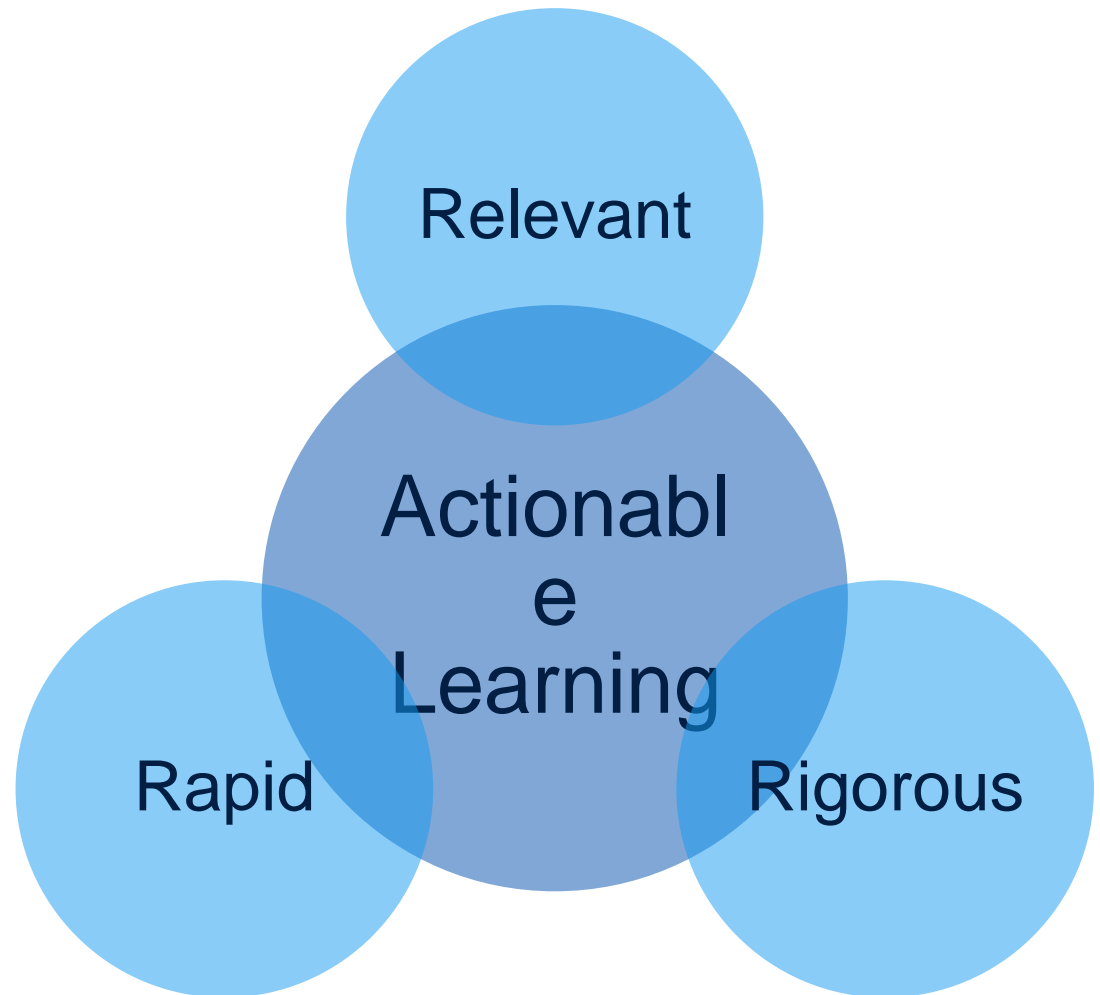
Why Actionable Learning?

- Research was critical in past transformations (e.g. Green Revolution)
- This time is different: transaction costs vs. on-farm technologies
- Little existing evidence for digital market-making technologies
- Researching private-public partnerships for innovation can be difficult
- Are new research tools needed for assessing frameworks instead of specific interventions?

Guidelines for Actionable Learning

THREE R'S OF ACTIONABLE LEARNING

- Trade-offs between different types of researchers
- How can these aspects be combined?



How to Create Systems for Actionable Learning

OPERATIONS SIDE

Willingness to Learn

Embedded
Action learning

Streamlined Funding

RESEARCH SIDE

Aligned Incentives

Increased
Efficiency

Use of
Administrative Data

A PROPOSAL FOR KENYA

Towards a System for Actionable Research

The Research Approach

PROJECT OVERVIEW

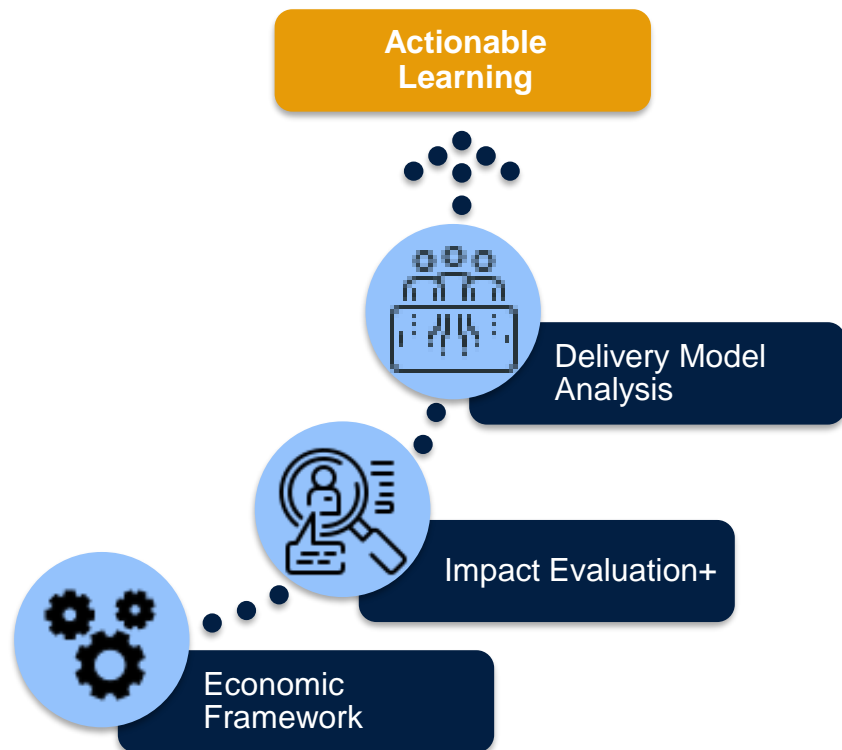
- 3 year evaluation
- Goal: to develop an integrated, systematic research approach for the Agripreneur Model



Kenya Climate Smart
Agriculture Project



PROJECT PATHWAY TO LEARNING



Building an Economic Framework

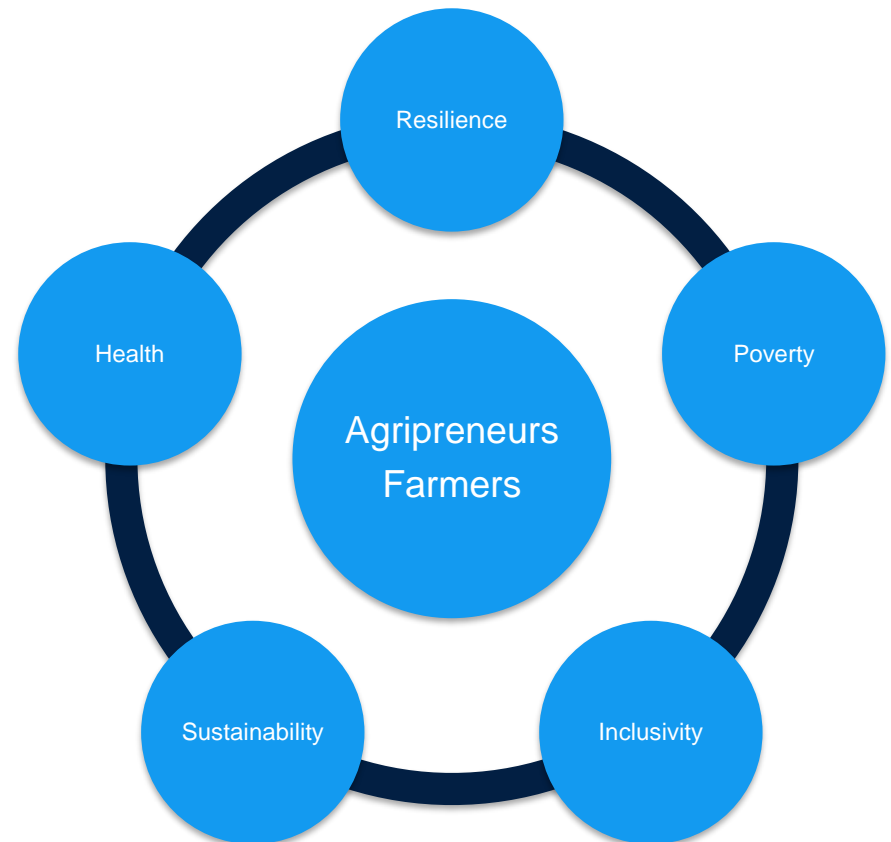
- 21st Century, high-income economies are platform dominated.
- Theory of platform economics has followed.
- How can these frameworks be applied to low-income, rural contexts?
- Structured economic frameworks can guide empirical analysis
 - What behavior should we test for?
 - What survey questions should we ask?
 - What delivery models can be tested?

A Flexible Impact Evaluation

METHODOLOGY

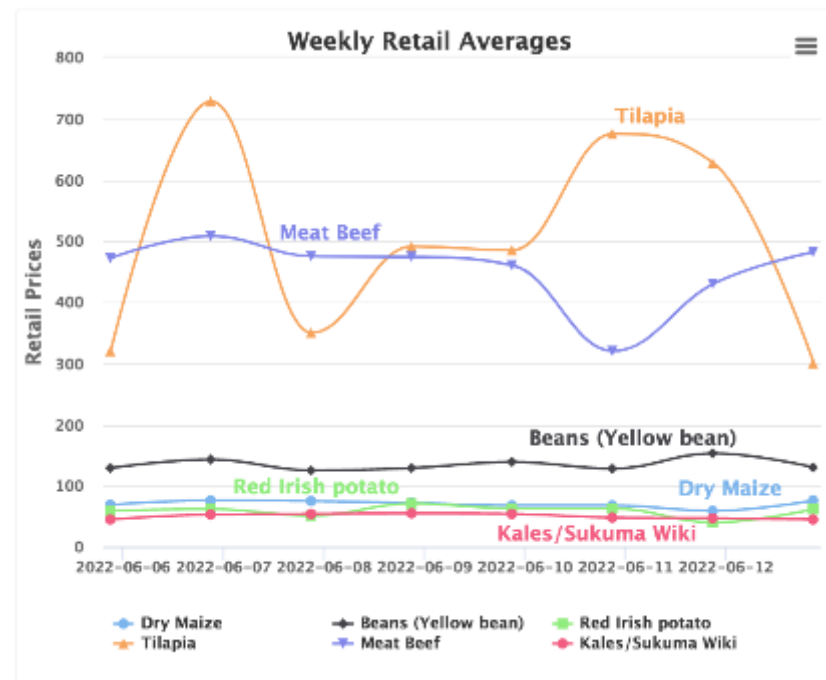
- Approach vs. intervention
- Pseudo-experiment based on program rollout
- Baseline, midline, and endline surveys
- Qualitative analysis
- Administrative data analysis

OUTCOMES



Impact Evaluation+ Administrative Data for Continuous Learning

- Digital companies have wealth of administrative data.
- Integrated data approach – using administrative data, market price data, large-scale survey data, climate data, and other geo-spatial data
- Delivering insights continuously
- Taking advantage of Open Data



Source: KAMIS (2022)

Tweaking the Delivery Model: Micro-Changes for Greater Impact

METHODOLOGY

- Platforms in high-income settings study behavioral economic impacts
- Nudging, changing how agripreneurs work together, commitment devices
- Randomized behavioral experiments (A/B testing)
- Digital data collection

OUTCOMES

- Understanding deviations from economic framework
- Making psychology work for impact
- Greater efficiency in delivery
- Stronger impact

Concluding Remarks: Revisiting the Presentation Objectives

1. To highlight the need for actionable, innovative, and systematic learning for the Digital Revolution

- Rapid, Relevant, and Rigorous Research
- Operations and research meeting in the middle

2. To present an example of how actionable learning can be applied to the Kenyan context

- An integrated research approach with continuous learning
- Insights from economic frameworks, impact evaluation, administrative data analysis, and behavioral experiments

Thank You

Dr. Michael Keenan

Consultant

mkeen@worldbank.org

INNOVATION DAY

at IFAD '22



INTERCONNECTED REGENERATIVE PRACTICES FOR RURAL
DEVELOPMENT: THE ROLE OF INNOVATION AND PUBLIC-
PRIVATE PARTNERSHIPS



Sustainable Ecosystems of Connected & Prosperous Communities

A Regenerative Approach

Regenerative Society Foundation's Regenerative Agriculture

21st June 2022



REGENERATIVE
SOCIETY
FOUNDATION



”Sustainable Ecosystems of Connected & Prosperous Communities” aims at creating a network of rural interconnected communities able to aggregate large quantities of high-quality produce for sale on domestic and international markets.

Knowledge and innovative technologies are provided directly to farmers for the collection and the analysis of useful information about crops status, finances and operational data.

The objective is to enable the shift from extractive to regenerative agricultural models, promoting social and environmental well-being (co-benefits) while impacting on climate change mitigation and consumption habits.



Why main **Value**-chains are broken?

MARKET

- Lack of access to formal markets, market information, requirements & compliance
- Unfairness in the price formation and lack of transparency
- High level of indebtedness
- Limited logistics & supply chain services
- Complex bureaucracy and high transaction costs
- Lack of a comprehensive certification for regenerative supply chains and co-benefits

ENVIRONMENT

- Extractive subsistence agriculture driven by poverty
- Improper use of chemicals & fertilizers
- Climate Shocks

SOCIAL

- Limited access to education and health services
- Lack of basic infrastructure (water, storage)
- Limited access to technology and innovation
- Lack of access to adequate financial services

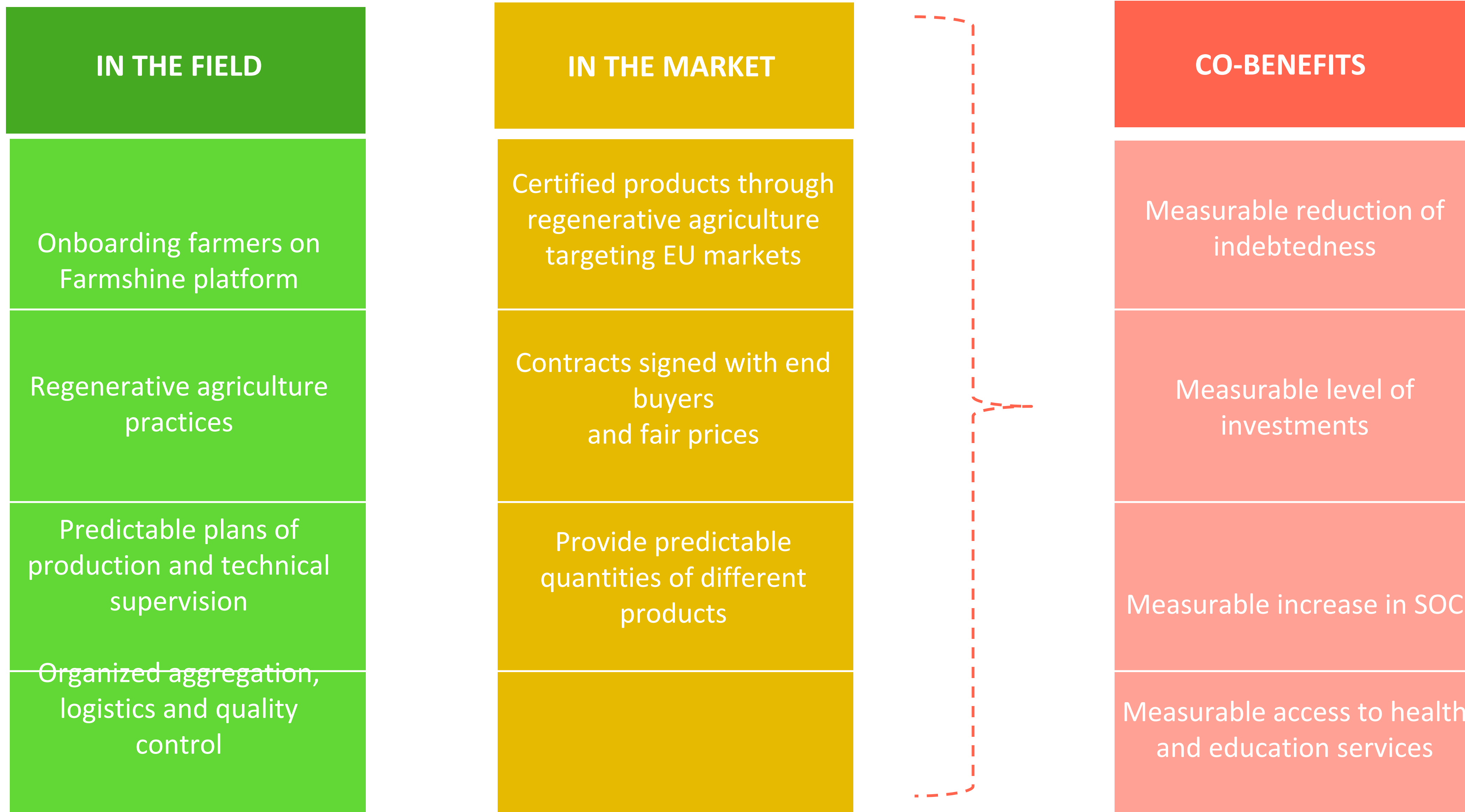
Key outcomes

- *Healthy soils:* through improved soil fertility and increased carbon sequestration
- *Agricultural diversification:* through a combination of crop rotation, intercropping and agroforestry
- *Wealthy families:* by providing access to better market opportunities for farming communities
- *Healthy society members:* through improved access to education and health services;
- *Access to finance:* by providing access to loans for inputs and services



