VITAL SIGNS

A monitoring system for agriculture, nature and human well-being

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www.vitalsigns.org

MAIN FUNDERS

- The Bill and Melinda Gates Foundation
- The MacArthur Foundation
- The Barr Foundation
- The Schooner Foundation
- The Global Environment Facility
- The Africa Biodiversity Collaboration Group
- The Mulago Foundation
- **etc**

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BACKGROUND-WHY VITAL SIGNS?

- Agriculture is the most important sector in Africa accounting for 65% of Africa's workforce and 32% of the continent's GDP. In some countries more than 50% of GDP.
- Agricultural landscapes are the single most important solution space for achieving the SDGs.
- African agriculture is diverse and complex – needs **site specific solutions.**
- We need the **data at that site level to get the solutions right**

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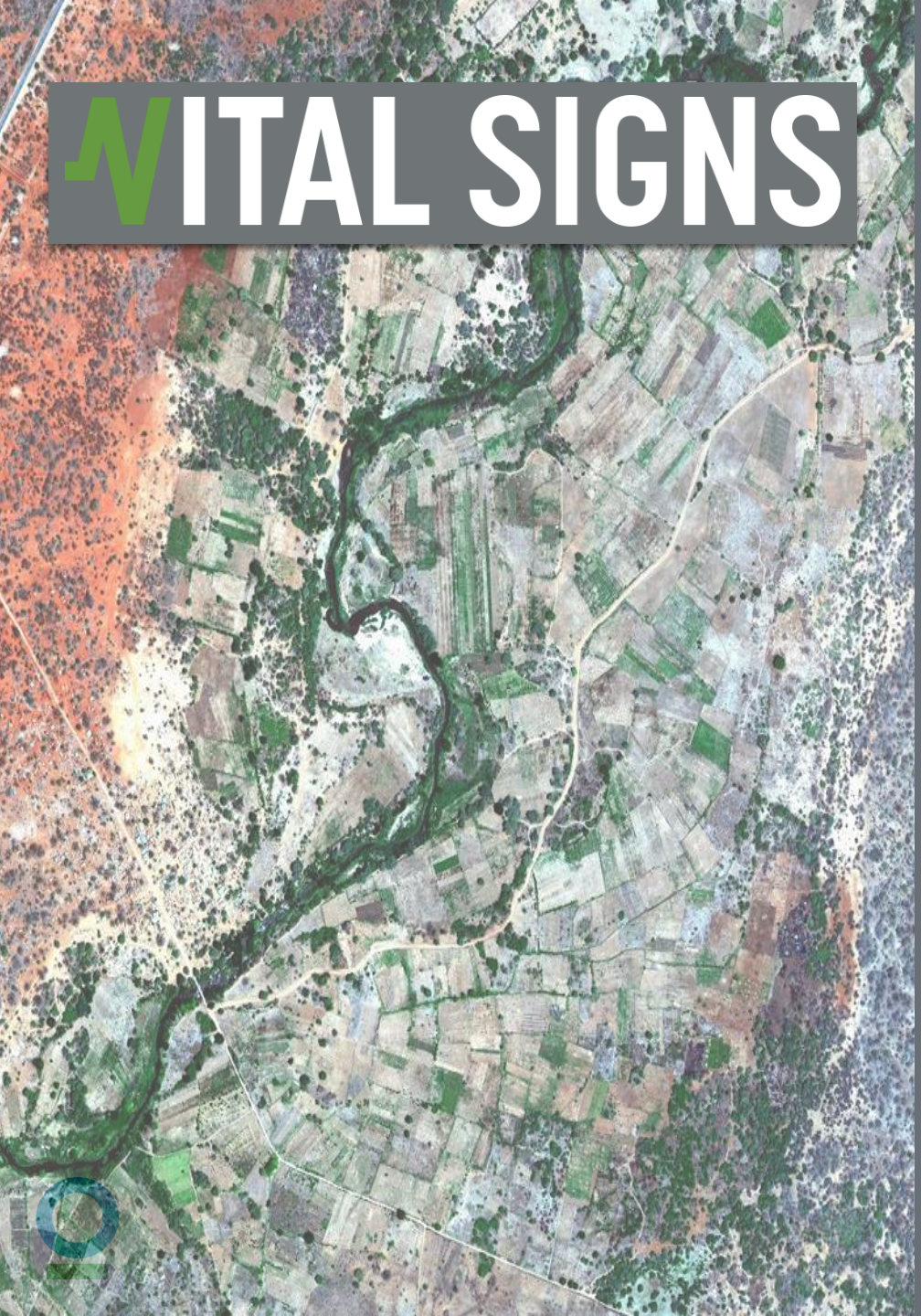
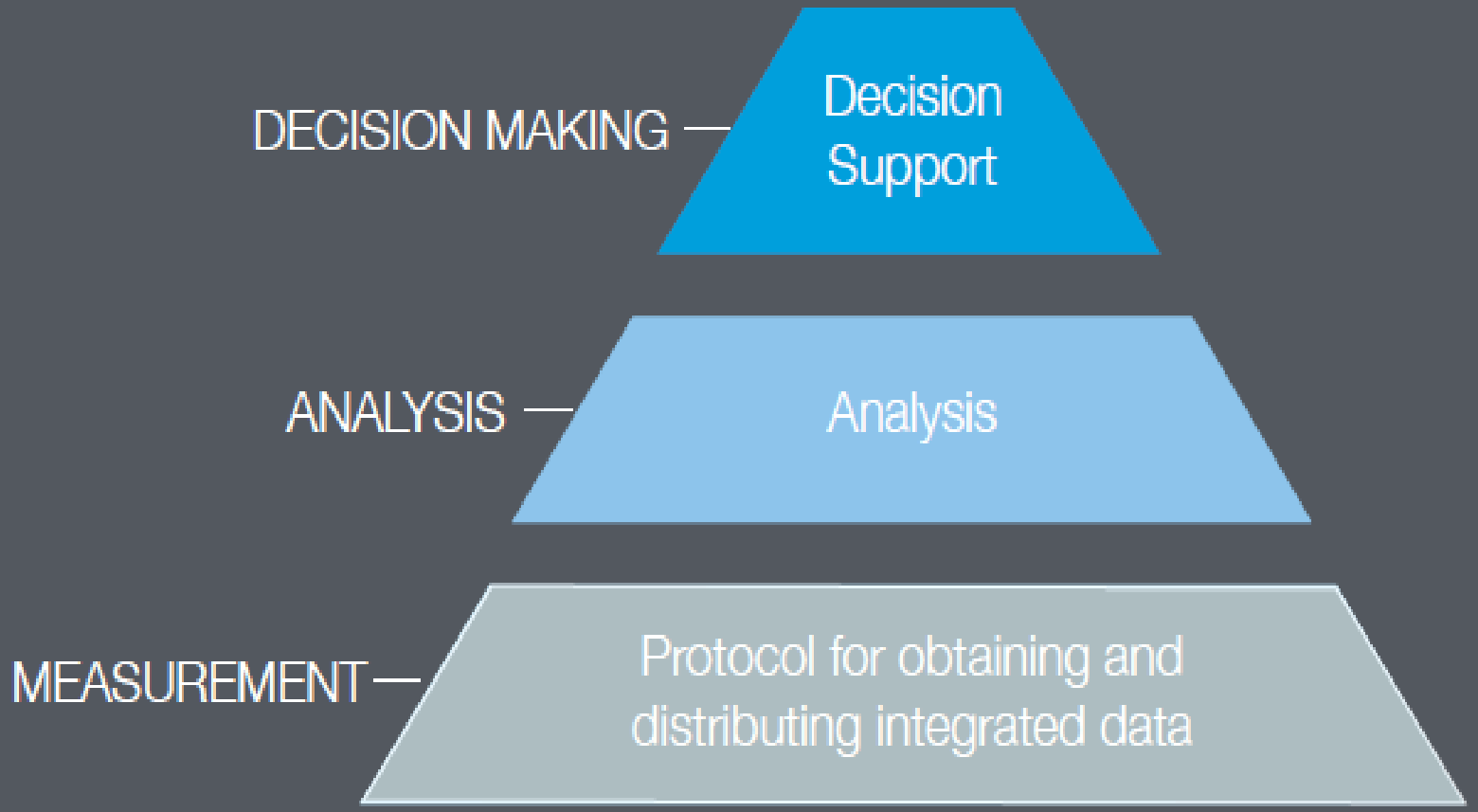


