VISION FOR ADAPTED CROPS AND SOILS and SoilFER

Food and Agriculture Organization of the United Nations

Fostering resilient food systems through fertile and healthy soils

CFS52 Side Event
25 October, 2024

The Vision for Adapted Crops and Soils

A movement to achieve a *resilient food system* grounded in *diverse, nutritious,* and *climate-adapted crops* grown in *healthy soils*.

FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

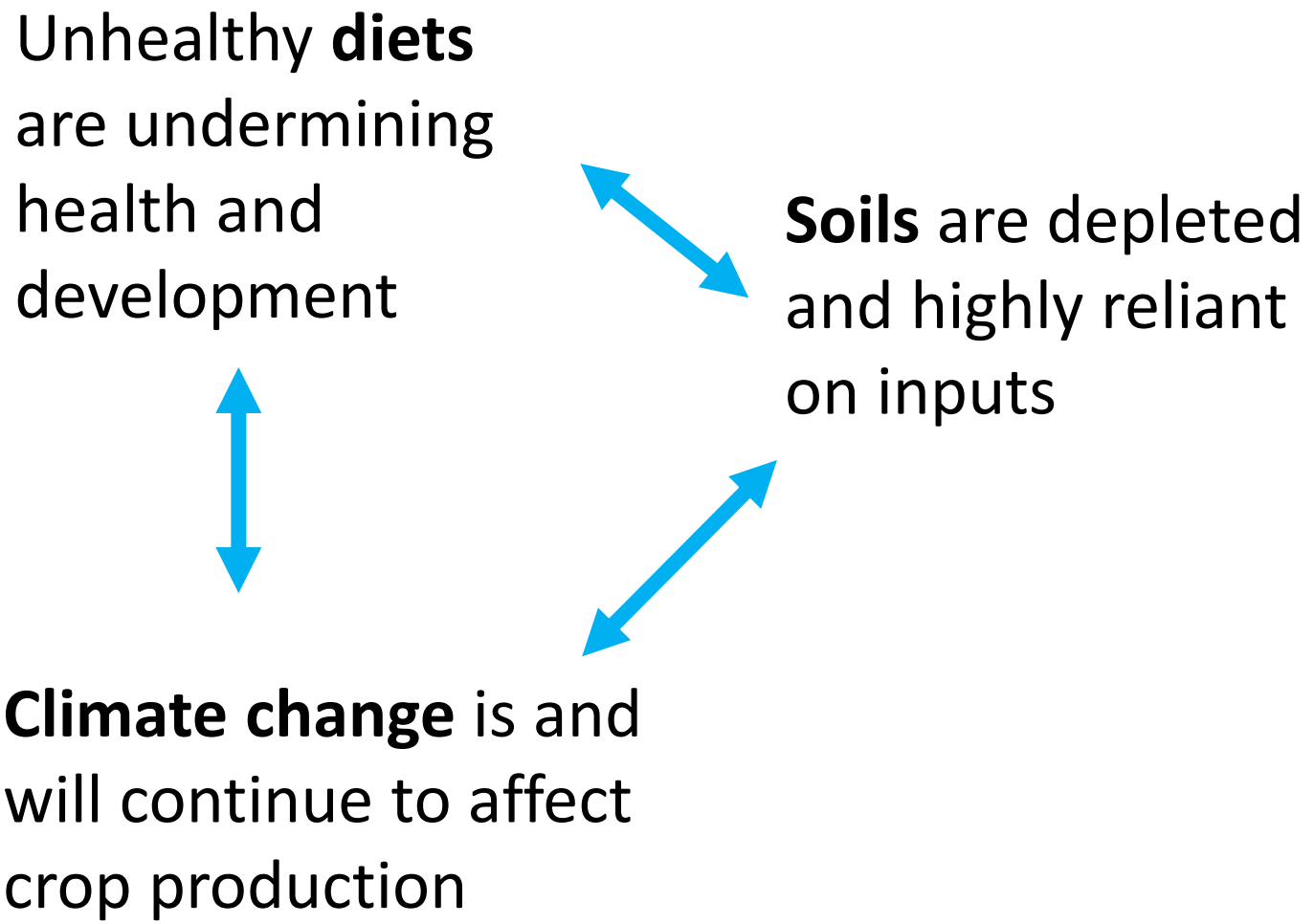
Crops and Soils - an integrated, holistic approach

Why Crops and Soils?

The truth is: soil is literally at the root of many pressing national security challenges that we face…without good soil, crops fail, prices rise, people go hungry.

U.S. SECRETARY OF STATE ANTONY J. BLINKEN, WORLD ECONOMIC FORUM, 16 JANUARY, 2024

Vision for Adapted Crops and Soils (VACS) addresses a set of interconnected problems



From the VACS Theory of Change

VACS Mission and Goals: *Catalyze a movement to boost agricultural productivity, nutrition, and farmer livelihoods through diverse, climate-adapted crops grown in healthy soils*

What's an Opportunity Crop?

Key to the Vision is the concept of an ***opportunity crop.*** An opportunity crop is a crop with great unrealized potential to improve food and nutrition security in the context of climate change and increasingly degraded soils in a particular place. Most are nutrient-rich traditional and indigenous crops that have suffered historically from underinvestment.