Approach Implementation

Milestones



Implementation strategy

MARKET

- Production of specific market driven products
- Identify market solutions for predictable quantities and prices through transparent contracts
- Value sharing based on quality and consistency
- Effective produce aggregation and safe storage procedures
- Full traceability of each bag of produce from farm to fork
- Fully integrated trading and logistic operations through a digital platform

ENVIRONMENT

- Controlled implementation of regenerative agricultural practices
- Innovative water supply for agriculture and human consumption
- Carbon credit generation and sale to generate communities' additional income

SOCIAL

- Farmers training on targeted regenerative agriculture solutions for consistent high-end quality standards, through supervision and controls
- Communities' virtual self management and control
- Inter-community exchange of information and crops rotation

Expected Results and Impact

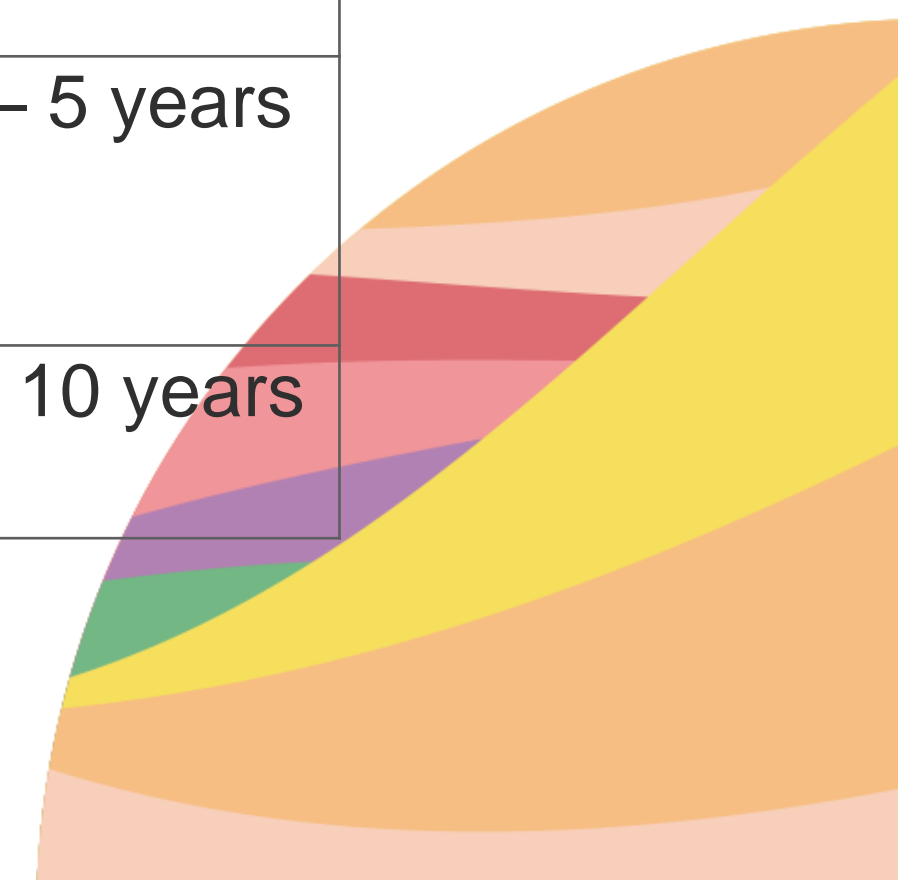
In a time span of 4 years:

- 1000 communities of 200 farmers sustainably engaged in trading quality produce
- 70,000 MT of quality produce traded annually
- Certified ethical trading mechanism
- Market stability and predictable income generation
- Elimination of community's indebtedness
- Development of self-investment capacity for business development
- Improved communities' health, wealth and access to better education
- Income generation through carbon credits sales
- Climate change mitigation benefits



Traction & Timeline

Overall results	RSF Impacts	Programme KPI	Targets	Time frame
Healthy soils	GHGE Carbon stock	Change in SOC	+ 20%	3 Years
Agricultural diversification	Biodiversity	Agrobiodiversity index (CGIAR)	Positive variation	2 – 5 Years
Wealthy families	Well-being Livelihood	DHS Wealth Index	Quintile progression	3 Years
Healthy society members	Inclusivity Jobs Education	FAO Resilience Index (RIMA)	+ 15%	3 – 8 Years
Healthy environment	Net primary production	NPP Measurement	Positive variation	3 – 8 Years
Wealthy families (access to finance)	Access to capital Invested capital Self-financing	Financial Inclusion Index	Positive variation	3 years
Healthy environment (access to water)	Water management	Rural Water Livelihoods Index (FAO)	Positive variation	3 – 5 years
Programme scalability	Capacity / scalability Innovation	Scalability Index	>60	5 - 10 years



Measurement &

The theoretical approach here described will be deployed and measured according to a Regenerative Index.

The Index analyzes regenerative entities such as products, processes, structures, systems, etc. rating their capacity to bring environmental and social co-benefits.

Certification

No holistic certification can guarantee a regenerative agricultural process with co-benefits for people and the environment, together with the fair and just financial remuneration of farmers.

As a follow up of the measurement activity, a self-certification process audited by RSF and recognized by third parties / international regulatory entities can ensure that a co-benefits approach is adopted with positive outcomes for both people and Planet.

Collaborating with IFAD and Potential Partners

We wish to create a long-term collaboration for:

- Putting the smallholder farmers at the center of the global market
- Formalizing African local markets and supply-chains
- Establishing a blended financing system to enable substantial changes in the food systems
- Integrating environmental benefits – social well-being – market & financial sustainability



We unite.
We act.
We flourish.

#StartRegeneratingNow

www.regenerativesocietyfoundation.com

INNOVATION DAY

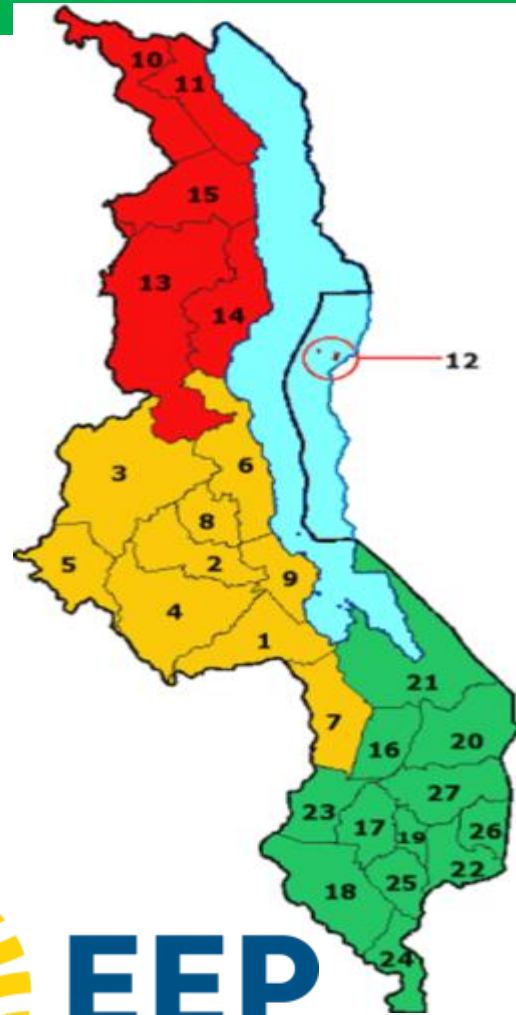
at IFAD '22



TOWARDS A CIRCULAR ECONOMY: EXPERIENCES FROM
SOUTHERN AFRICA AND FINLAND



Biogas from market waste Project



www.greenimpacttech.org

GIT Overview

Green Impact Technologies (GIT) was established in 2018 to accelerate alternative energy technologies to low-income communities in sub Saharan Africa countries.

OUR VISION

To accelerate a better everyday life for many people.

OUR MISSION

To accelerate alternative energy solutions targeting marginalized communities with an aim of eradicating energy poverty.



www.greenimpacttech.org

PROBLEM/VALUE PROPOSITION

- 97% of the population use biomass (firewood or charcoal) for cooking
- High dependence on rain fed agriculture by smallholder farmers
- Rising cost of inorganic fertilizers.
- Lack of Climate smart agriculture technologies for farming
- Waste management challenges
- Lack of alternative energy sources for lighting, phone charging and entertainment



www.greenimpacttech.org

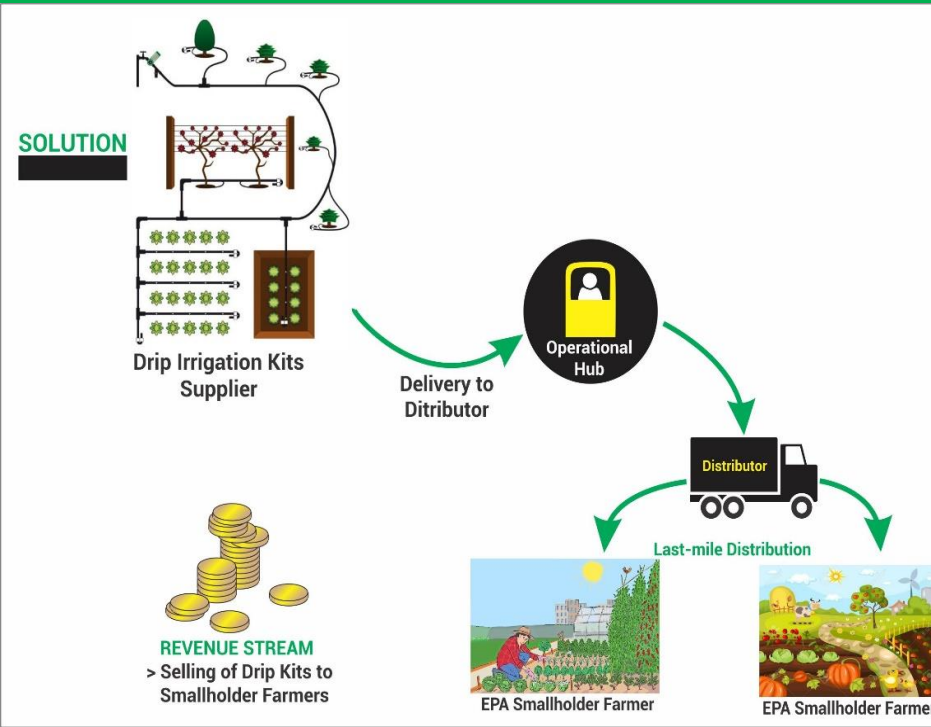
Circular Economy Model

- ❑ GIT is piloting an innovative circular economy solution at a vegetable market in Malawi. With EEP Africa support, the company has established a biodigester at the market that converts biodegradable waste into biogas, which is stored and distributed in refillable bags to local households, restaurants and businesses
- ❑ The bio digester also converts bio slurry into organic fertilizer that shall be sold to smallholder farmers.

eHub a one stop shop

- ❑ In addition, the eHub as been completed a one stop shop for the distribution of range of clean energy technologies to surrounding communities, such as PAYG solar water pumps, solar home systems and improved cook stoves.

Elements for the circular economy model



The enterprise uses market systems approach to deploy:

- Solar water pumps,
- Solar home systems,
- Biogas for cooking
- Bio fertilizers,



Green Impact Technologies



EEP
Africa

Biogas for Cooking and Fertilizer (Bio Slurry)

- Tsangano Market is one of the largest vegetable markets in Malawi.
- Waste management Challenges at the market
- GIT has developed a 40cubic meters biogas digester



Green Impact eHub-One Stop Shop for Energy solutions



Project Impact

- The installed biogas system is expected to generate 0.31 MW of clean energy and reduce 1,900 tCO₂e emissions during the life of the project.
- Provide gas to 40 HHs and restaurants
- Create 200 jobs both part time and full time
- The project primarily employ women to collect feedstock at the market, manage the eHub and distribute the biogas.

Admore Chiumia
Chief Executive Officer

THANK YOU!!!

GreenImpact
Technologies



www.greenimpacttech.org



Restoring rangelands

Sequestering carbon, building peace

SOILWATCH
REMOTE MONITORING | SOIL REGENERATION

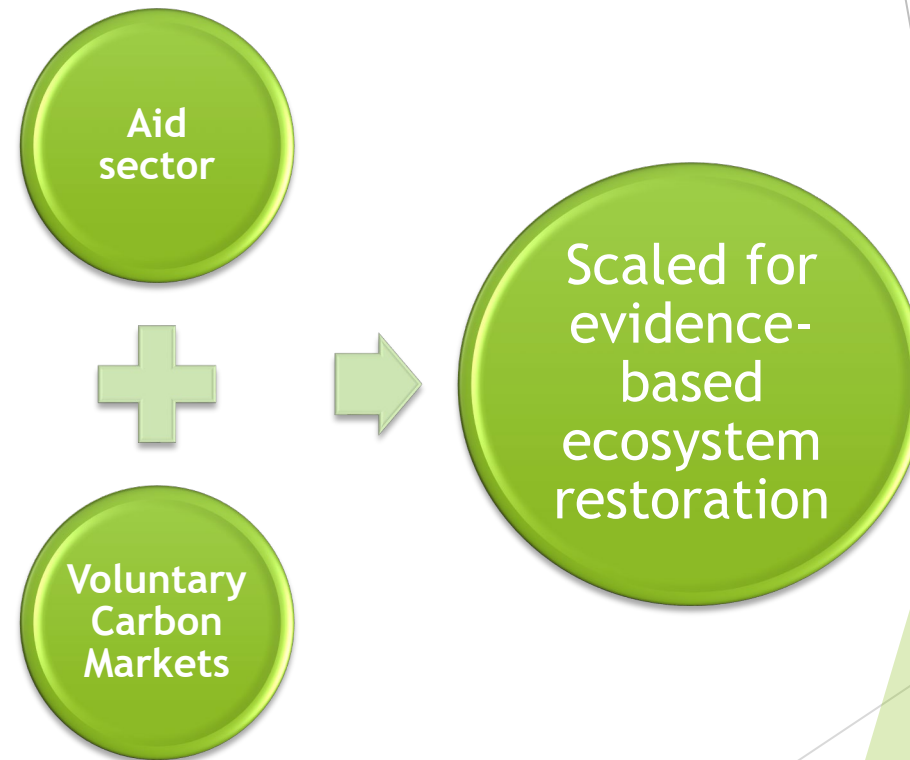
SoilWatch seeks to support evidence-based and scalable ecosystem restoration

Mission Statement:

*To mobilise funding for **evidenced and measurable** activities that work with vulnerable rural communities to **restore ecosystems** at the local level, alleviating issues with **food security and conflict**, and combating **climate change** at the global level through the provision of **better data** on impacts of activities on the ecosystems*