- The ***Vital Signs*** monitoring system **collects and integrates data** using standardized protocols and methods including household surveys, vegetation plot measurements, and remote sensing.
- The data **analyzed together** aims to communicate the importance of ecosystem services for small holder agriculture and the **complex trade-offs** between agriculture, ecosystems and human wellbeing.
- The goal is to ensure that agricultural development does not undermine conservation and ecosystem services critical to human well-being.

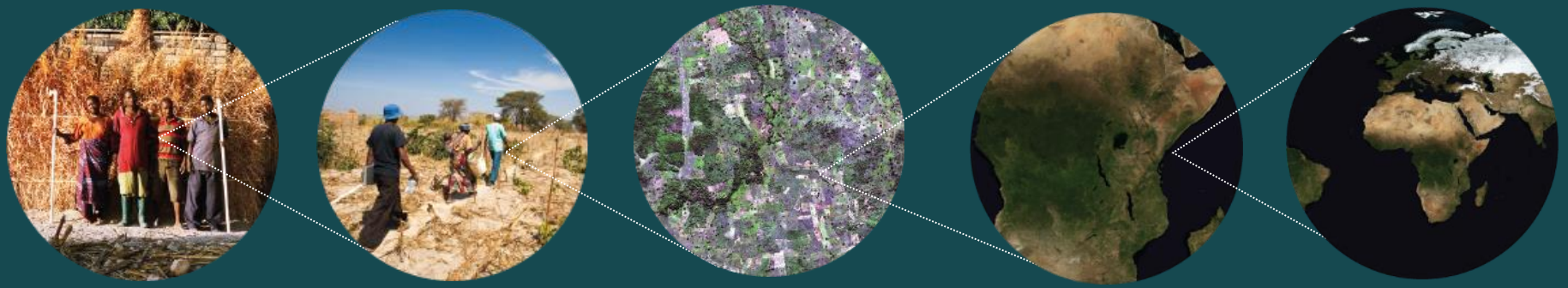
VITAL SIGNS SYSTEM



QUESTIONS VITAL SIGNS AIMS TO ANSWER

- What is the value of nature to farmers?
- What interventions will increase the resilience of agricultural production to climate variability and shocks?
- Which ecosystems (and where) should we conserve to ensure that agricultural production can be sustained?
- Where should agriculture be intensified to maximize yields while sustaining healthy ecosystems?