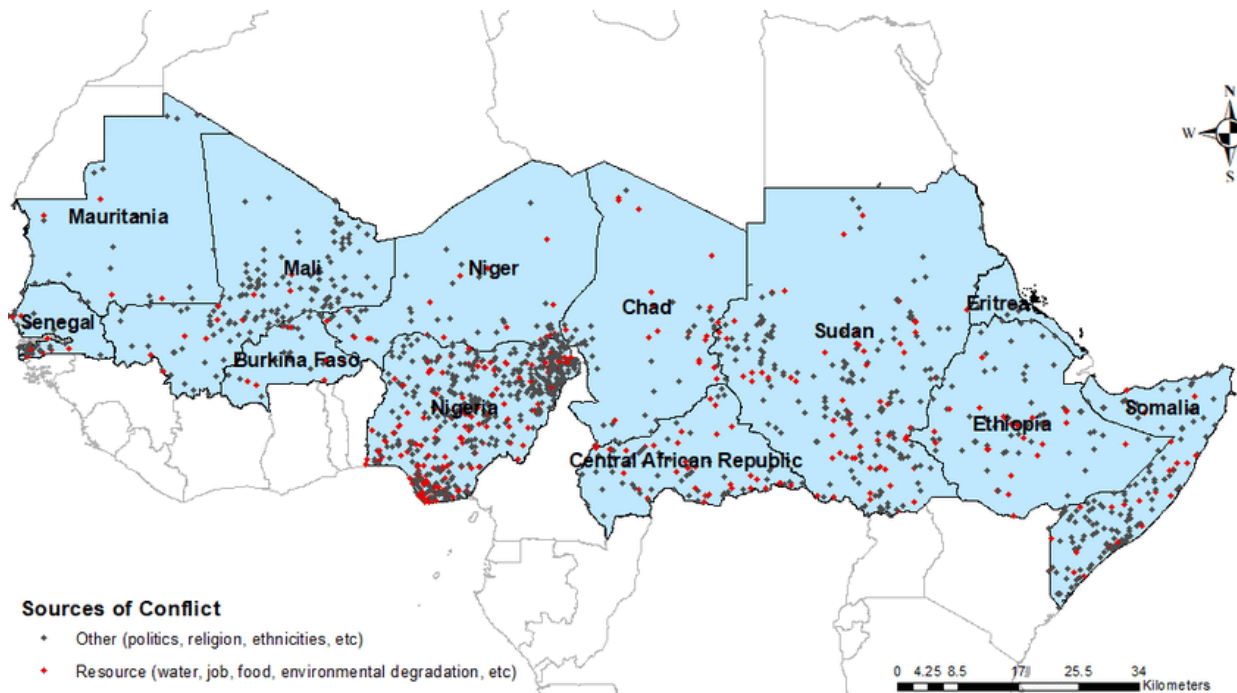
Approach:

*Identify and fill **key gaps** in existing funding and implementation **systems** to **unlock their potential** for **ecosystem restoration** in environmentally vulnerable and conflict-affected countries*

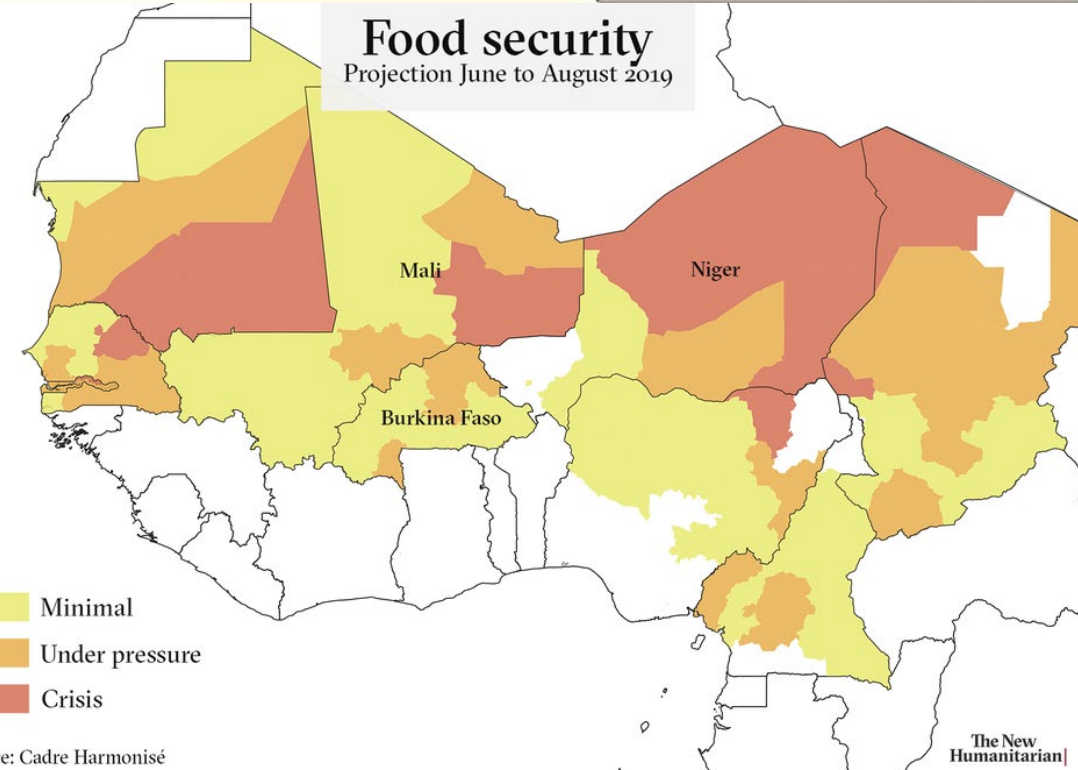
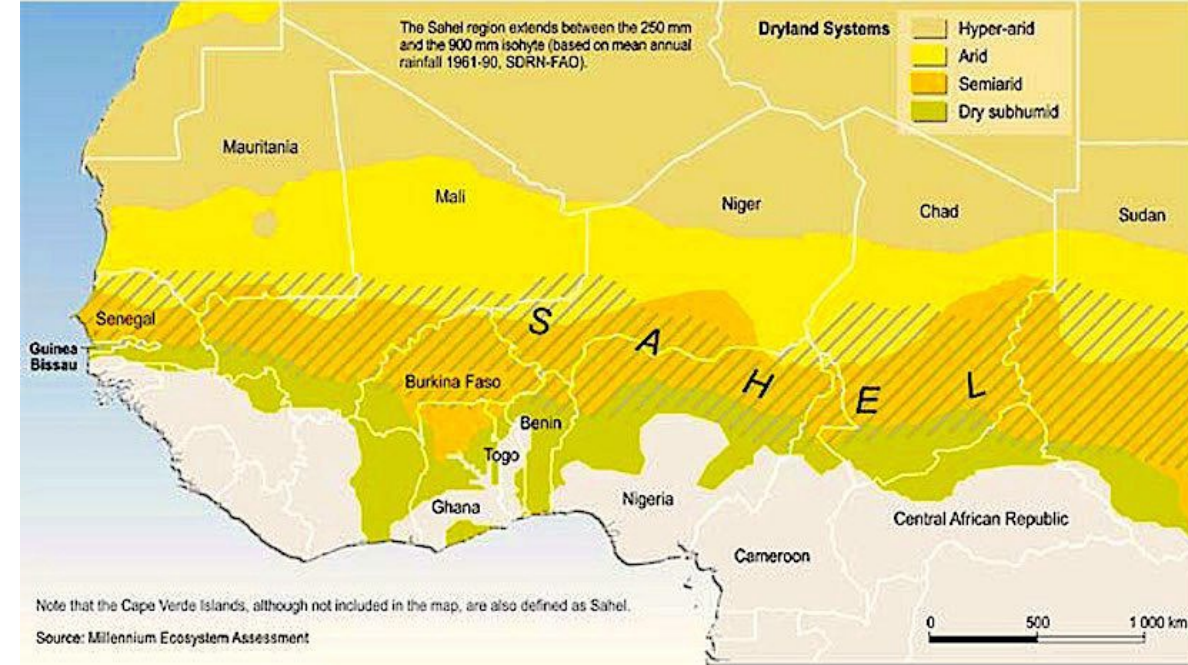


Complex environmental issues in Sudano-Sahel

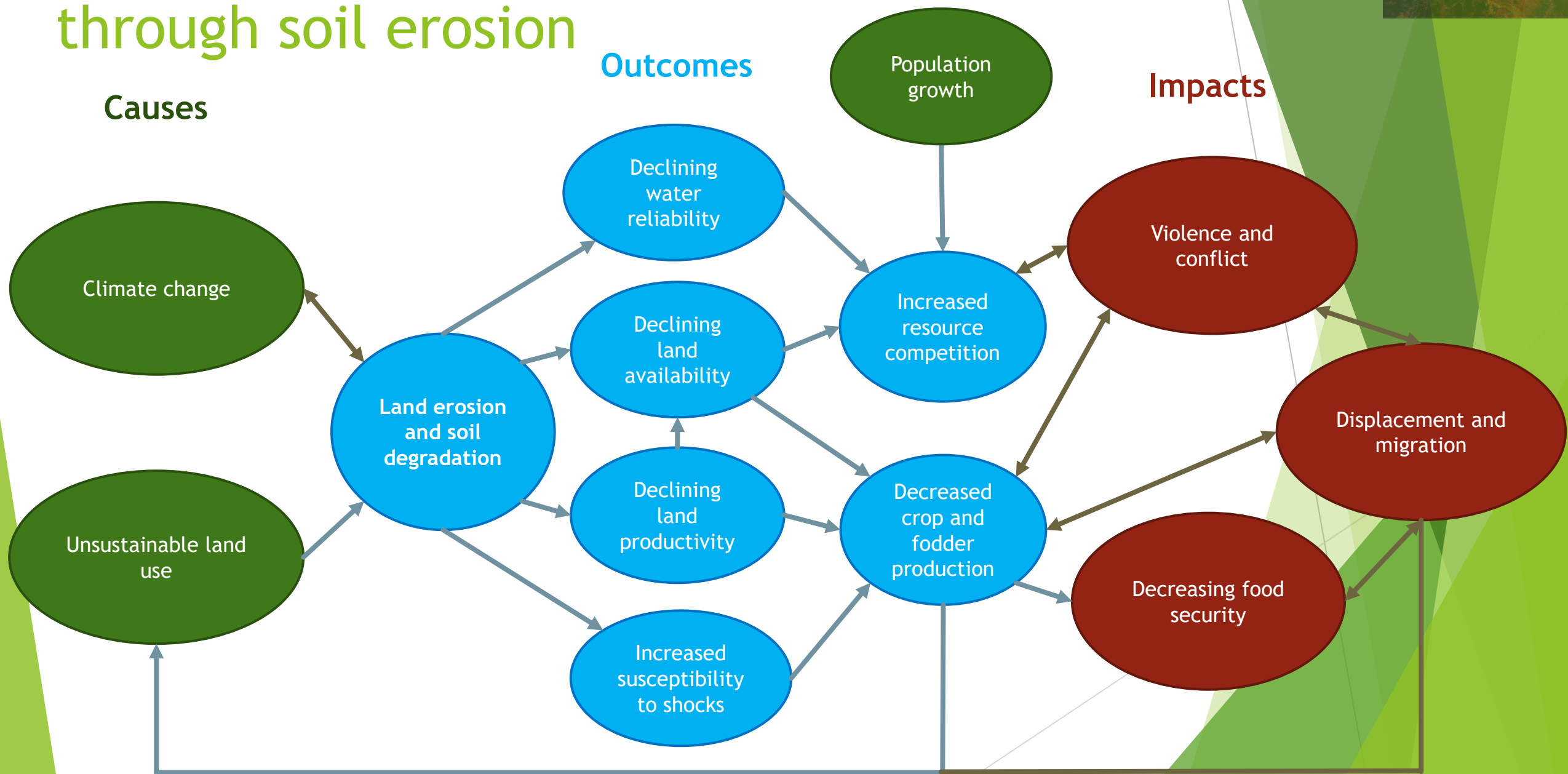
- Land erosion and desertification in the arid and semi-arid lands of the Sudano-Sahel contributes to issues with food security and conflict
- Discussion around causes often framed around climate-change




Source: Idean Salehyan, Cullen S. Hendrix, Jesse Hamner, Christiner Case, Christopher Lineberger, Emily Stull and Jennifer Williams. Social Conflict in Africa: A new database international interactions 38,4 (2012): 503-511



Environmental catastrophe occurs through soil erosion





Soil erosion is primarily caused by unsustainable land use practices

Pastoralism

- Increasingly sedentary lifestyles
- Growing size of herds
- Preference of sheep and goats over cows
- Exacerbated by cropland encroachment and deforestation

Eroding rangeland in Darfur
Source: SoilWatch

Rangelands can be massive carbon sinks

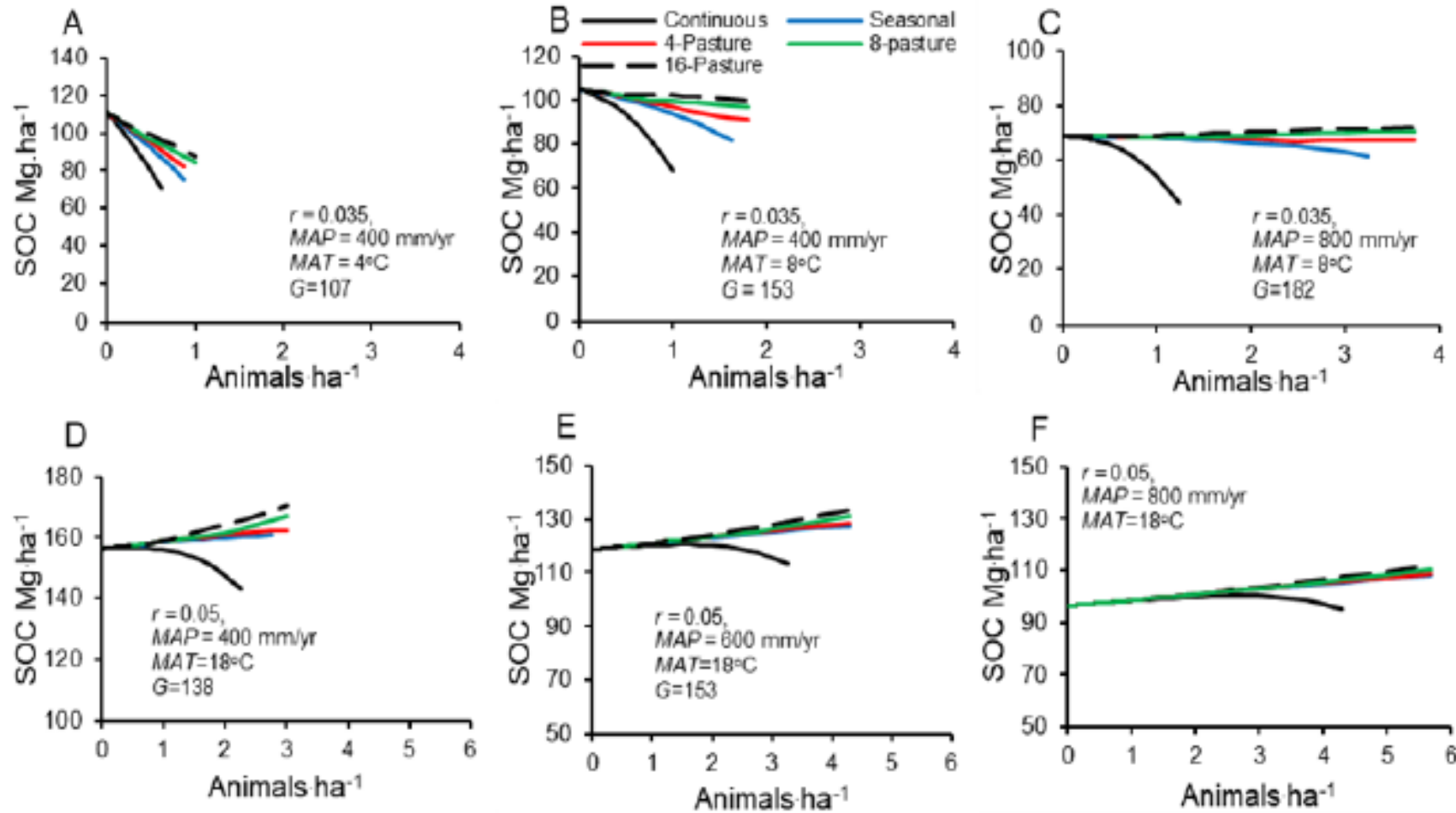
- Rangelands refer to ecosystems where the vegetation is predominantly grasses, grass-like plants, forbs or shrubs, and often with trees that are grazed or have the potential to be grazed by livestock and wildlife
- Rangelands cover **54% of the global terrestrial surface** which equals to 79,509,421 km²
- Across rangelands globally, at least 11% of rangelands (approximately 8,000,000 km²) are degraded
- With a change in management regime, degraded rangelands can be restored
- Restoring just 5% of the world's degraded rangelands could **remove 16 gigatons** of carbon from the atmosphere



A grass-roots approach to climate action

- Perennial grasses are particularly efficient carbon removers, due to the massive root structure
- When roots decompose, they build soil organic material, of which over 50% is carbon
- Temperate grasslands can store over 150 tons of carbon in soil per hectare, bringing the total carbon sink near to that of tropical rainforests.

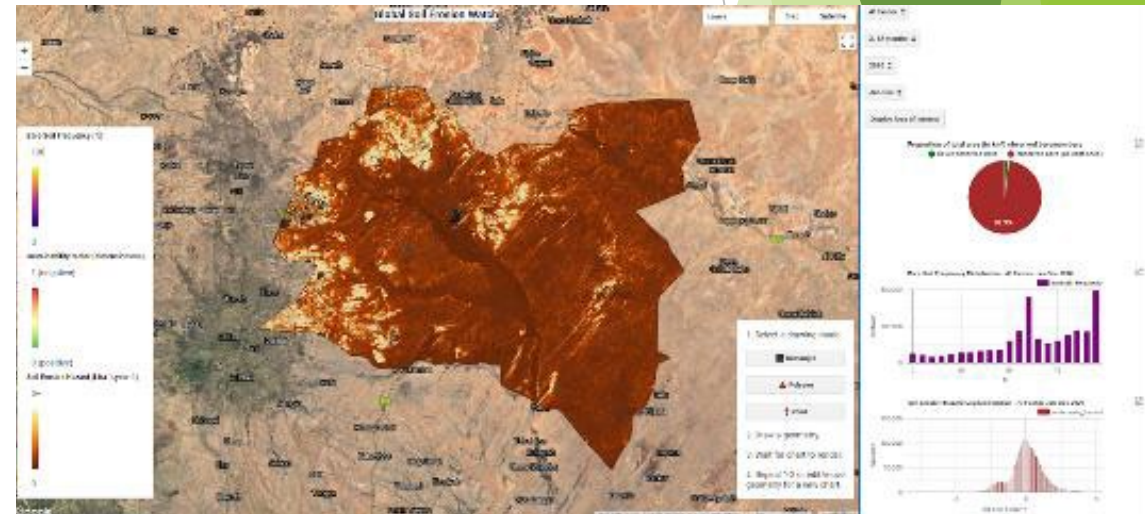
Grazing animals are a vital part of a healthy savannah ecosystem



Equilibrium soil organic carbon densities (Mg ha^{-1}) to a depth of 30 cm for different numbers of pastures and stocking densities for the entire grazing system. (A–C), temperate conditions. (D–F), tropical conditions. Note the difference in scales for (A–C) versus (D–F). (Ritchie M.E. 2020)

Our Tech

- A key gap for better rangeland management is access to accurate data on impacts
- SoilWatch is developing a **rangeland management application**, to allow monitoring and modeling key ecosystem services: carbon sequestration, forage production and biodiversity
- The tool utilizes near real-time **satellite data** in combination with limited number of **in-situ samples**. Process-based and machine learning models produce **carbon flux estimations**
- The interface is in **visual spatio-temporal format**, allowing the users to continuously improve their rangeland management practices, and buyers to verify how much carbon is being sequestered
- Collaboration with aid sector actors and carbon project developers for continuous validation





Collaboration with SoilWatch, IFAD, and Finland

- SoilWatch is in discussions with the International Fund Agricultural Development (IFAD) and FinnPartnership to explore the environmental and carbon impact of IFAD's rangeland management in Sudan
- Learning contributes to scaling up M&E capacity for IFAD and the sector, as well as unlocking funding from carbon credit markets to rangeland restoration

Climate Impact

Total beachhead market calculation:

- Sudan: 600 000 km² of land restored over 30 years = (conservative sequestration rate: 100tCO₂/km²/year)
- Expansion planned across the Sahel to restore 2.5 Mio km² of rangelands over 30 years

1.8Gt
CO₂



CO₂ Sequestration:

Increasing soil organic carbon
= healthier soil / biodiversity
= greater moisture absorption
= resistance to flooding/drought
= greater yields
= increased food security

Financial and social impact:

Additional income for adoption of regenerative management practices

Thank you for your interest

Eero Wahlstedt (eero@soilwatch.eu)

www.soilwatch.eu

Further information

- ▶ <https://journals.sagepub.com/doi/10.1177/17816858221089487>
- ▶ <https://www.hs.fi/ulkomaat/art-2000008536745.html>
- ▶ https://www.linkedin.com/posts/world-economic-forum_sdg15-sahel-rotationalgrazing-activity-6904757270497099776-PYKt



MISSION

**SOLAR FOODS
DISCONNECTS
FOOD PRODUCTIONS
FROM AGRICULTURE**

SOURCES OF GLOBAL GREENHOUSE GAS EMISSIONS



70%

ENERGY



30%

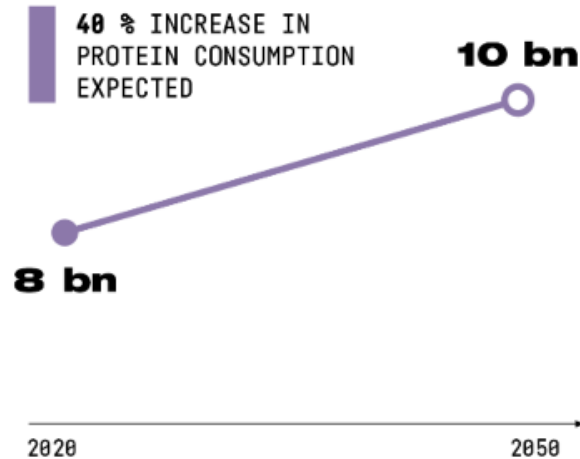
FOOD PRODUCTION
AND LAND USE CHANGE

CHALLENGES IN FOOD PRODUCTION 1/2

MORE MOUTHS TO FEED



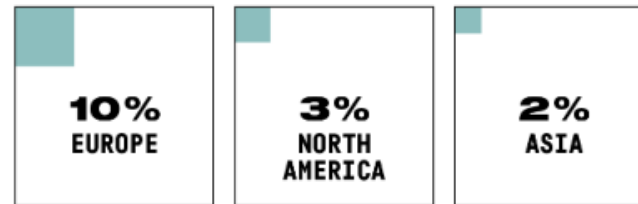
Global population



LIMITED FARMLAND TO EXPAND



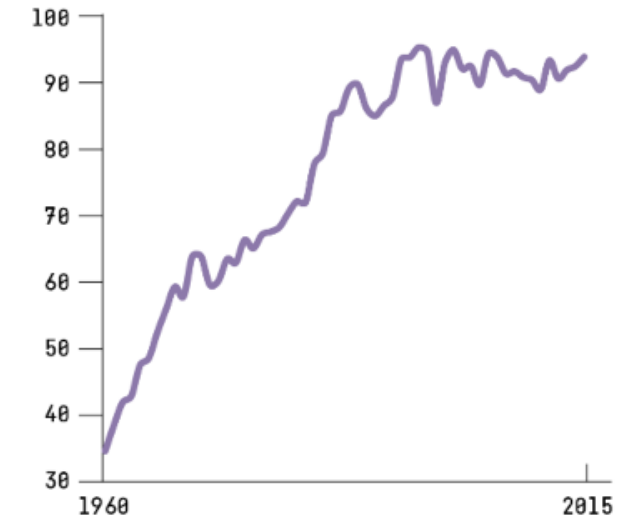
Available land suitable for agriculture



GLOBAL FISH CATCH HAS PEAKED

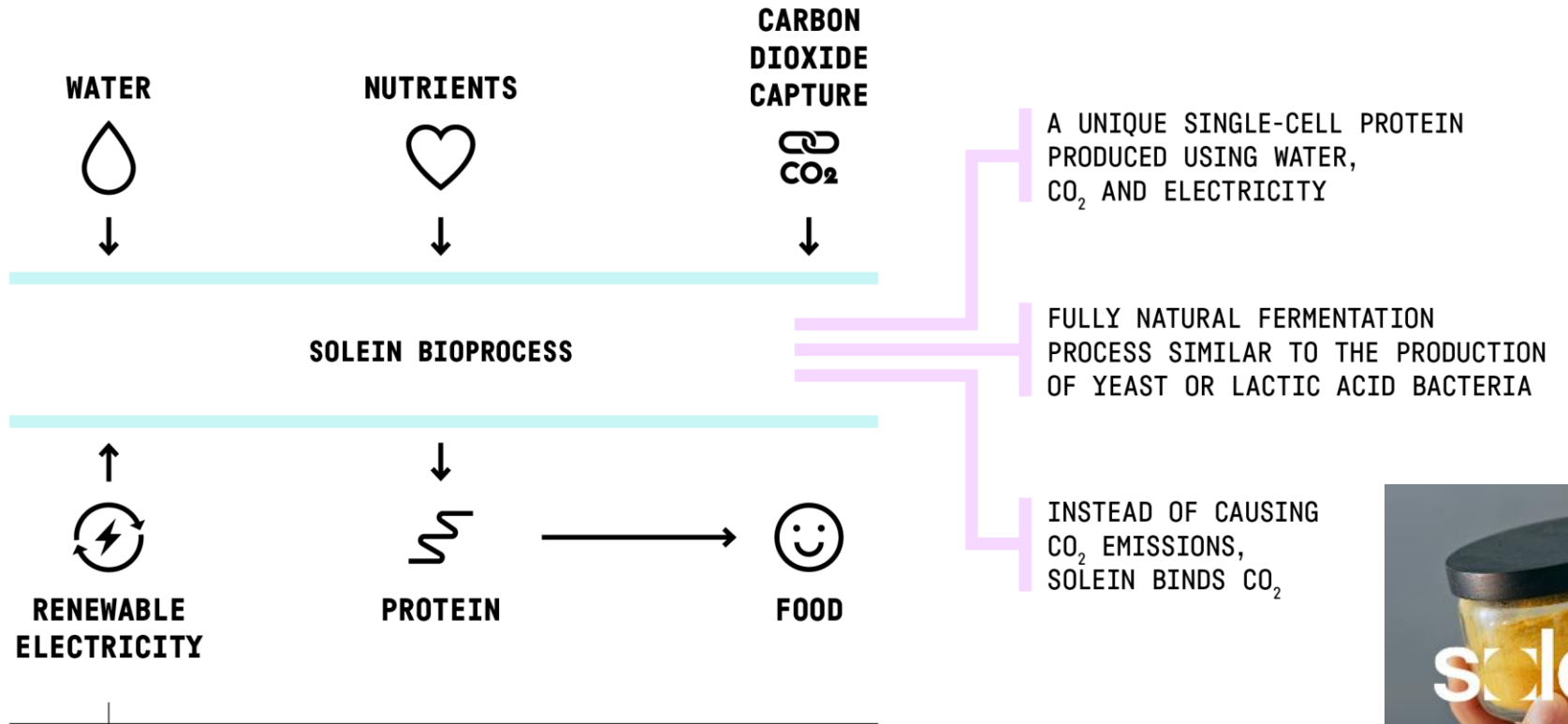


Million tonnes



Source: Company materials, UN, Potsdam Institute for Climate Impact Research, The University of Sheffield's Grantham Centre for Sustainable Futures, Our World in Data

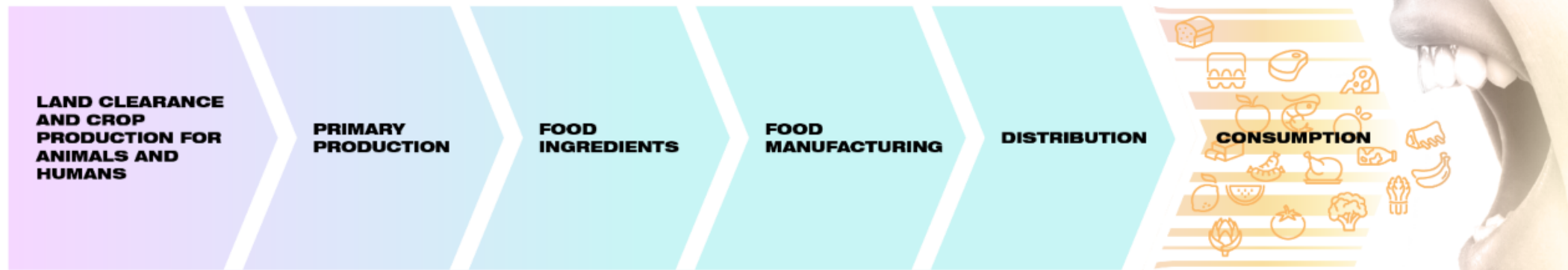
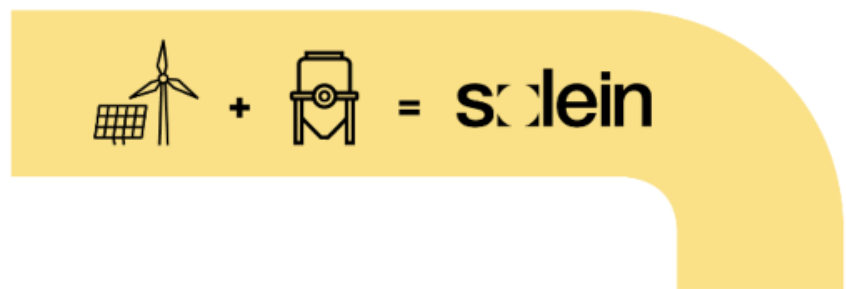
DESIGNED BY NATURE



FORTUM PROVIDES SOLAR FOODS 100% RENEWABLE ENERGY



FOOD PRODUCTION DISCONNECTED FROM TRADITIONAL AGRICULTURE

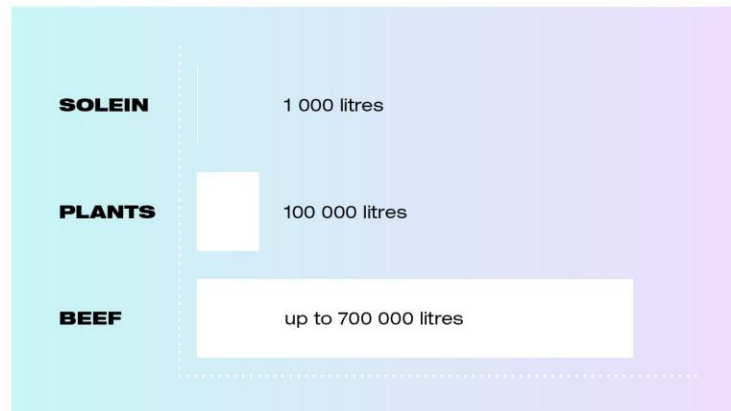


SOLEIN® IS THE WORLD'S MOST SUSTAINABLE PROTEIN



WATER SCARCITY
Litres per 1 kg protein

Solein uses **100 times less** water than plant production and **up to 700 times less** than the production of beef.



LAND USE
m² per 1 kg protein

Land use for Solein is **20 times more efficient** than for plant production and **200 times more efficient** than for beef production.



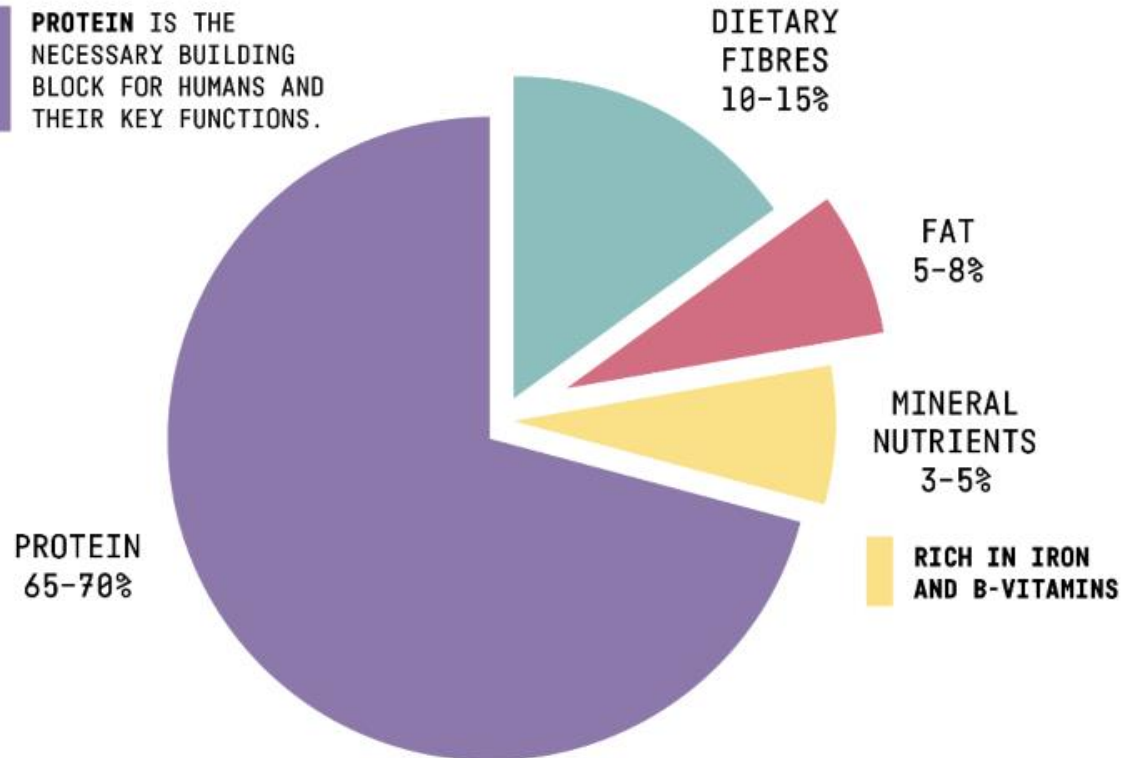
EMISSIONS
kg CO₂-eq / kg protein

Solein pollutes **five times less** than plant production and **200 times less** than beef production.



SUSTAINABLE EVERYDAY PROTEIN

PROTEIN IS THE NECESSARY BUILDING BLOCK FOR HUMANS AND THEIR KEY FUNCTIONS.



EVERYDAY SOURCE OF PROTEIN

BREAKFAST



Cereal

LUNCH/DINNER



Noodles & pasta

OTHER



Beverages



Bakery



Meat alternatives



Snacks

SOLEIN VALUE PROPOSITION TO FOOD PRODUCERS



SUPERIOR NUTRITIONAL PROFILE

Complete protein source with vitamins that is bioavailable, non-GMO and - allergenic.