Vital Signs Design



HOUSEHOLD

PLOT

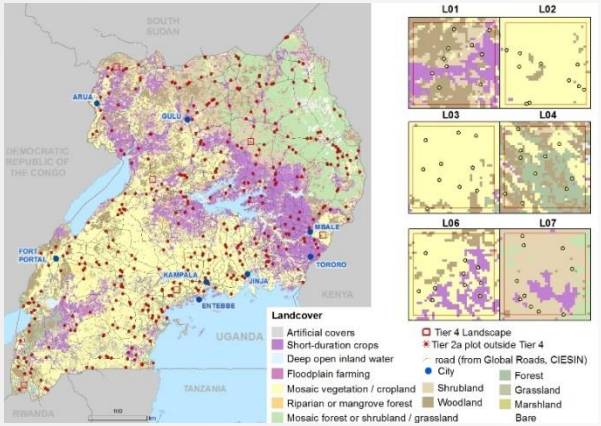
LANDSCAPE

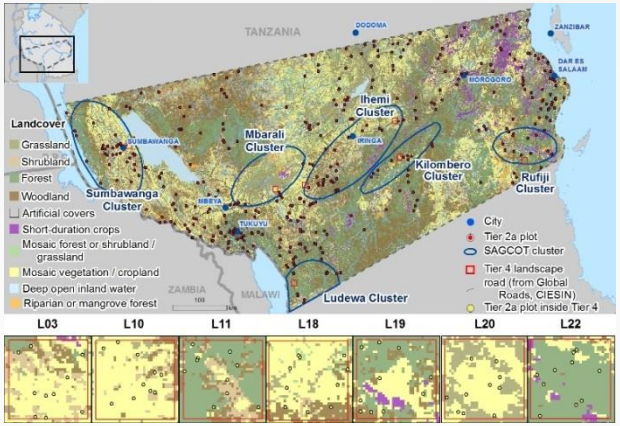
NATION

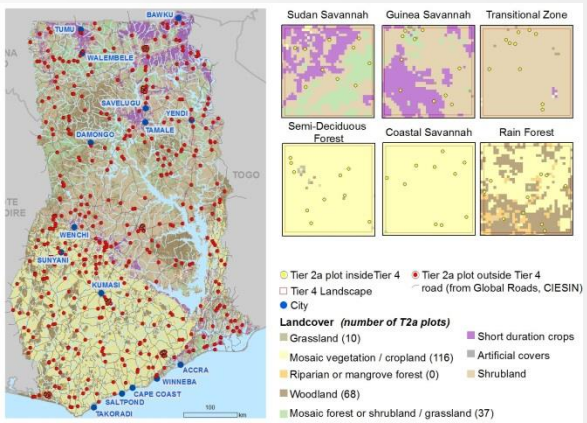
GLOBE

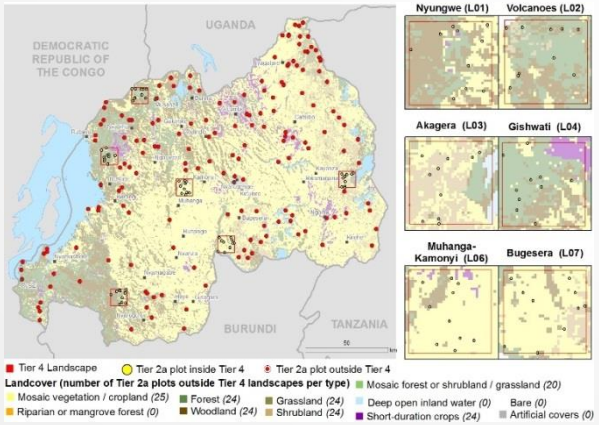
VITAL SIGNS SAMPLING FRAMEWORK

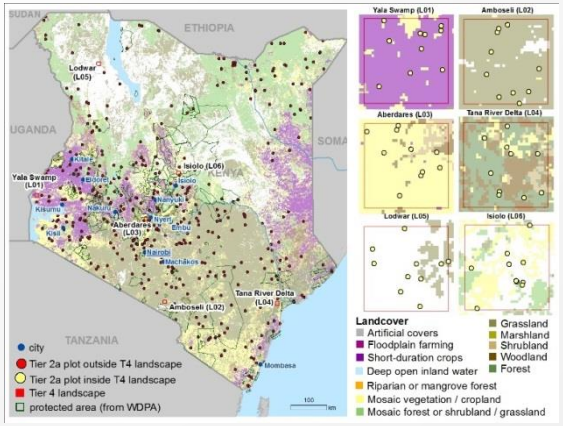
UGANDA, TANZANIA, GHANA, RWANDA & KENYA











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DATA COLLECTED TO DATE

- **830** household surveys covering **7,197** individuals
- **2,272** agricultural fields surveyed
- **212** verified yield samples
- **4,980** soil samples from biophysical plots
- **999** soil samples from farmer's fields
- **49,661** trees measured and identified
- **6,810** subplots assessed for erosion
- **2,764** unique plant species identified
- **6733** georeferenced land cover points recorded for ground-truthing classifications
- **8** weather stations constantly collecting data and transmitting to database every half hour

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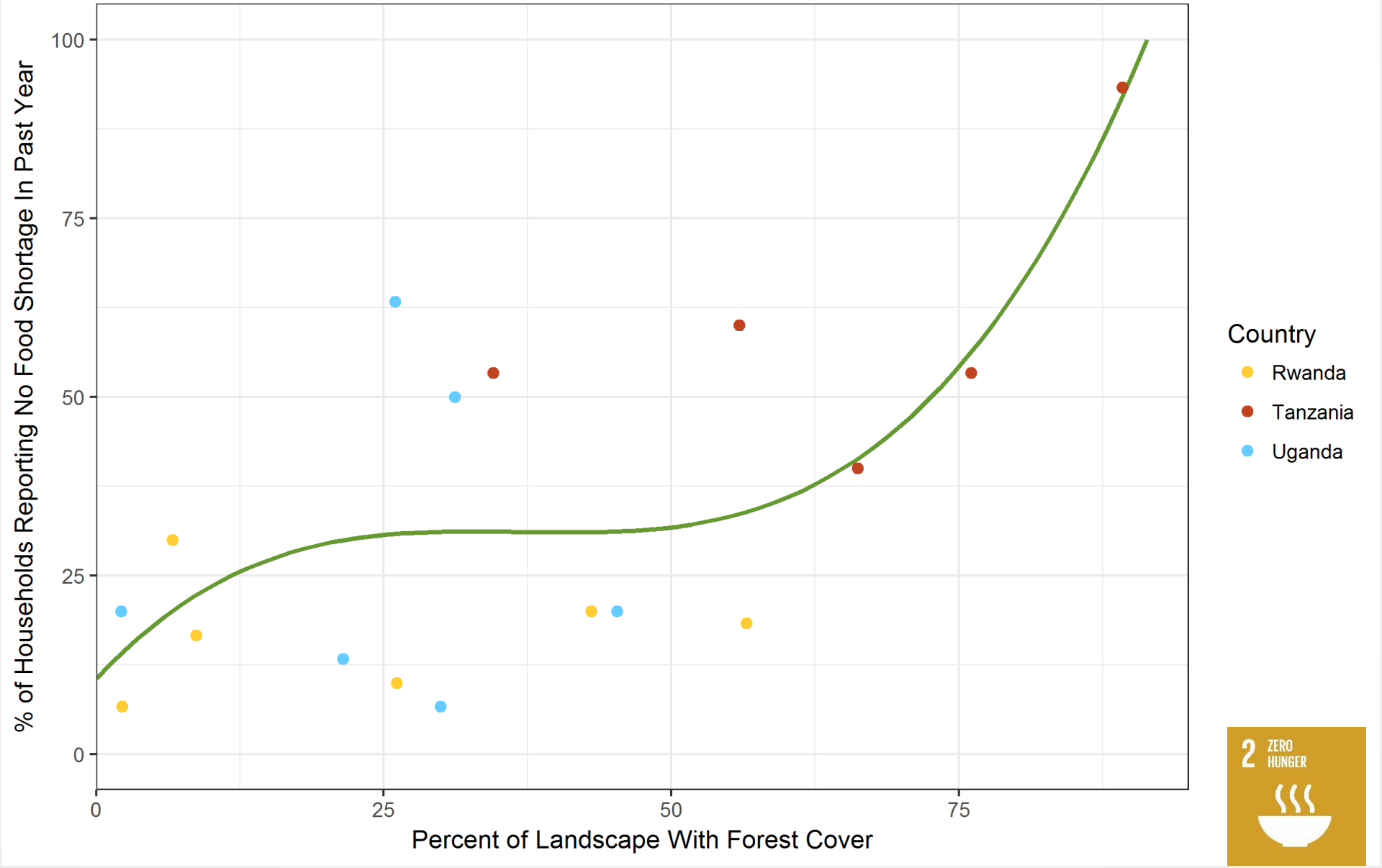
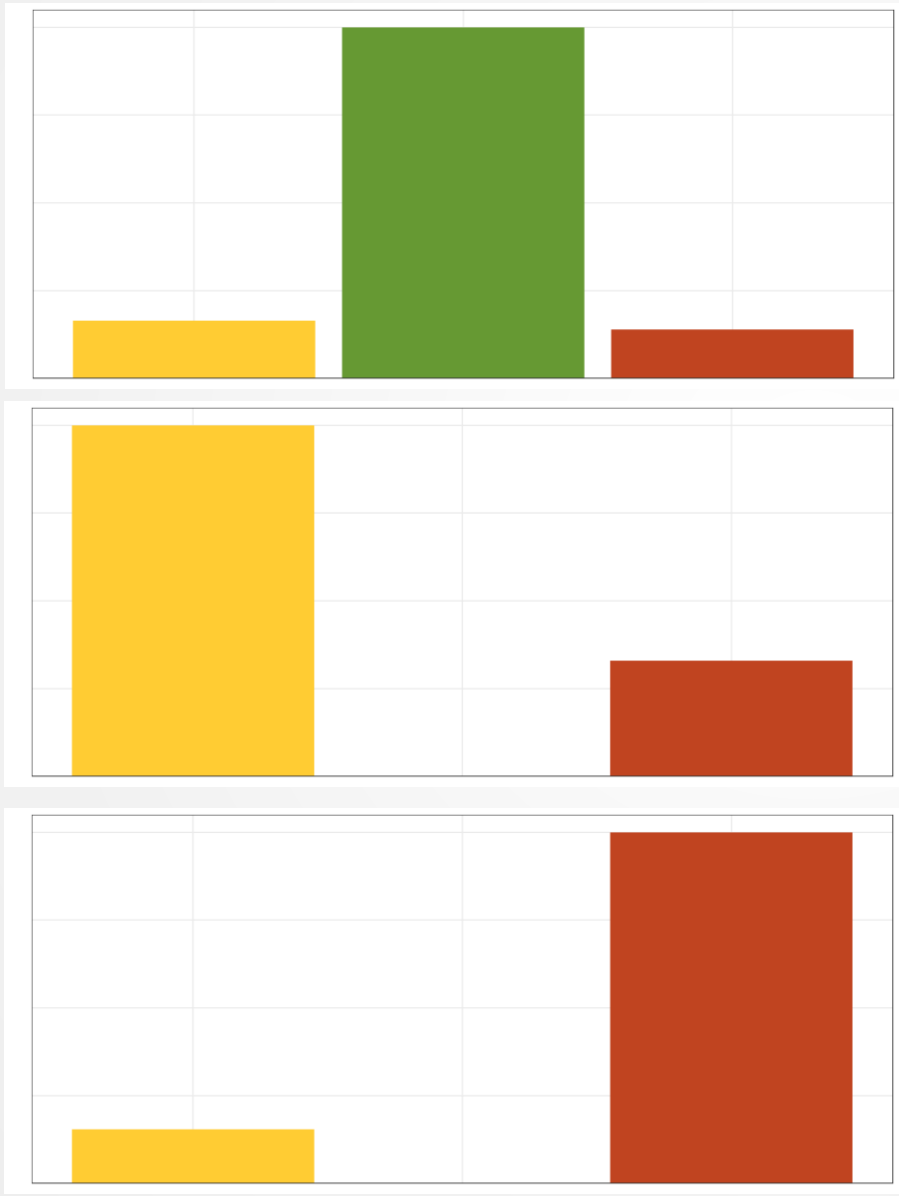
PRELIMINARY FINDINGS