MOST ENVIRONMENT FRIENDLY

100x more efficient use of water and 20x of land than plants.



VERSATILE

Great texture and flavour attributes that can be used in variety of food products.



GREAT CONSUMER DEMAND



STABLE PRICE & CONSISTENT QUALITY

Price not dependant on outside factors.



FAST PRODUCTION TIME & COST COMPETITIVE

Flexible and reliable production technique.



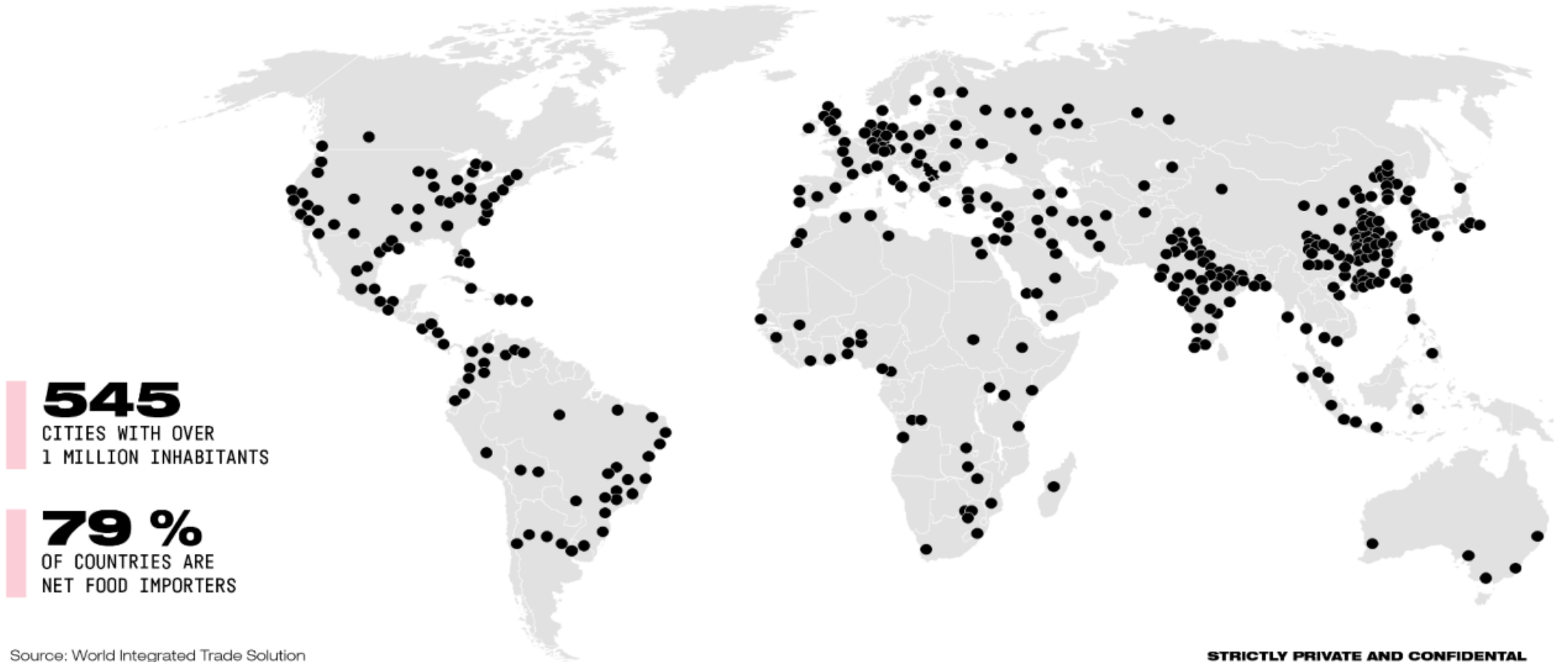
LOCALLY PRODUCED

Can be produced where protein is needed.



PREDICTABLE COSTS/MARGIN

VISION: "GIGA" FACTORY IN ALL MAJOR CITIES



545
CITIES WITH OVER
1 MILLION INHABITANTS

79 %
OF COUNTRIES ARE
NET FOOD IMPORTERS

Source: World Integrated Trade Solution

SOLAR FOODS

Liberating protein production.



solarfoods.fi



[/company/solarfoods](https://www.linkedin.com/company/solarfoods)



[/SolarFoodsFi](https://www.facebook.com/SolarFoodsFi)



info@solarfoods.fi



[@Solar_Foods](https://twitter.com/Solar_Foods)

INNOVATION DAY

at IFAD '22



APPLICATIONS OF GIS AND ARTIFICIAL INTELLIGENCE (AI) FOR CLIMATE ACTION





Applications of GIS and Artificial Intelligence (AI) for Climate Action

Use of geo-ICT for smallholders: insights from G4AW program

Ruud Grim

Manager Space for Sustainable Development

20 June, 2022

IFAD Jobs, Innovation and Rural Value Chains





Content

- G4AW Objectives
- Results
- Examples of G4AW services
- Satellite and geodata
- Lessons Learned



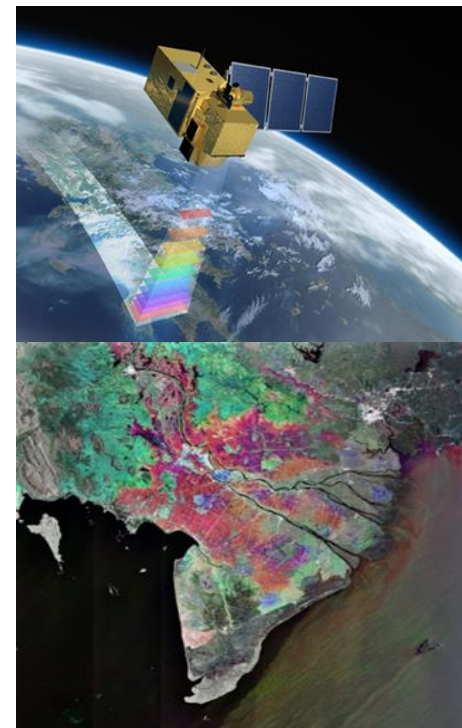


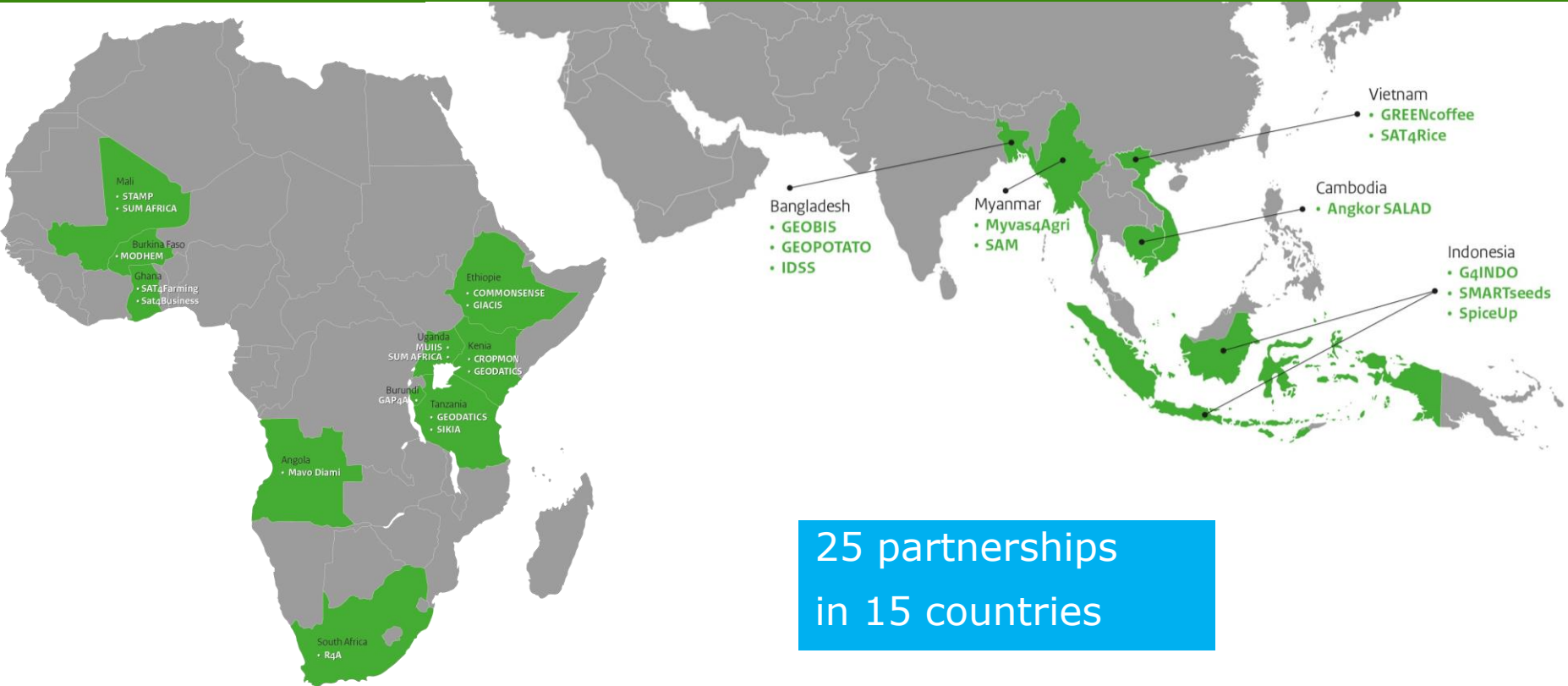
Objectives of G4AW

- Reach 4.5 million smallholder food producers
- Production increase
- Less use of inputs
- Secure/higher incomes

Commissioned by Netherlands
Ministry of Foreign Affairs

Budget: 60 mio euro





25 partnerships
in 15 countries



Achieved

- Support developing new (digital) market
- 30+ million private investment
- Digital advisory and/or financial services based on use of satellite data
- Geo-ict in strategies of Dutch ngo's & finance institutions
- Training and coaching of extension officers
- Local employment
- Awareness & outreach for new investments

NUMBER OF FOOD PRODUCERS

4,051,800

Participating and trained
in using G4AW services



30%

Female users



43%

Young (<35y) users

1,970,400

With improved livelihoods

Contributing to:





Services (Garbal):

Localization of places with vegetation & water
Market information

Channels:

Call center (Orange)

Results:

STAMP (2019):
>75k pastoralists
MODHEM (2020):
>65k pastoralists

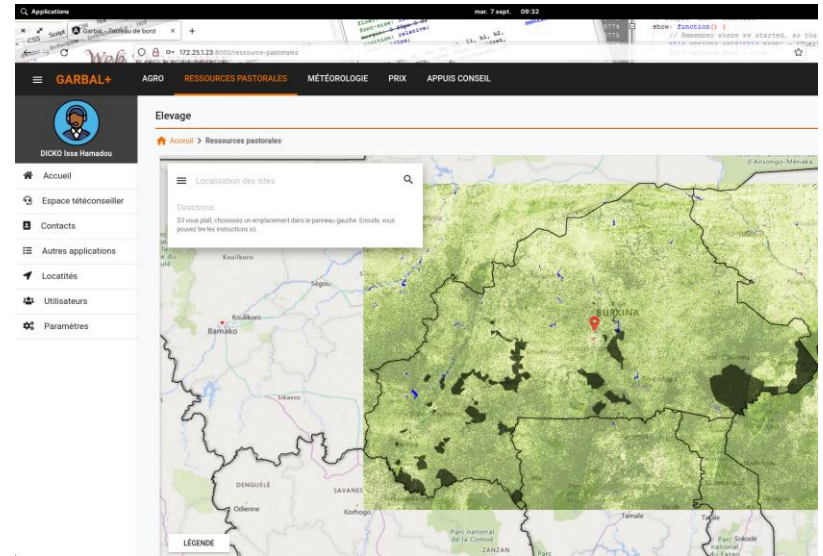
Scaling to Niger
(since June 2021)

Impact STAMP

Lower mortality rates for cows (23.9%)
Less herd loss: 160 euro (saving)



Hoefsloot
Spatial
Solutions



STAMP (Mali) / MODHEM (Burkina Faso)



Services:

Drought insurance
(localized)

Channels:

Local insurance companies
Farmers cooperatives
AIC, Planet Guarantee

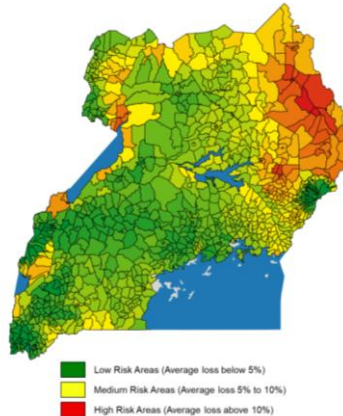
Results:

Coffee & maize farmers
insured: 289,000 (2021)

Impact (Insured versus Uninsured)

Less selling assets at distress before
drought windows (4% / 21%)
Leaving farm for other work (4% / 15%)
Lower own consumption (16% / 35%)

Uganda Risk Rates (Generic Product)



SumAfrica (Uganda, Mali)





Services (bundled):

AgriCoach, Nutrition Coach, Online fertilizer and seeds savings, payment and credit, HealthCoach (Covid-19)

Channels:

G50 'Extension officers'
Mobile device app

Results:

~170,000 smallholder families in Burundi
2021: scaling to 400,000 (2.3 mio people)

Impact:



Farmers rating on AgriCoach

9.3 out of 10



227%

Bean productivity (double)



65%

increase in application of GAP's

AUXFIN

Weather Impact

eleaf
FEED THE WORLD



GAP4A (Burundi)



Services (cocoa, palm oil, maize):

- Plantation location & age
- Palm oil mill locations
- Weather information
- Pest & disease (spraying calendar)
- Loans

Channels:

- Call center & Voice messages (by Esoko)
- Village Loan and Saving AAA (VLSAs)
- Regional Support Center (RSCs)

Results:

- Loan pilot is currently running.
- Evaluation expected by 2022/Q2

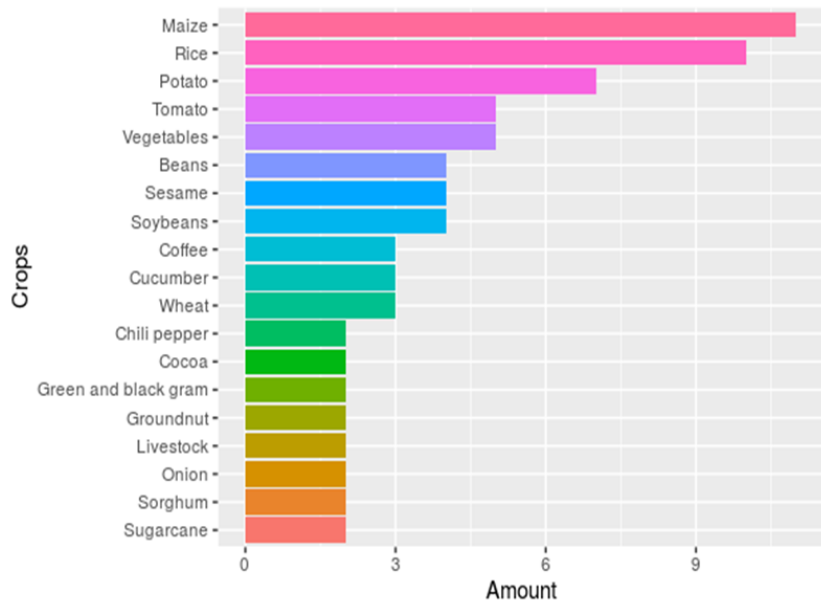
Impact
Farmers better organized
Cooperation with mill and Touton (trader)
Local entrepreneurs & employment



Sat4Business (Ghana)



Crops & services



Type of service	Proposal	Realized
<i>Crop management advice</i>	21	19
<i>Weather information</i>	11	18
<i>Good agricultural practices</i>	10	18
<i>Fertiliser advice</i>	8	13
<i>Market information</i>	8	11
<i>Pest and disease information/advice</i>	8	16
<i>Irrigation advice</i>	6	8
<i>Farmer profile information</i>	4	10
<i>Agricultural input loans</i>	3	5
<i>Crop index insurance</i>	3	4
<i>Crop selection advice</i>	2	9
<i>Crop yield information</i>	1	10
<i>Flood mitigation advice</i>	1	2
<i>Location information</i>	1	8
<i>Sustainable tracing systems</i>	1	4



Satellite & geodata

- Weather satellites (EUMETSAT, NOAA, ...)
- Satellite data (see right)
- Field plots (GNSS: GPS, GALILEO)
- In-situ data (GIS)
- Market information (GIS)

Supported by data platforms

Sensor type	Sensor name	Number in proposal	Number in operational service
<i>Optical</i>	MODIS	16	12
<i>Optical</i>	Landsat 7/8	14	5
<i>Radar</i>	Sentinel 1	14	11
<i>Optical</i>	Sentinel 2	14	14
<i>Optical</i>	SPOT-VGT / PROBA-V	4	2
<i>Optical</i>	VHR	4	3
<i>Radar</i>	SMAP	3	2
<i>Radar</i>	TerraSAR-X	3	1
<i>Radar</i>	ALOS PALSAR	2	-
<i>Radar</i>	AMSR	2	2
<i>Various</i>	Sentinel 3	2	-
<i>Radar</i>	SMOS	2	2
<i>Optical</i>	VIIRS	2	1



Value chain benefits (jobs)

Local job creation, e.g.

- Extension services, e.g. G50 and RSCs
- Call centers
- ICT service providers
- others

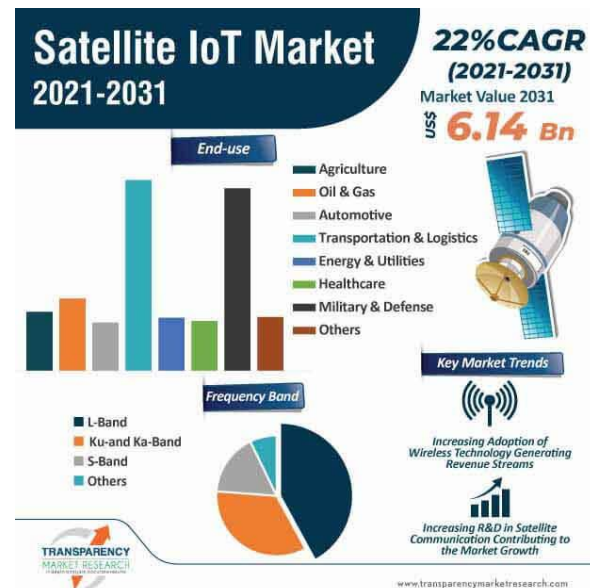
More transparency along the value chain





Future developments / benefits

- Digital services are useful from BoP (more inclusive) to commercial farmers (paying clients)
- Digital services can be bundled to fit food producer needs (better)
- Digital services are beneficial for all value chain actors (also for logistics)
- New (space) innovations may emerge (IoT, SatCom in rural areas with no good connectivity) for farmers, access to finance and logistics





SAVE THE DATE

Space for Food Security

G4AW Conference, 3-6 October 2022

Location: Utrecht, NL



G4AW
GEODATA FOR
AGRICULTURE AND WATER

Netherlands
Space
Office





Thank you for your attention

Let's stay connected!





Services (Hwtet Toe):

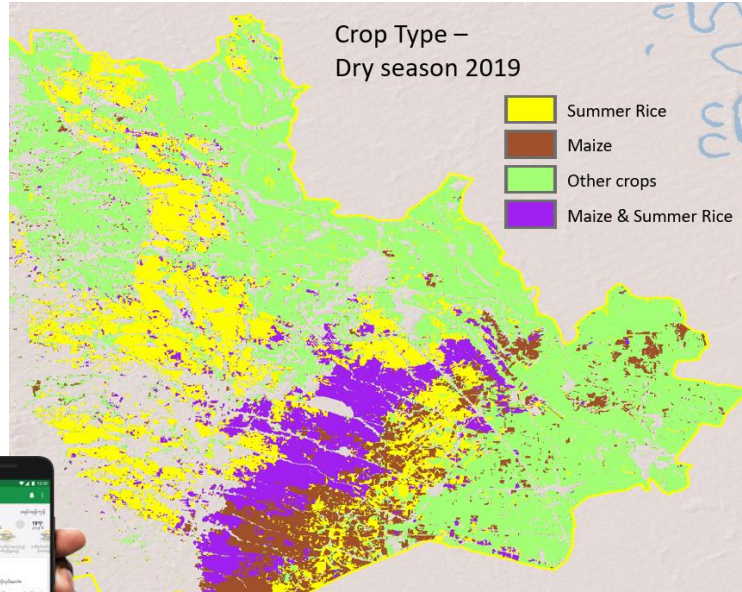
- Weather forecasts
- Crop monitoring
- Good Agricultural Practices
- Flood monitoring

Channels:

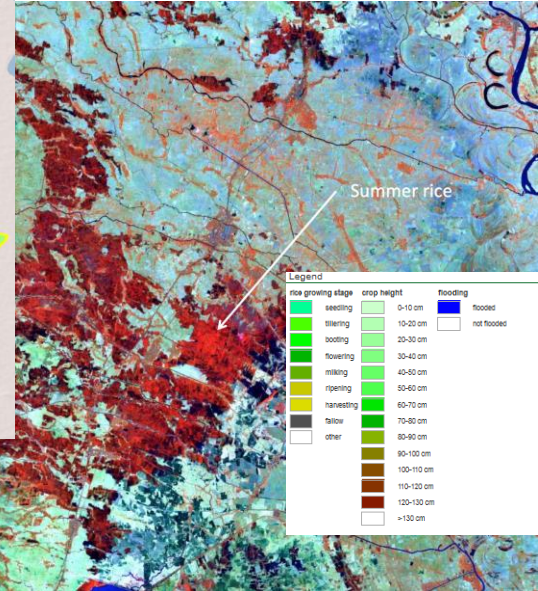
- Call center
- Extension officers
- Smartphone app
- Business dashboard

Results:

- >700k farmers app
- >200+ mio FB views
- >2 mio reactions



ထွက်တိုး
Hwtet Toe



Myvas4Agri (Myanmar)



Lessons Learned (AgTech)

- Innovation & scaling takes time
- Implement user-centered approach & digital inclusion using active M&E
- Bundling of services provide benefits (e.g. free advisory with buying inputs)
- Education & trust remain crucial success factor (e.g. farmers are more risk taking rather than to pay for insurance)

Stimulating smallholders' access to emerging AgTech and FinTech markets, Part 1: Users and Services, Summary Report 2021



Space for Food Security
Stimulating smallholders' access to
emerging AgTech and FinTech markets

Part 1: Users and Services, Summary Report

- Weather information and forecast crucial
- Better soil data needed for good fertilizer advice
- Develop service delivery to be flexible for adaptations and scaling



Lessons Learned (FinTech)

NpM Geodata for AgTech and FinTech; what have we learned?, March 2021



Geodata, a paradigm shift for inclusive finance!

- Geodata for credit scoring improves the current business process.
 - Higher production, increased repayment rate, improved prediction of non-payment, reduced processing time, and reduced operational costs.
- The number of farmer customers is increasing, but revenue generated is still relatively low. Reaching scale is a condition to break even or make a profit.
 - High upfront costs of service development
 - More investment needed to reach scale



ESA Earth Observation for Sustainable Development Initiative (EO4SD) – *Insights from the Climate Resilience activity*

→ OBSERVING | OUR CLIMATE | OUR FUTURE

Clement Albergel,
Climate Office, European Space Agency, ECSAT

IFAD '22 Conference:
APPLICATIONS OF GIS AND ARTIFICIAL INTELLIGENCE (AI) FOR CLIMATE ACTION
21st of June 2022

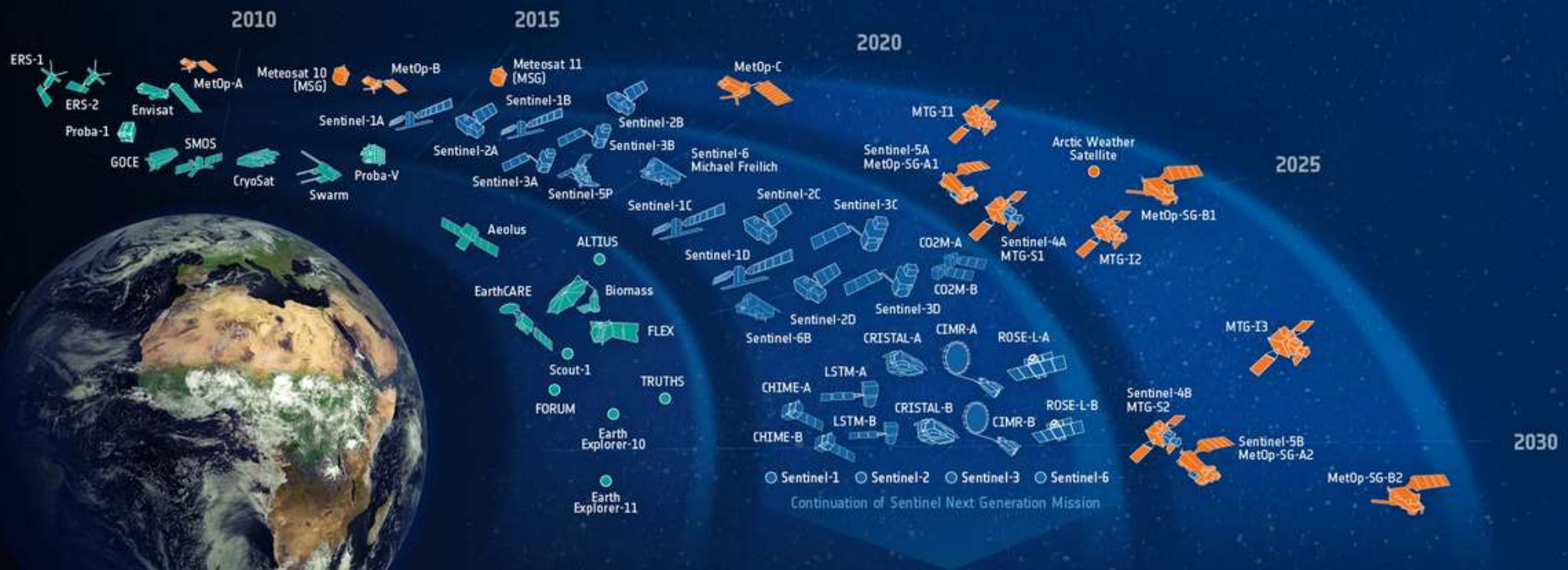
ESA UNCLASSIFIED – For ESA Official Use Only



→ THE EUROPEAN SPACE AGENCY

- **Climate Resilience:** ability to anticipate, absorb, accommodate, or recover from climate change in a timely and efficient manner
- **Important framework for policy and programme development**
- The Paris Agreement (PA) article 7.1 : “**to enhance adaptive capacity, strengthen resilience and reduce vulnerability to climate change, with a view to contribute to sustainable development and ensure an adequate adaptation response in the context of the 2°C temperature goal**”
- The PA also contains financial mechanisms to support developing countries
- National resilience building activities need access to high quality information on environmental risks
- **Satellite Earth Observations (EO) considerable potential to inform and facilitate climate resilient development**

ESA-DEVELOPED EARTH OBSERVATION MISSIONS



Science

Copernicus

Meteorology



Copernicus: Sentinels

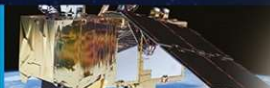


250 TB
of EO data
disseminated
daily to
society



sentinel-1

→ RADAR VISION



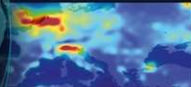
sentinel-2

→ COLOUR VISION



sentinel-3

→ A BIGGER PICTURE



sentinel-4

→ EUROPEAN AIR MONITORING



sentinel-5p | sentinel-5

→ GLOBAL AIR MONITORING



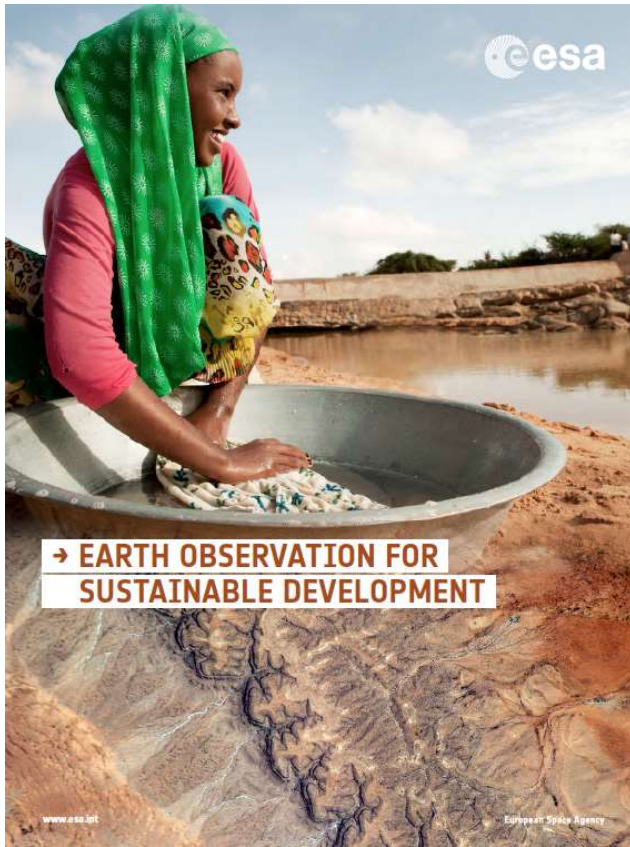
sentinel-6

→ CHARTING SEA LEVEL



→ THE EUROPEAN SPACE AGENCY

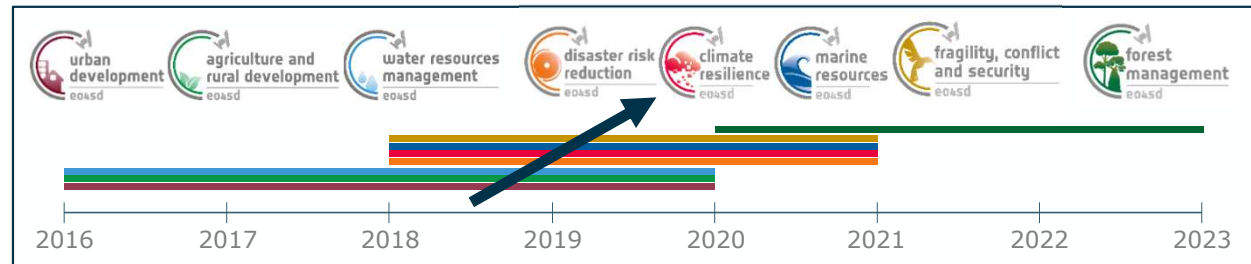
ESA EO PROGRAMS IN SUPPORT OF INTL. DEVELOPMENT



- **eoworld: 2008-15**
Small-scale **demonstrations of EO services** in support of IFI projects to raise awareness



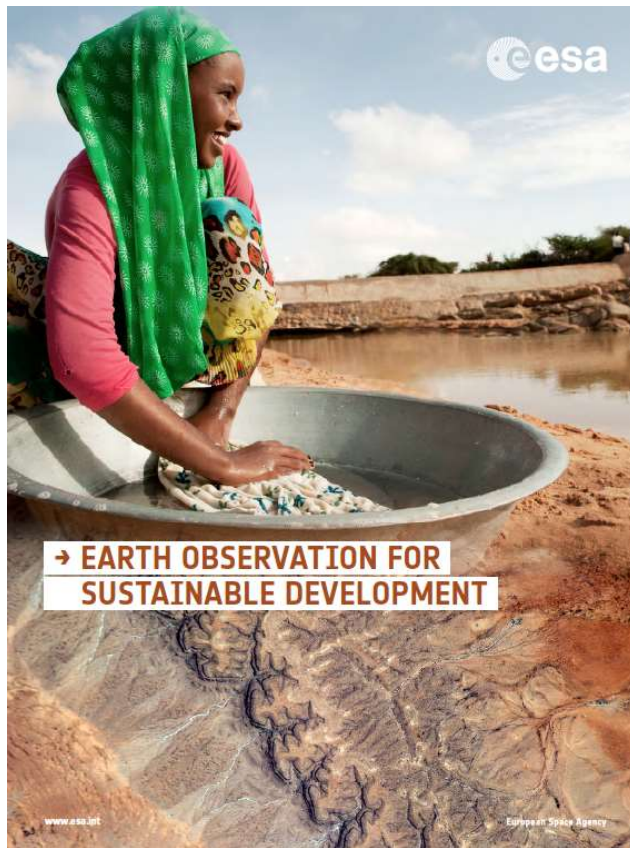
- **EO4SD: 2016-23**
Consolidate requirements, engage stakeholders (IFIs & client states) via regional demonstrations of EO



- **GDA: 2020-25 | Space for IDA**
Mainstream & transfer EO into operational working processes & financing of ODA/development aid as 'best-practice' source of geo-information



OBJECTIVE OF THE EO4SD INITIATIVE



- *Achieve a **step increase** in the uptake of **satellite-based environmental information** in the IFIs regional and global programs.*
- ***Systematic user-driven approach** in order to meet longer-term, strategic geospatial information needs in the individual **developing countries**, as well as **international and regional development organizations**.*

<https://eo4sd.esa.int/>



MAIN PARTNERS



→ THE EUROPEAN SPACE AGENCY

Members of EO4SD Climate Cluster



The climate cluster of the ESA's EO4SD initiative was composed of the following members