NATURE PLAYS A KEY ROLE IN FOOD SECURITY



2 ZERO HUNGER

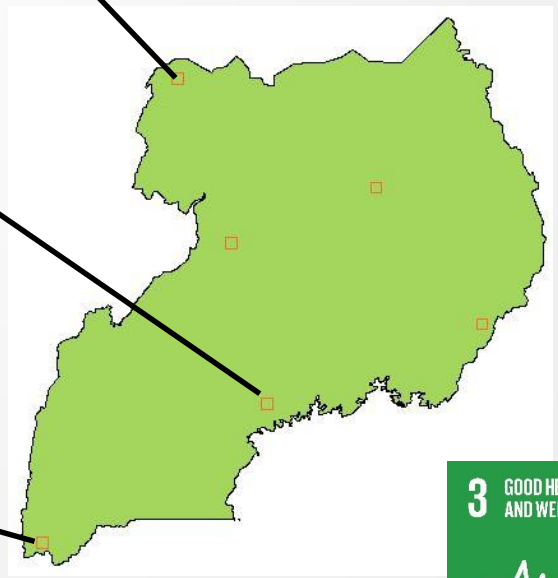
UGANDA: FORESTS CAN BUFFER AGAINST MALNUTRITION WHERE AGRICULTURAL OUTPUT IS LOW



Agricultural Production

Natural Resource Use

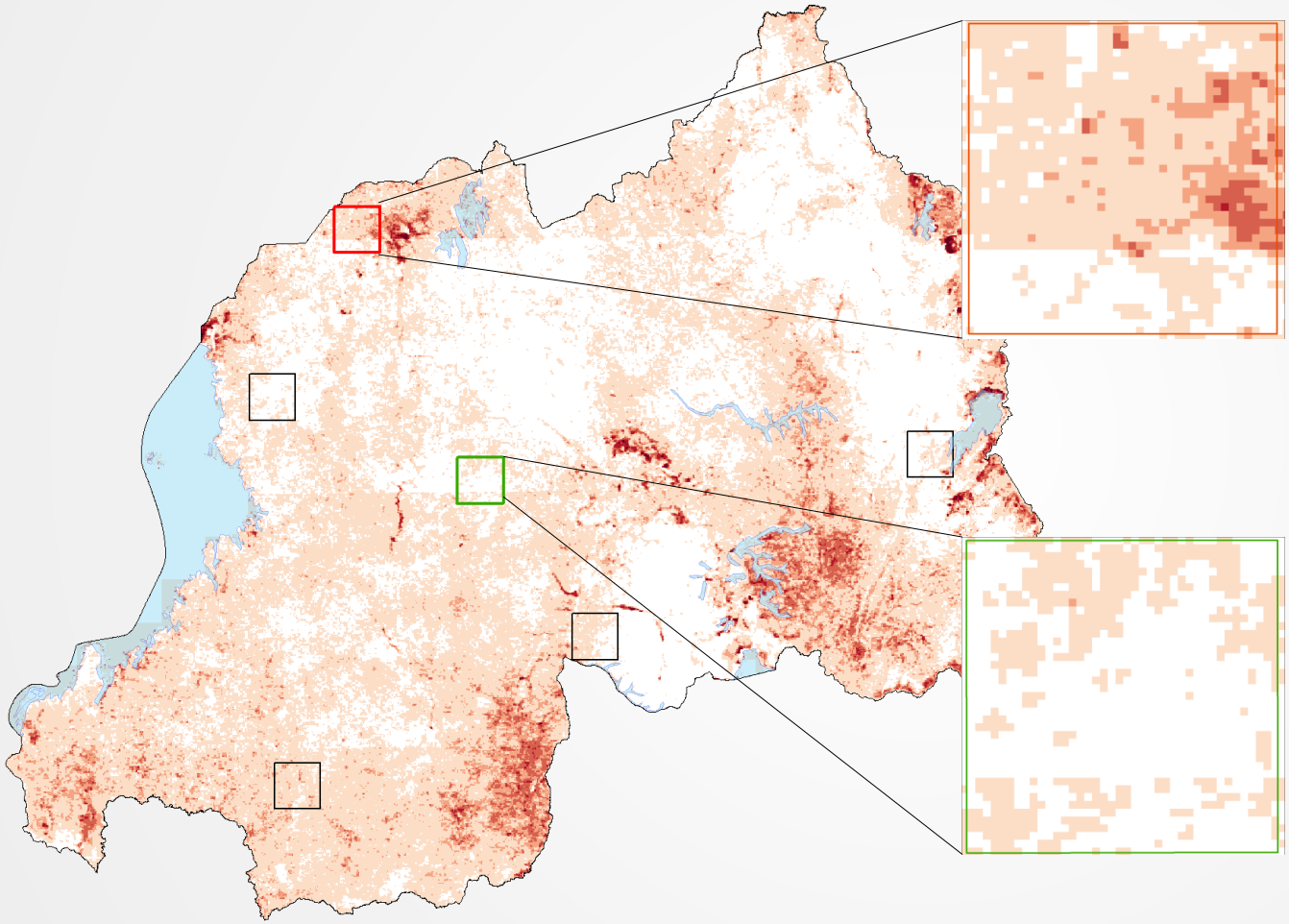
Stunting



3 GOOD HEALTH AND WELL-BEING

LOW RETURNS ON INVESTMENT IN AGRICULTURE DUE TO LAND DEGRADATION

RWANDA: LOW RETURNS ON INVESTMENT IN AGRICULTURE DUE TO LAND DEGRADATION



42% degraded: farmers get **$4** for every $1 spent on Agriculture.

2.6% degraded: farmers get **$34** for every $1 spent.

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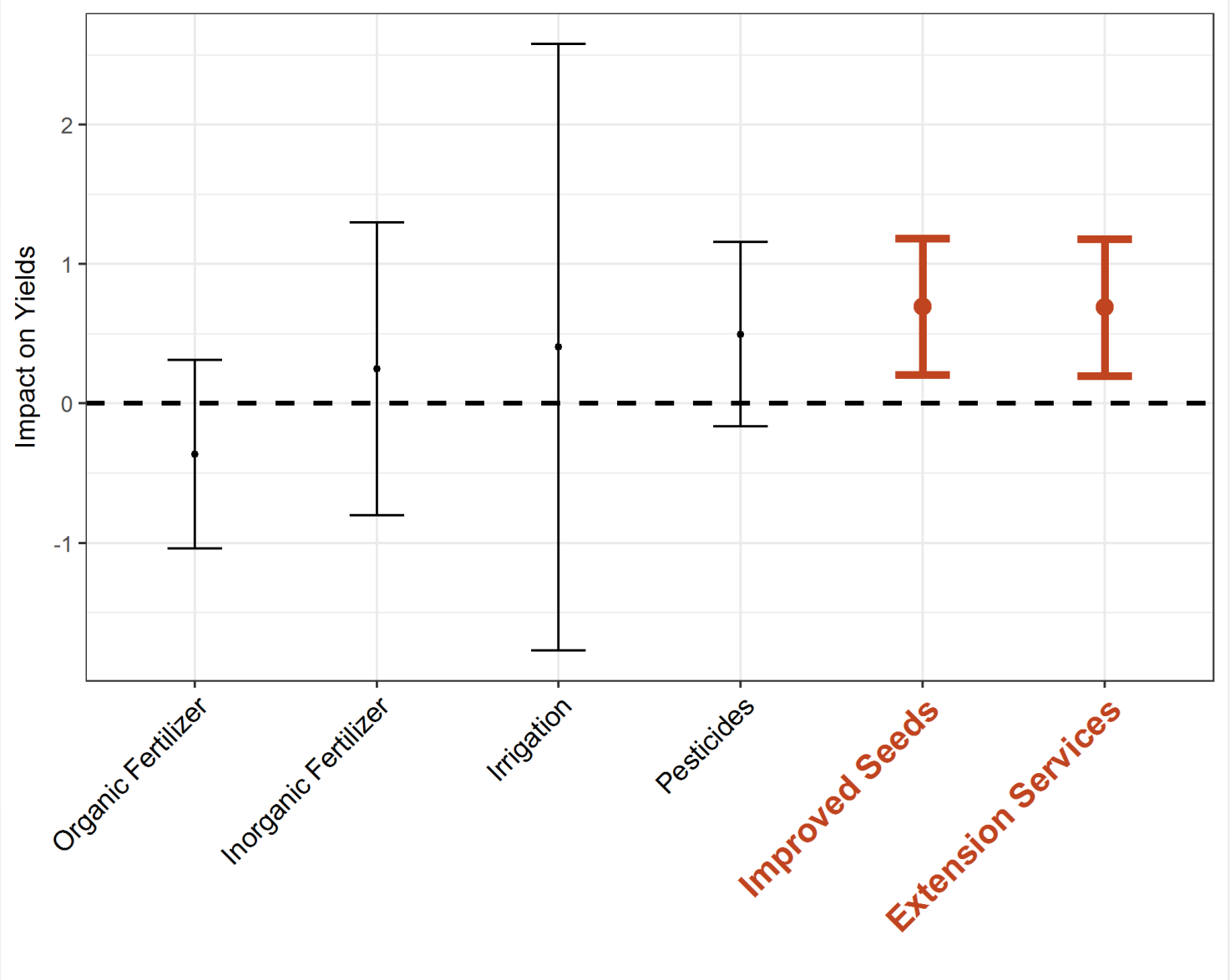
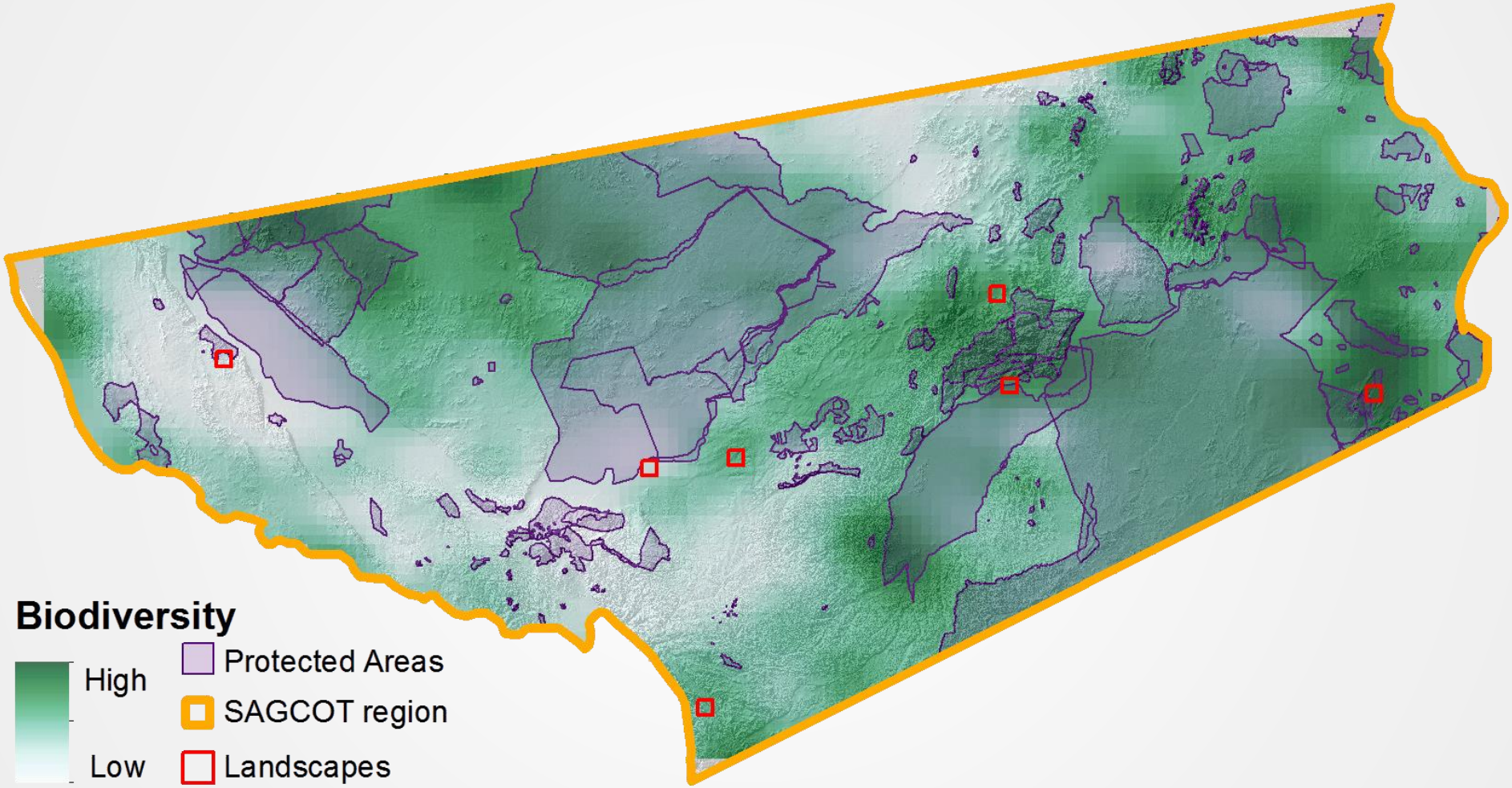
1 NO POVERTY