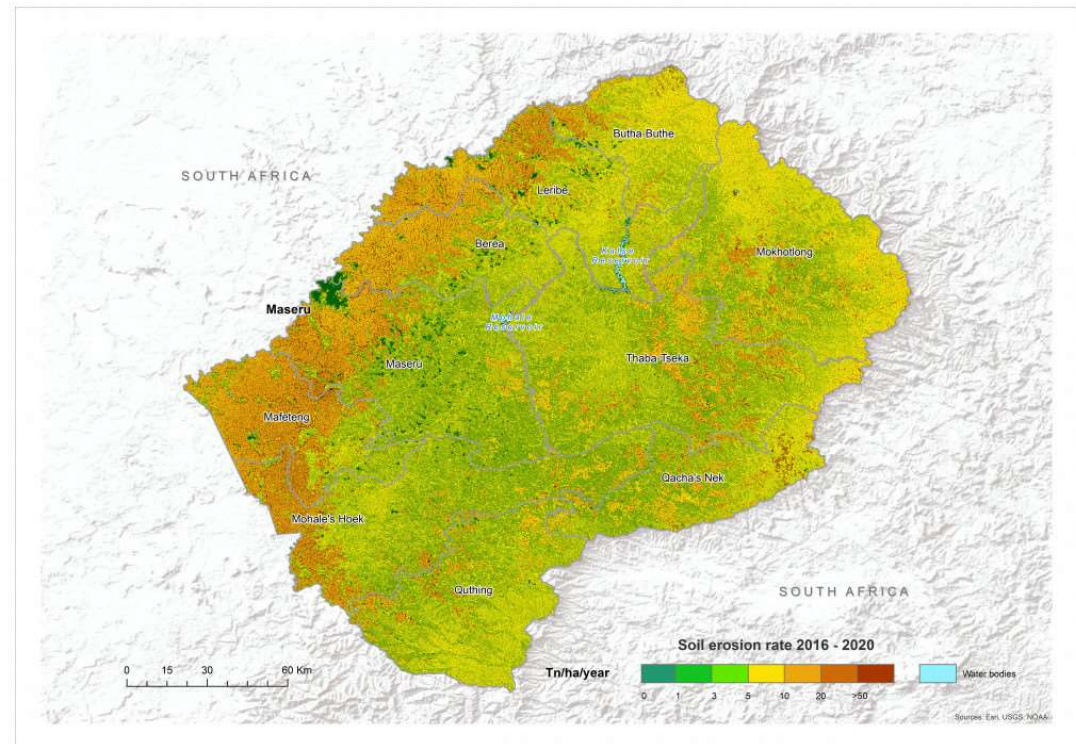
- GMV
- Telespazio UK
- SISTEMA
- GeoVille
- ACCLIMATISE
- NOAA



Wetland and land degradation monitoring for restoration and rehabilitation plans in Lesotho



- Stakeholder: International Fund for Agricultural Development (IFAD)
- Project: Restoration of Landscapes and Livelihoods
- Objective: Lesotho suffers amongst the most severe soil erosion in the world. Land degradation as a result of soil erosion has been identified as one of the greatest environmental challenges facing Lesotho. The degradation is extended to its numerous wetlands, what is critical, as Lesotho depends on its water resources to create revenue for the country.
→ The objective of the EO4SD CR cluster was to analyse annual soil loss changes over the last 20 years and to evaluate degradation of wetlands due to the climate variability.

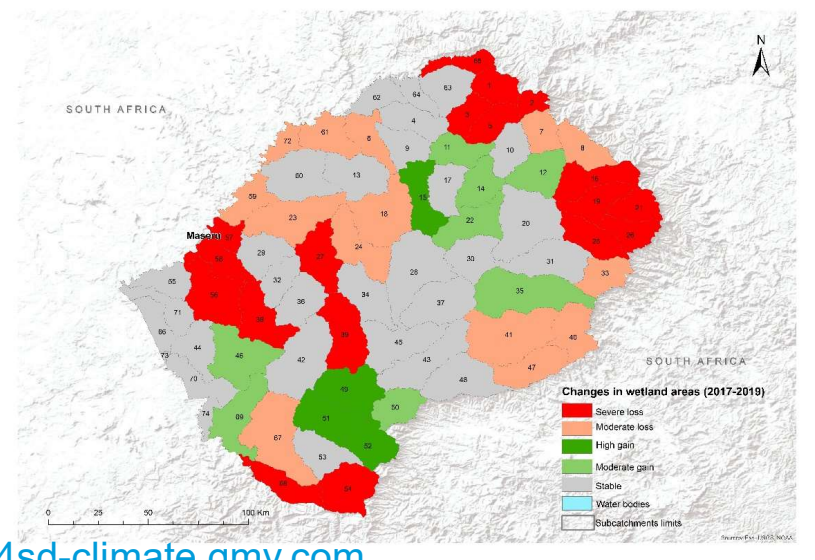
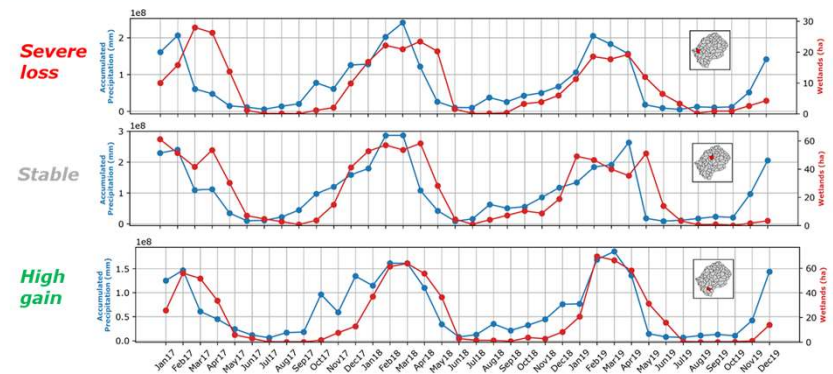


<http://eo4sd-climate.gmv.com>



Wetland and land degradation monitoring for restoration and rehabilitation plans in Lesotho

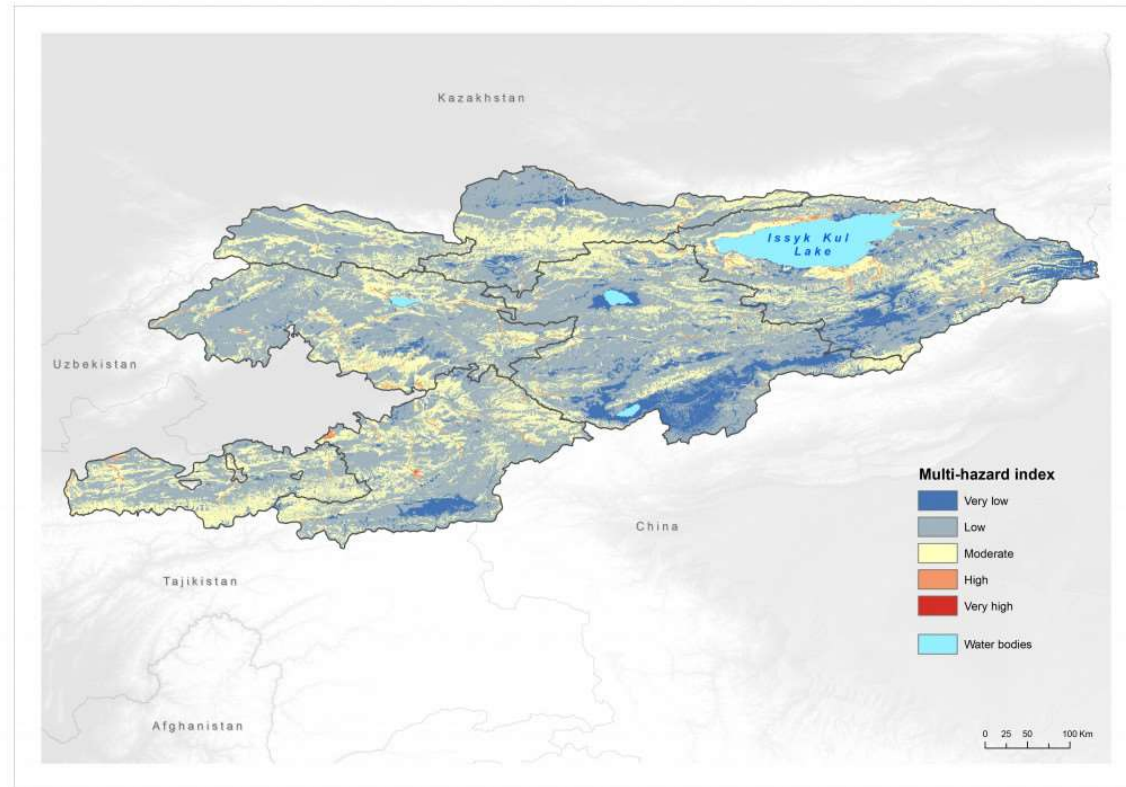
- Service: The service delivered also include the wetland identification and monthly monitoring of the wetlands extent on a national coverage. All products were aggregated at sub-catchment level to facilitate the identification of hot spots.
- Impact/ Added Value: The EO-based products provided evidence related to soil erosion and wetlands condition that supports the prioritization of catchment and sub-catchment areas for landscape and wetlands restoration and rehabilitation.



<http://eo4sd-climate.gmv.com>

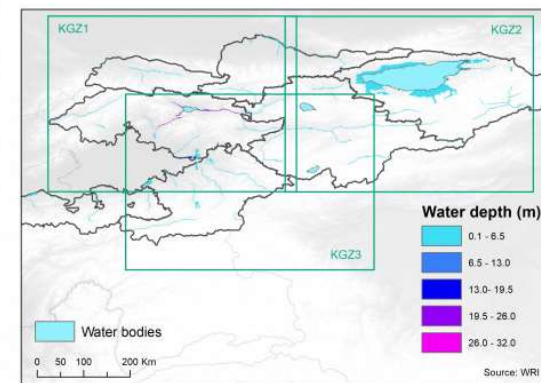
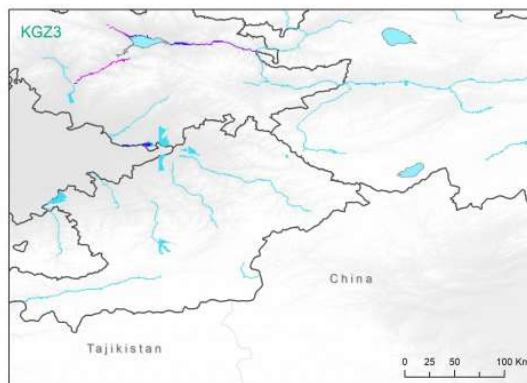
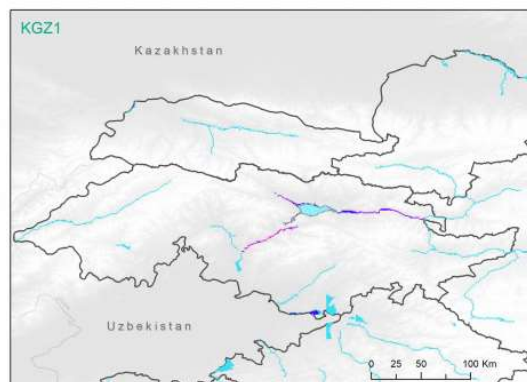
Analysing climate risks faced by pastoralism in Kyrgyzstan

- Stakeholder: International Fund for Agricultural Development (IFAD)
- Project: Regional Resilient Pastoral Communities
- Objective: IFAD's project aims to contribute to rural poverty alleviation in Kyrgyzstan through increased resilience, incomes and enhanced economic growth in rural farming communities. To identify measures for improved livestock and pasture health and productivity, and enhancement of climate resilience of pastoral communities is necessary to determine the risks posed by the climate change in the country. **The EO4SD CR cluster supported the climate rationale of the project providing information about the hazards and climate changes.**



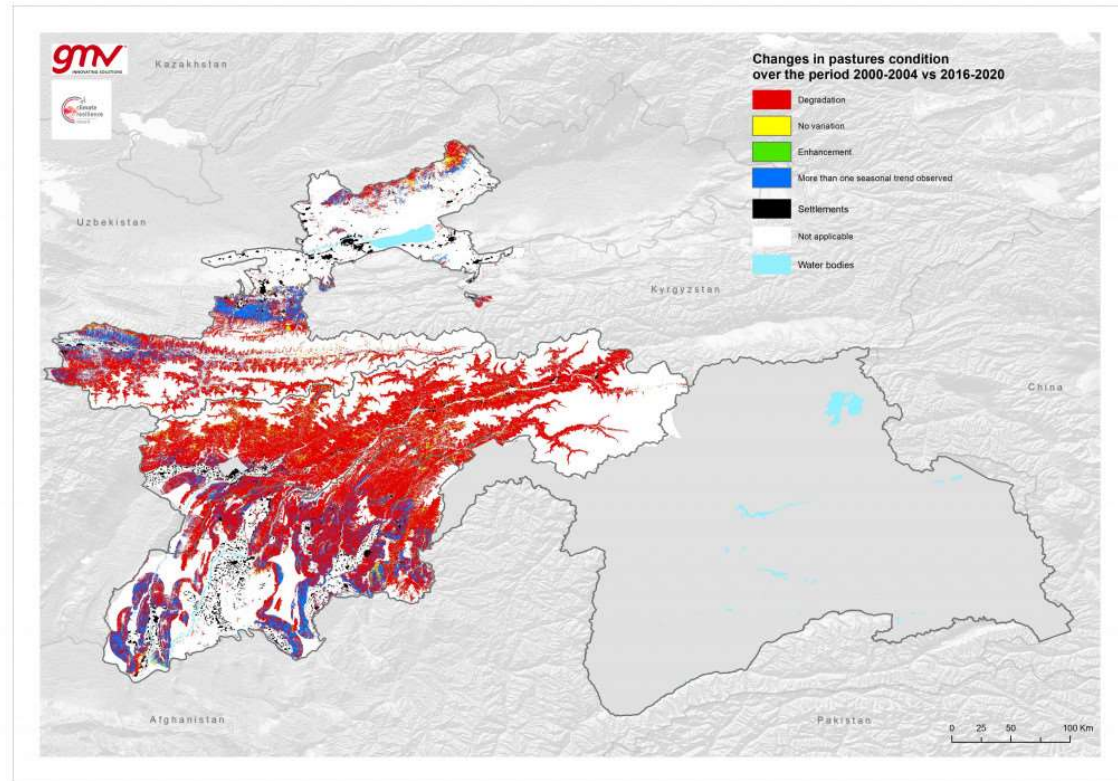
Analysing climate risks faced by pastoralism in Kyrgyzstan

- Service: The EO4SD CR cluster provided **EO-based climate indicators and natural hazard information**, such as related to landslides, floods, droughts, vegetation deterioration, and land degradation to produce up-to-date multi-hazard maps that highlight pasturelands exposed to the most severe overall levels of climate-related hazard.
- Impact/ Added Value: **This information helps to both identify key degraded areas exposed increasing hazard, and prioritise areas with the greatest potential to benefit from climate resilience investments.** Results from the cluster were used by IFAD to build the case for climate resilience investment in a co-funding proposal to **Adaptation Fund**.