IMPROVED SEEDS AND EXTENSION SERVICES ARE CRITICAL FOR HIGHER YIELDS



13 CLIMATE ACTION

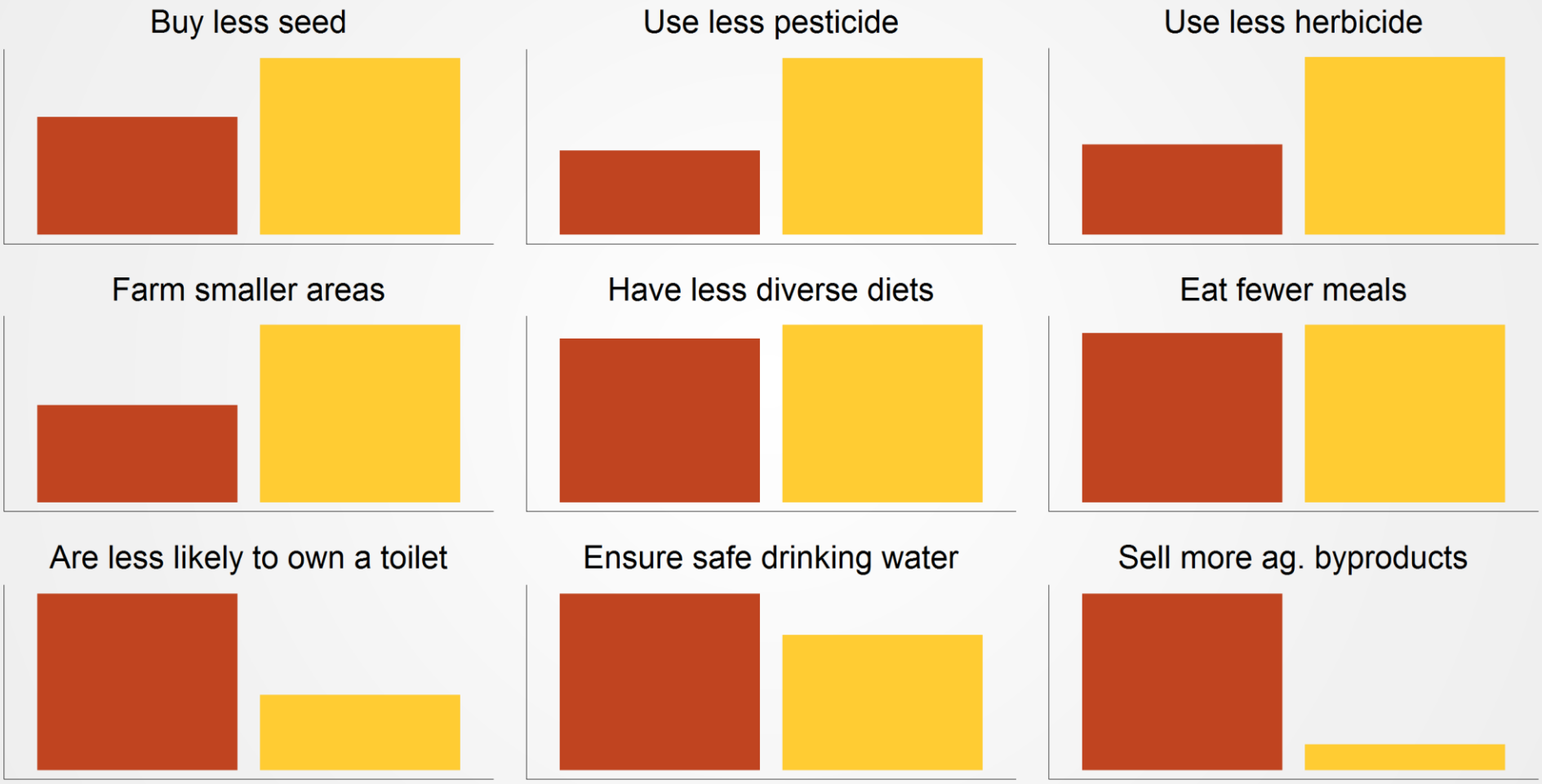
TANZANIA: MAPPING AND PROTECTING NATURAL CAPITAL



15 LIFE ON LAND

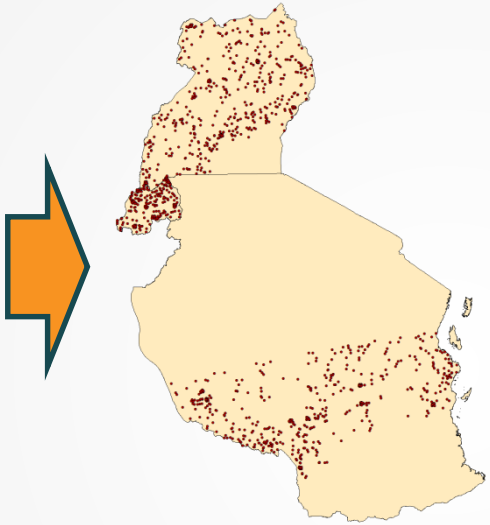
WOMEN FARMERS CARRY THE BIGGEST BURDEN

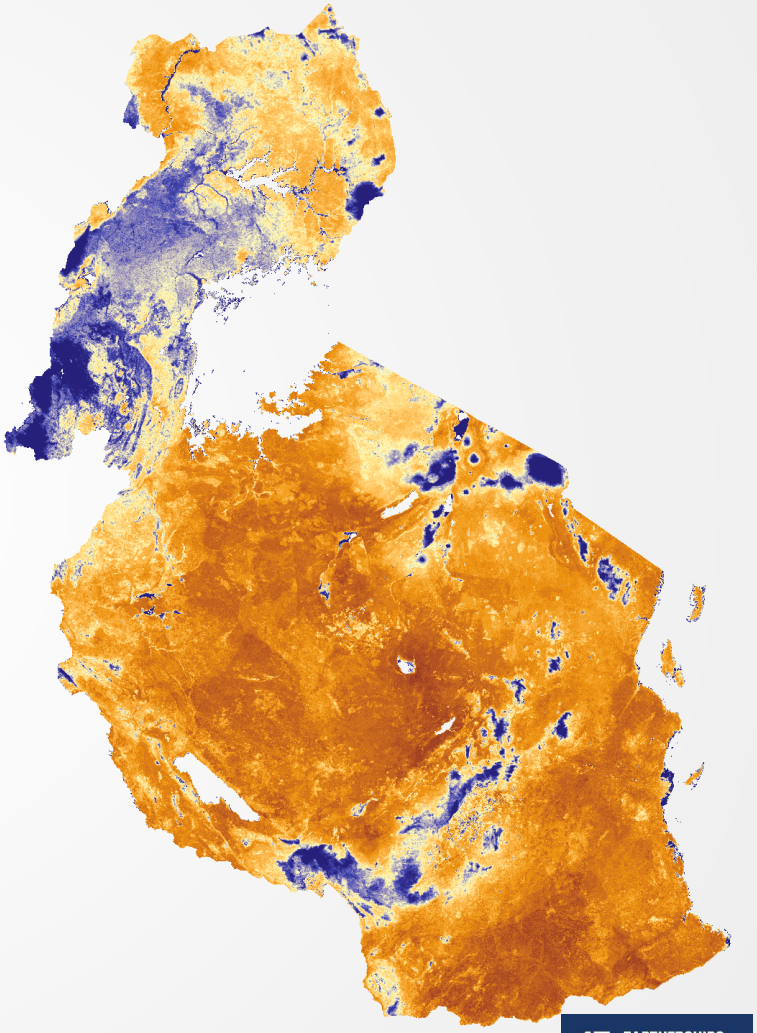
FEMALE HEADED HOUSEHOLDS …



5 GENDER EQUALITY

INTEGRATING AND AMPLIFYING





Partnering with ISRIC, Vital Signs has scaled up on-the-ground soil samples using Machine Learning to map soil nutrients across the continent at high resolution.

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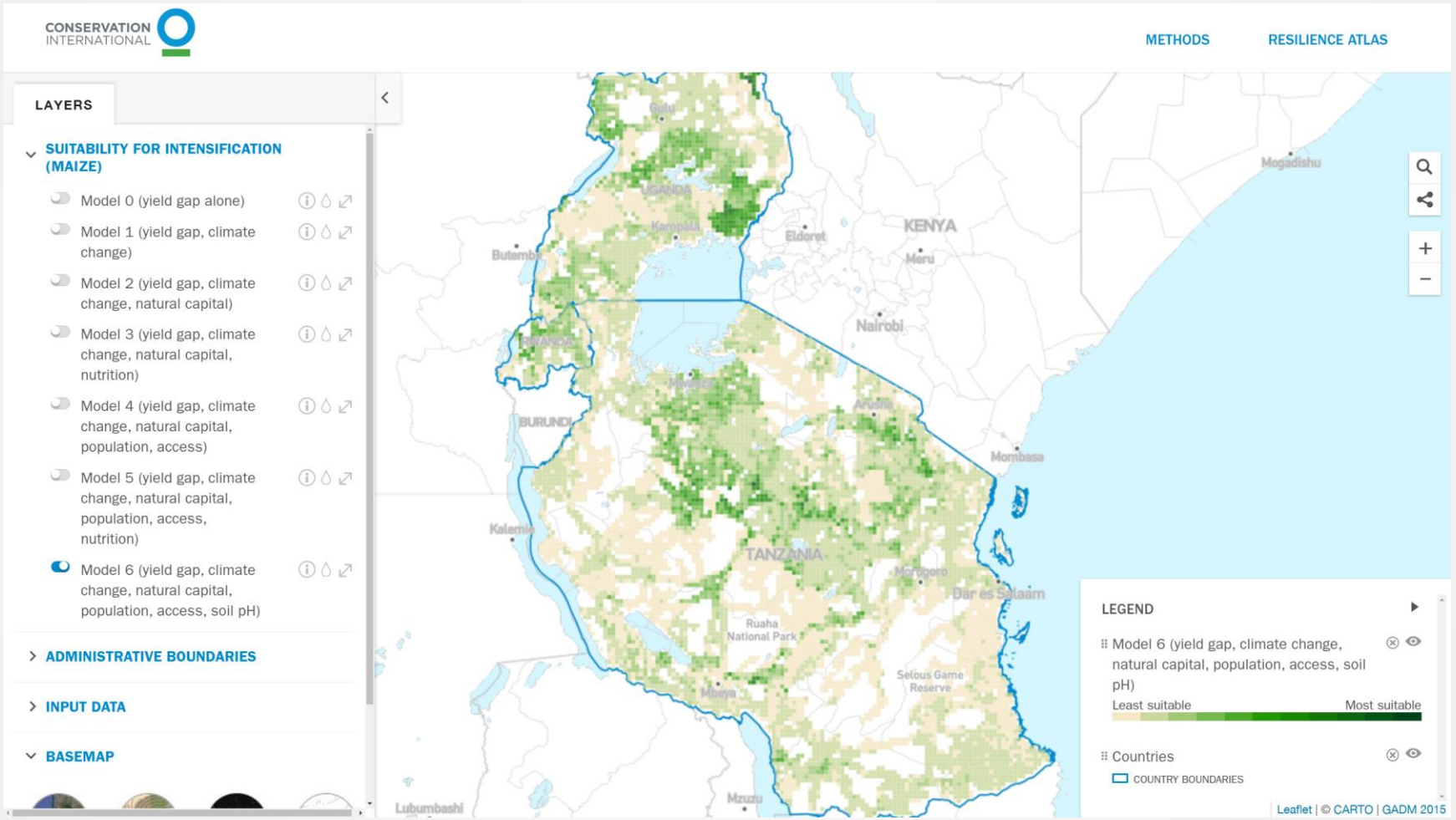
17 PARTNERSHIPS FOR THE GOALS