Assessing rangelands degradation due to climate change in Tajikistan

- Stakeholder: International Fund for Agricultural Development (IFAD)
- Project: Community-Based Agricultural Support
- Objective: IFAD's project objective is to stimulate inclusive economic growth and poverty reduction in Tajikistan poor rural communities by improving access to productive infrastructure and services that are expected to lead to sustainable agricultural production and equitable returns. **The EO4SD CR cluster collaborates with the Food and Agriculture Organization (FAO) and IFAD to jointly identify climate vulnerable pastoral communities and analyse the rangelands degradation.**

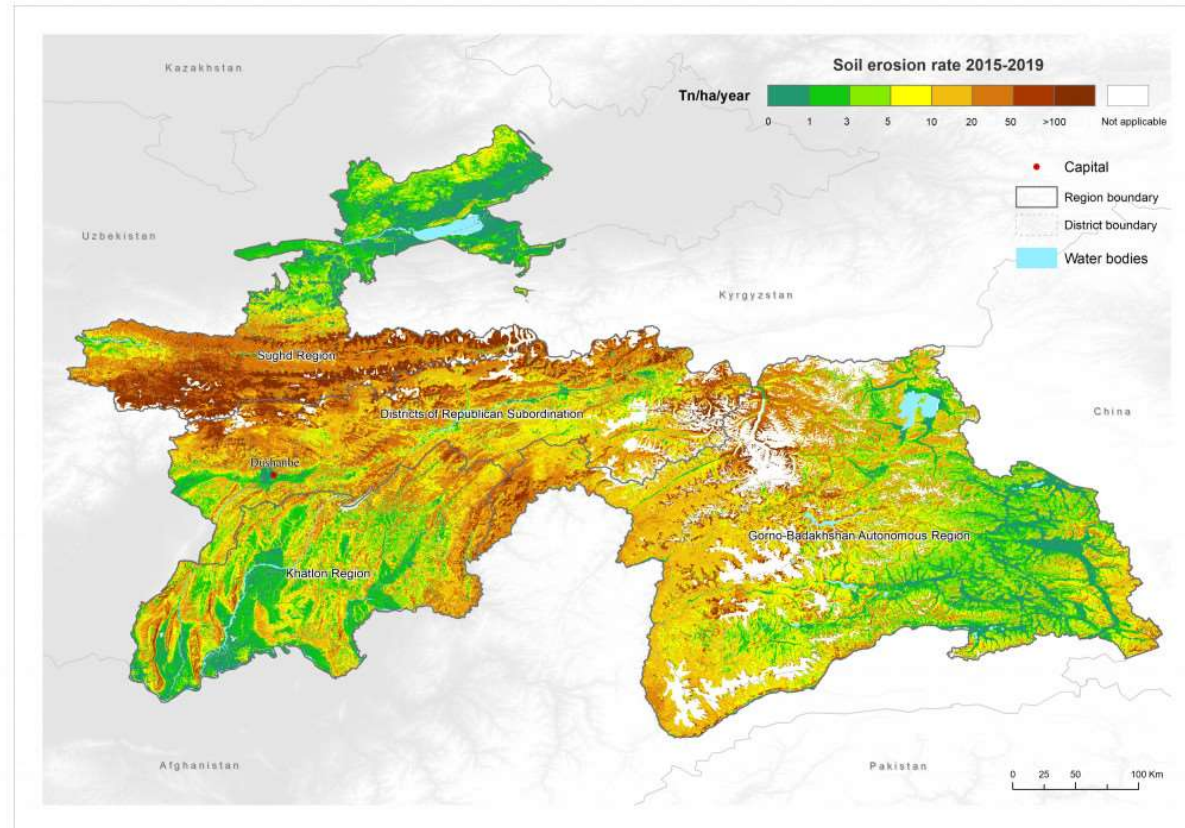


<http://eo4sd-climate.gmv.com>



Assessing rangelands degradation due to climate change in Tajikistan

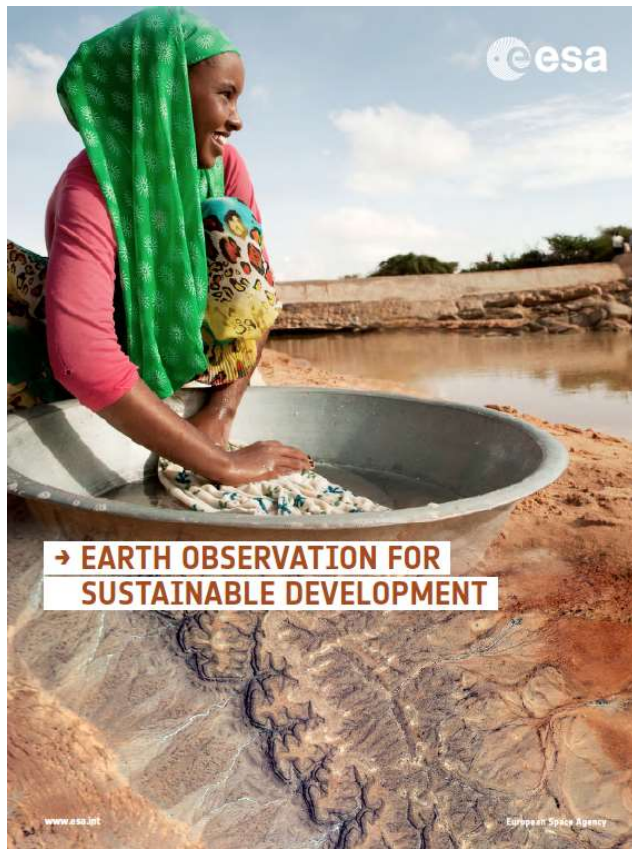
- Service: The EO4SD CR cluster provided EO-based rangeland condition changes over the period 2000-2020 per grazing season and aggregated at district level, climate indicators over the degraded pastures to assess the climate change impact and soil erosion rates to determine land degradation over Tajikistan. In-situ information gathered by local consultants was used to localised methodologies to the country's grazing practices.
- Impact/ Added Value: The rangeland and climate products supported the climate rational for IFAD to solicit co-funding from the Green Climate Fund.



<http://eo4sd-climate.gmv.com>



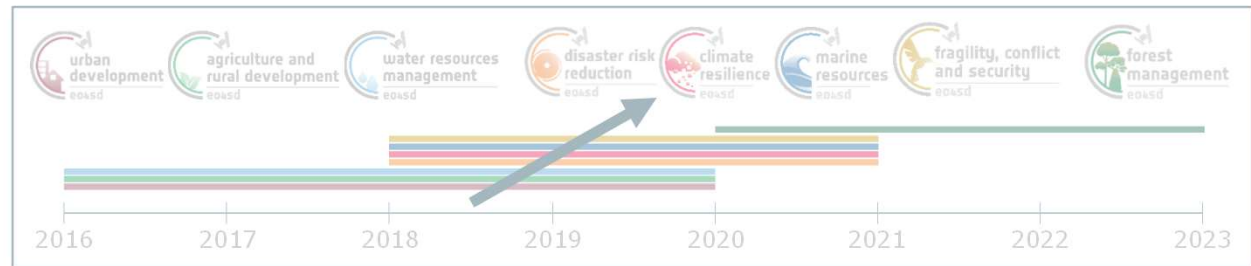
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<https://gda.esa.int/>



INNOVATION DAY

at IFAD '22



FROM IDEA TO IMPACT THROUGH INNOVATIVE PUBLIC-PRIVATE
PARTNERSHIPS



From Idea to Impact through Innovative Public-Private Partnerships

IFAD Conference - June 21, 2022



U.S. Department of State

Dr. Sarah Staton

Deputy Director - Office of Science and Technology Cooperation
Bureau of Oceans and International Environmental and Scientific Affairs





U.S. National Science Foundation

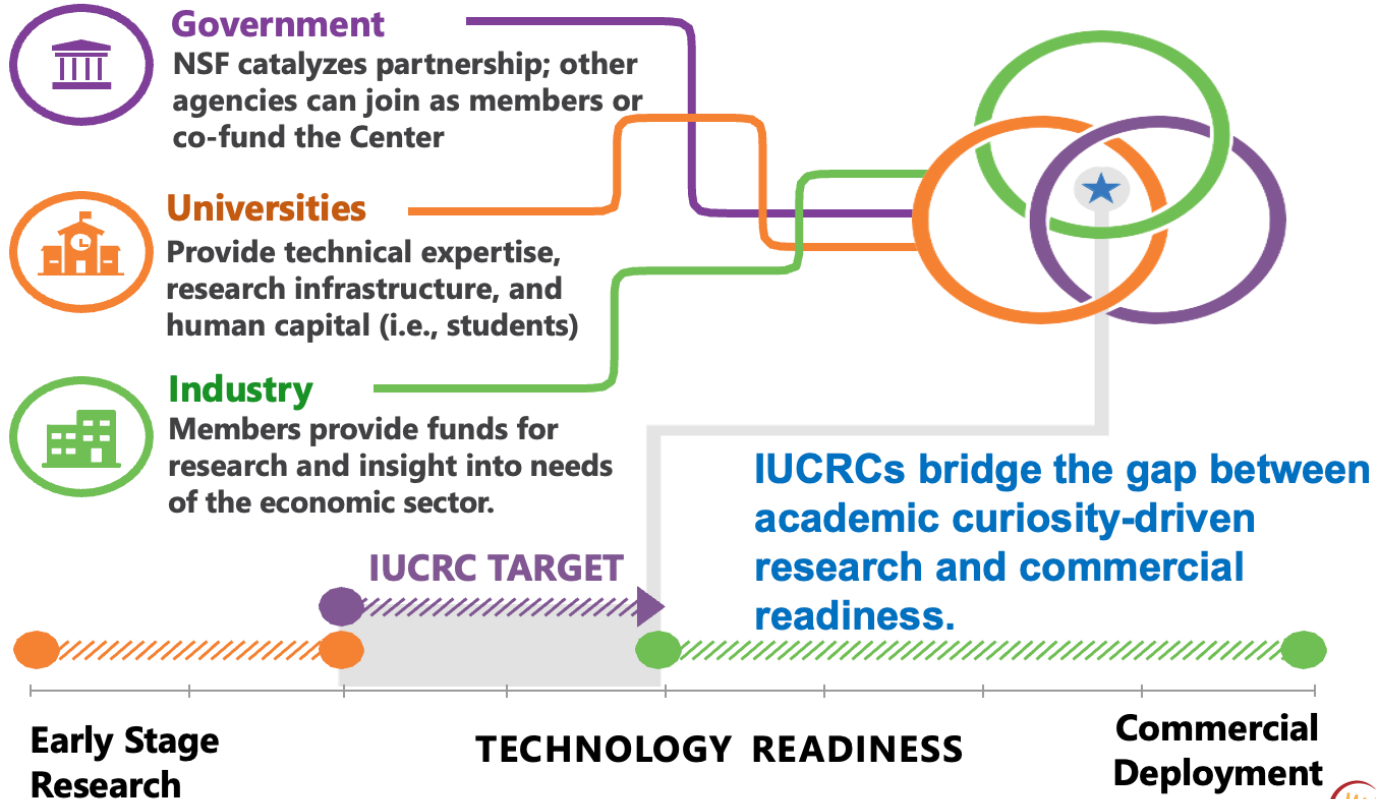


INDUSTRY UNIVERSITY COOPERATIVE RESEARCH CENTER (IUCRC) PROGRAM

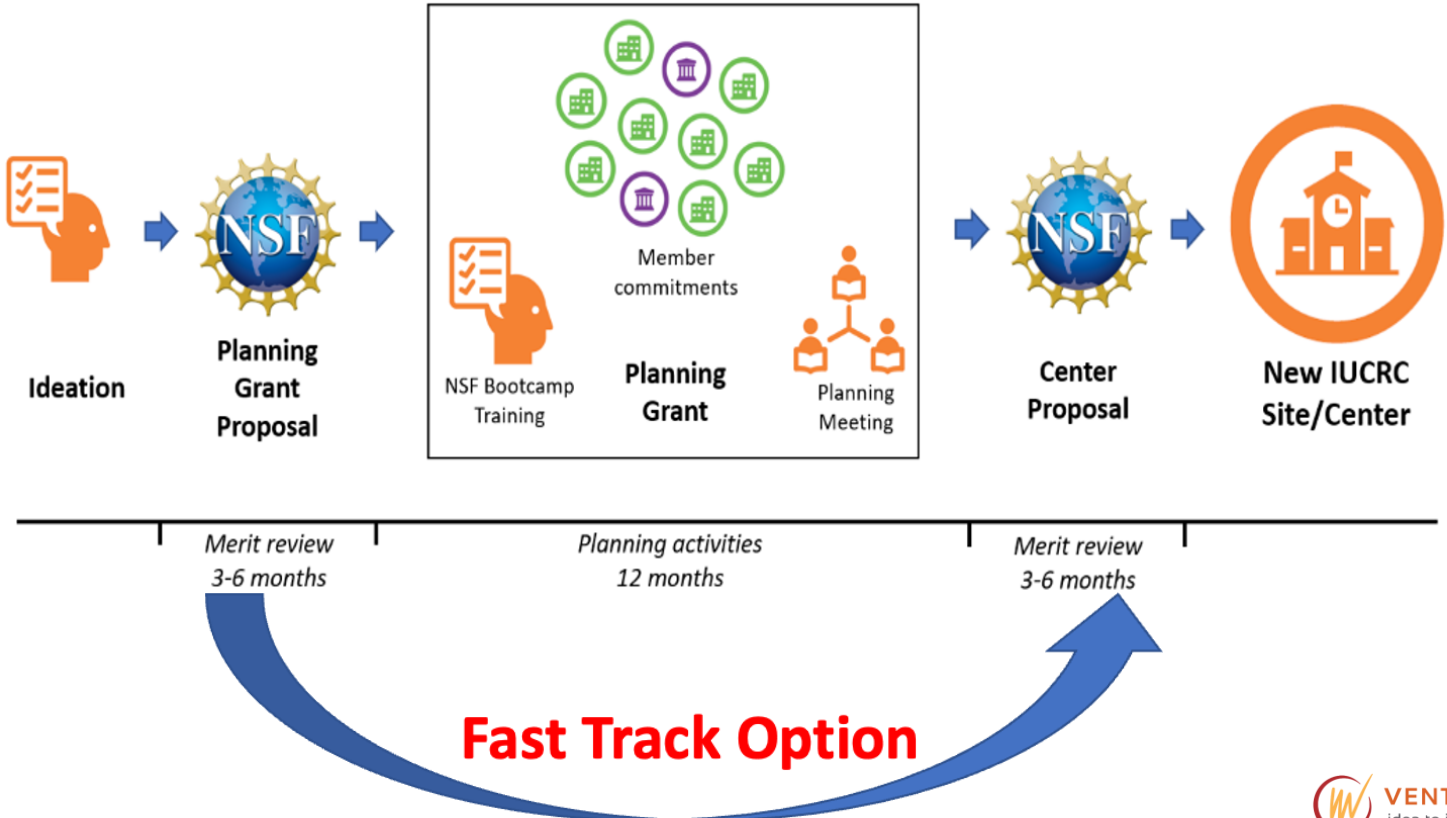
Barbara Ransom: NSF IUCRC Program Director
(Point of Contact for more information)
bransom@nsf.gov

IUCRC – A Multilateral Partnership

(focused on advancing a sector of the economy not one company's sole interest)



IUCRC - Path and Timeline to Creation



NSF IUCRCs – Portfolio Snapshot and Facts

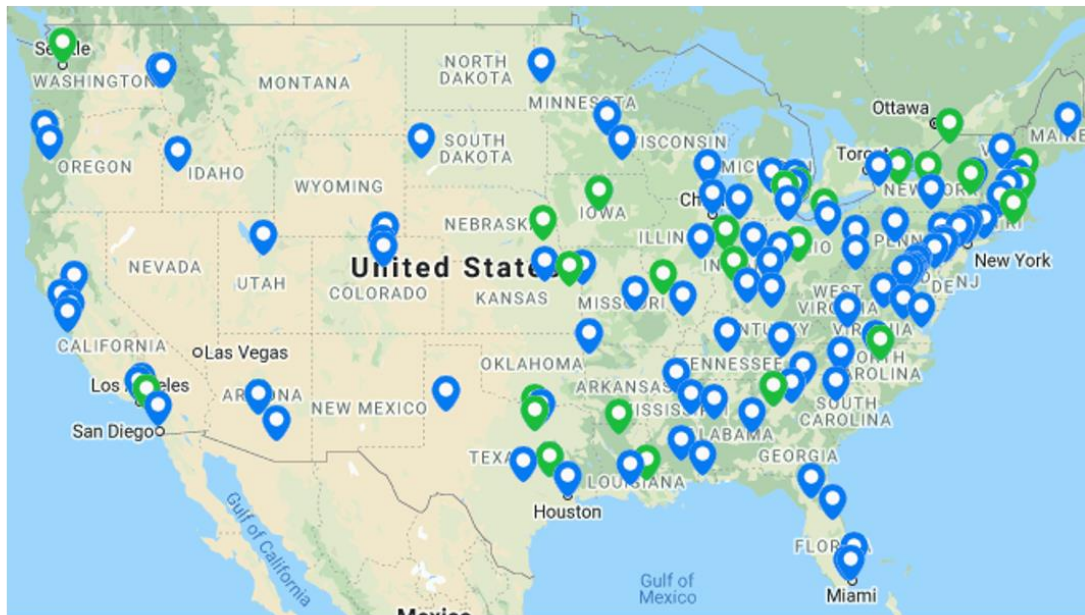
84
Active
Centers

400+
Large
Firms

300+
Small Firms

110+
Universities

20+
Government
Entities



In 2021: **\$47M** in non-NSF funds generated to support Center research.

~1/4 of graduating IUCRC-involved students hired by Center members.

Logos of Some IUCRC Members



IUCRC – Value Proposition for Members

IUCRC Program Funding Benefit

ROI: Member
Each member dollar leverages ~23 additional dollars

ROI: NSF
Each NSF dollar leverages ~7 or more external dollars for basic, use-inspired research



Access to Talent

Members scout student talent and mentor them so they end up with Desired skills for work in industry



Leverage Research Dollars

Get high ROI via joint project funding model



Reduce R&D Risk

Share risks of early stage research for disruptive technology



Access to Network

Interact collegially with other Members/competitors/regulators



Research Cost Avoidance

Save internal research dollars, access to facilities, and infrastructure, lower human capital costs



Access to Intellectual Property

Royalty-free, non-exclusive licenses on IP produced in the Center

VentureWell

Jesse Flanagan
Senior Program Officer



Powering Agriculture



- 24 Innovator-Grantees designed, piloted, and deployed clean energy solutions within agricultural value chains.
- Funding unlocked through milestones: new markets served, total customers served, KW clean energy produced, etc.
- The growth of innovator grantees continues beyond funding cycles: 77 business models and technologies remain active as of 2021.



Public-Private Partnerships to Improve Yield Based Crop Insurance



- Crop insurance for smallholder farmers in SSA is largely inaccessible, and the products available to farmers are inadequate.
- PPPs are piloting remote sensors to gather local data, which can improve insurance products.
- Financial interests to improve technology are aligned for nearly everyone in the value chain.



VENTUREWELL™
idea to impact