INTENSIFICATION PRIORITY SETTING

INTENSIFICATION.RESILIENCEATLAS.ORG



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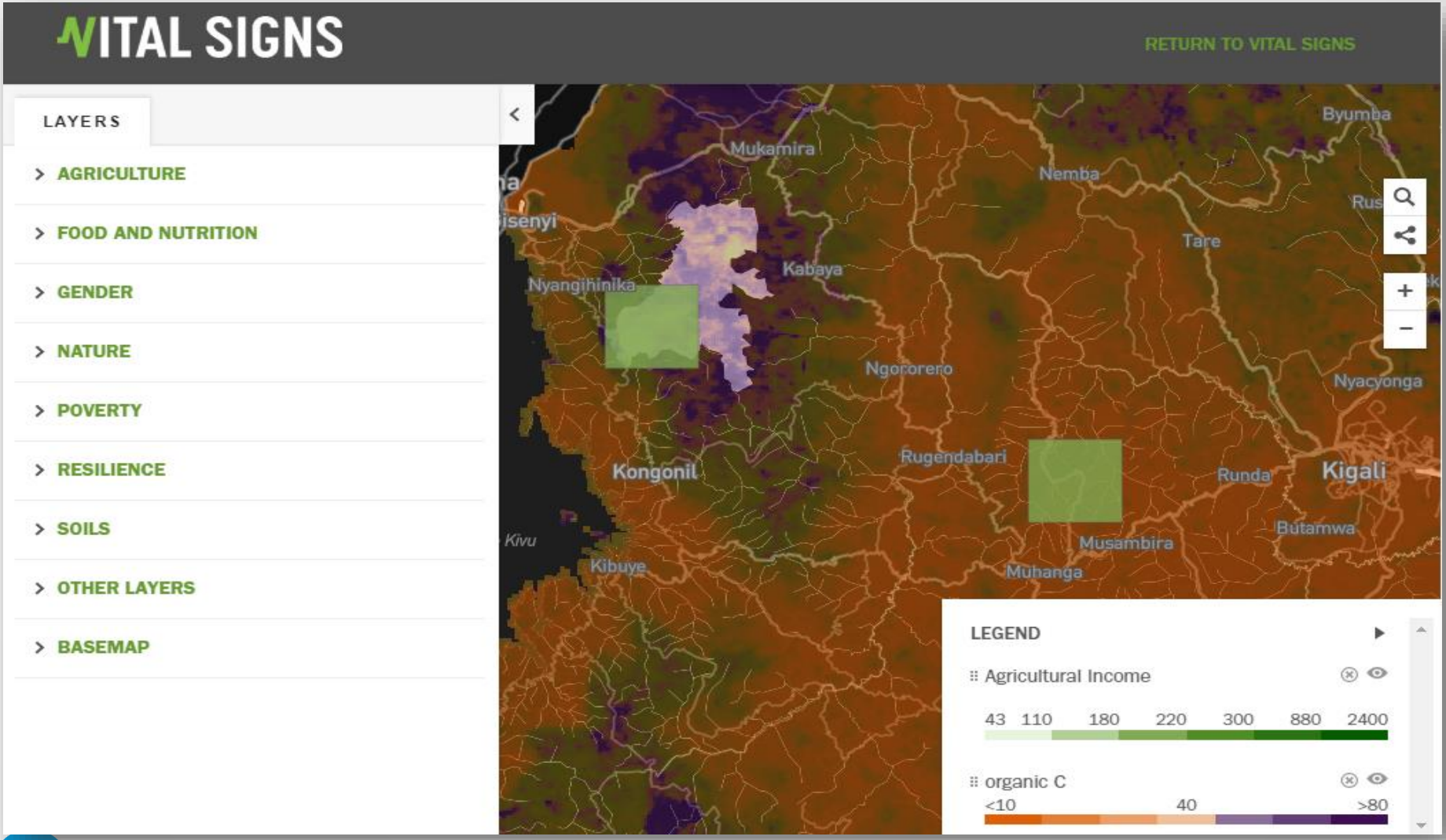
12 RESPONSIBLE CONSUMPTION AND PRODUCTION

VISUALISING THE VITAL SIGNS INDICATORS

INDICATORS.VITALSIGNS.ORG



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Vital Signs & Technology

Space Based Sensors

Ground Sensors

Social Surveys

Scalable Data Integration
and Insights Platform

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

PARTNERSHIPS

- LSMS – ISA
- National Statistics and Meteorological Agencies
- NASA & ESA
- Land PKS
- AGRA
- Lund University

OTHER EXCITING OPPORTUNITIES!

- **University of Washington – Data Science for Social Good program** – 16 students and 2 Data Scientists made available to work on our data for 10 weeks
- **Monitoring Framework for the GEF Integrated Approach Pilot on Sustainability and Resilience for food Security in Sub Saharan Africa** – 12 countries
- **UNECA –** Signed MOU to provide data for their various programmes
- **SDG Interlinkages working group –** support countries to better understand how the SDG targets and indicators link together for easier reporting
- **Future Earth (futureearth.org)**–opportunity to share the best science with the wider society in Africa

IN SUMMARY

- Natural resources are playing **a key role in** complementing food security and nutrition
- Limited returns on investment from agriculture especially due to land degradation
- High levels of malnutrition remain despite increase in intensification
- Female headed households still bear most of the burden

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NEXT STEPS – RENEWING
OUR PARTNERSHIP

NEXT STEPS- 5 TO 10 YEAR TIMEFRAME?

- **2nd Phase of Data Collection:** VS Established strong baseline but needs to continue data collection to better understand trends, causality and trade offs (at various scales).
  - Focus on a smaller number of key indicators
  - Larger sample sizes in key hotspots
  - Incorporate National data –Household surveys, agricultural data, etc
- **Identify key entry points for Data to support Policy Making** : e.g
  - Tanzania: Village land use plans
  - Rwanda: Bonn Challenge-forest landscape restoration program;
  - Kenya-Integrated platform for planning and decision making
  - Uganda-Agricultural Zoning Policy

NEXT STEPS- 5 TO 10 YEAR TIMEFRAME?

- **Strengthen National Capacity** to analyze and use the results for better decision making at various scales (including extension workers)
- **Strengthen collaboration with key partners working in the same space** : The Regional Center for Mapping and Development, CIAT, ICRAF, European space agency, AFSIS, Land PKS, CGIAR Data Platform, etc
- **Respond to Emerging Requests for Data:** SDG 2 reporting, Planetary Health (Environment and Health/Climate change and Health)
- **Plan for Sustainability –** Integrate the data collection and monitoring system into either the Bureau of Statistics, or Planning Ministry – so that in 10 years countries have capacity to collect, analyze, interpret their own data and use it for better decisions

THANK YOU

Questions?

CONSERVATION INTERNATIONAL

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