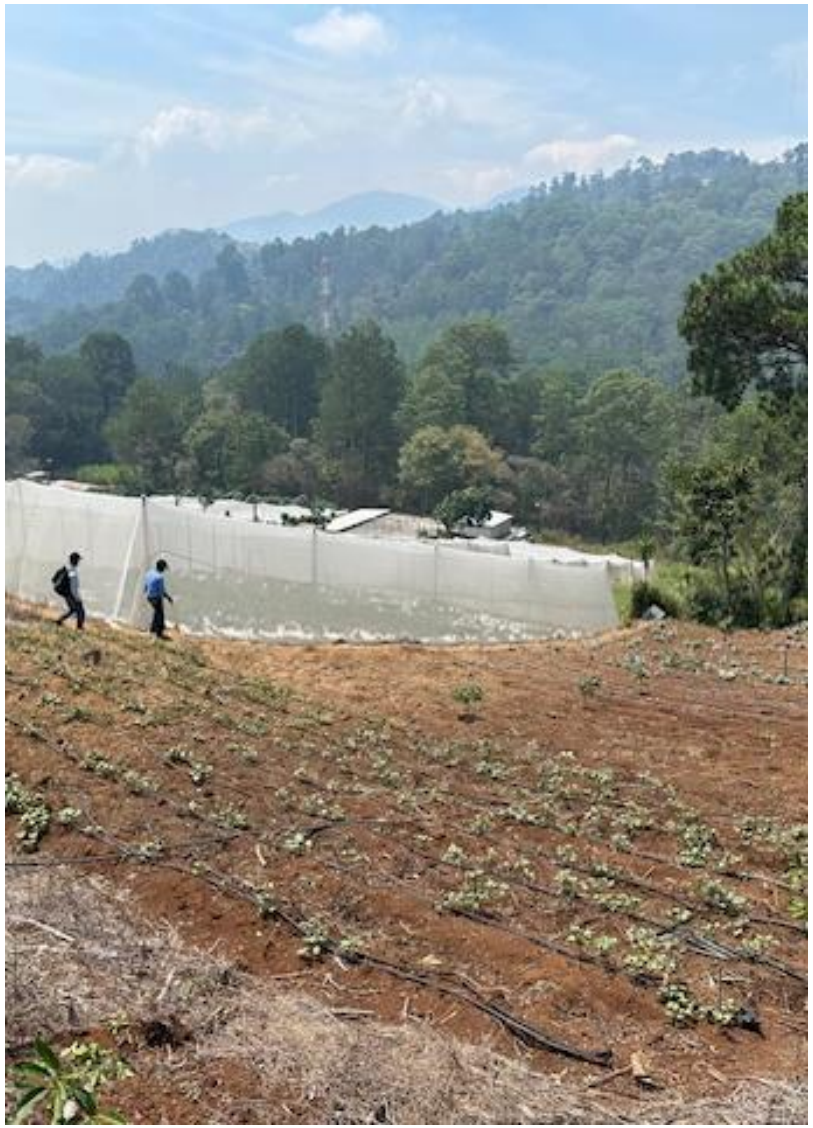
Why is it so important to match land use with its sustainable potential and improve soil health?

- Growing crops where they can be sustainably produced **protects the land from degradation** for future generations
- Crops grown in soils they are adapted to are **more productive**
- Healthier soils allow crops to **survive droughts** and **increase fertilizer use efficiency**
- More productive crops on healthier soils **reduce greenhouse gas emissions** and **sequester carbon**

The VACS Investment Framework: Illustrative Interventions

	WHERE TO PLANT *For sustainable land use and food production*	WHAT TO PLANT *For productivity and nutrition*	WHAT CROP MANAGEMENT SYSTEMS *For efficiency & productivity*	HOW TO APPLY TO DIVERSE CROPS *For each crop and conditions in a given year*
GLOBAL	*Develop tools to inform land use planning, including by integrating soil and crop information.*	*Enable plant breeding programs; increase awareness about benefits of opportunity crops.*	*Develop knowledge systems to accelerate innovation and sharing globally of successful practices.*	*Develop novel fertilizers and formulations that will support increased production of opportunity crops.*
NATIONAL + SUBNATIONAL	*Share technical advice and research to inform land use and agricultural subsidy policies.*	*Build R&D capacity; Build value chains for new varieties to deliver them to markets and consumers.*	*Expand agricultural curricula and extension services to focus on nutrition, sustainability, and diverse crop management.*	*Invest in crop management Decision Support Tools for pest and nutrient management for opportunity crops.*
LANDSCAPE	*Strengthen land use planning and extension services.*	*Expand access to crop suitability information to identify crop options for specific landscapes.*	*Develop systems to analyze the impacts of different management systems on nutritious diets and sustainability.*	*Support learning collaboratives that accelerate real-time knowledge sharing and reduce adoption risk for farmers.*
FARM	*Enable hyper-local recommendations by integrating farmer inputs into soil information systems.*	*Expand access to more crop options, allowing farmers to diversify and improve income, nutrition, and soil health.*	*Develop and provide access to app-based, locally-tailored Decision-Support Tools and local training and education.*	*Provide access to mobile and remote consultation services and local demonstrations of best practices.*
FIELD	*Develop low-cost tools to help small farmers deploy precision farming techniques.*	*Expand access to crop suitability information to identify crop options for specific fields.*	*Expand access to knowledge on how to successfully manage traditional and indigenous crops.*	*See Farm and Landscape.*

Where to plant and *what* to plant



How to manage

Avenues

Shape the Policy Environment

- **Local and national governments** integrate opportunity crop and soil management considerations into plans, regulations, subsidies, and institutional procurement.
- **Multilateral organizations** promote policies that support opportunity crop diversification and effective soil management.
- Stakeholders collaborate to establish relevant data, evidence, and baselines.

Mobilize Resources

- **Government and non-government donors** increase and sustain investments in opportunity crops and soil health, in support of food security, nutrition, climate, biodiversity, water, gender, and poverty alleviation goals.
- **VACS donors** effectively coordinate to advance shared goals.

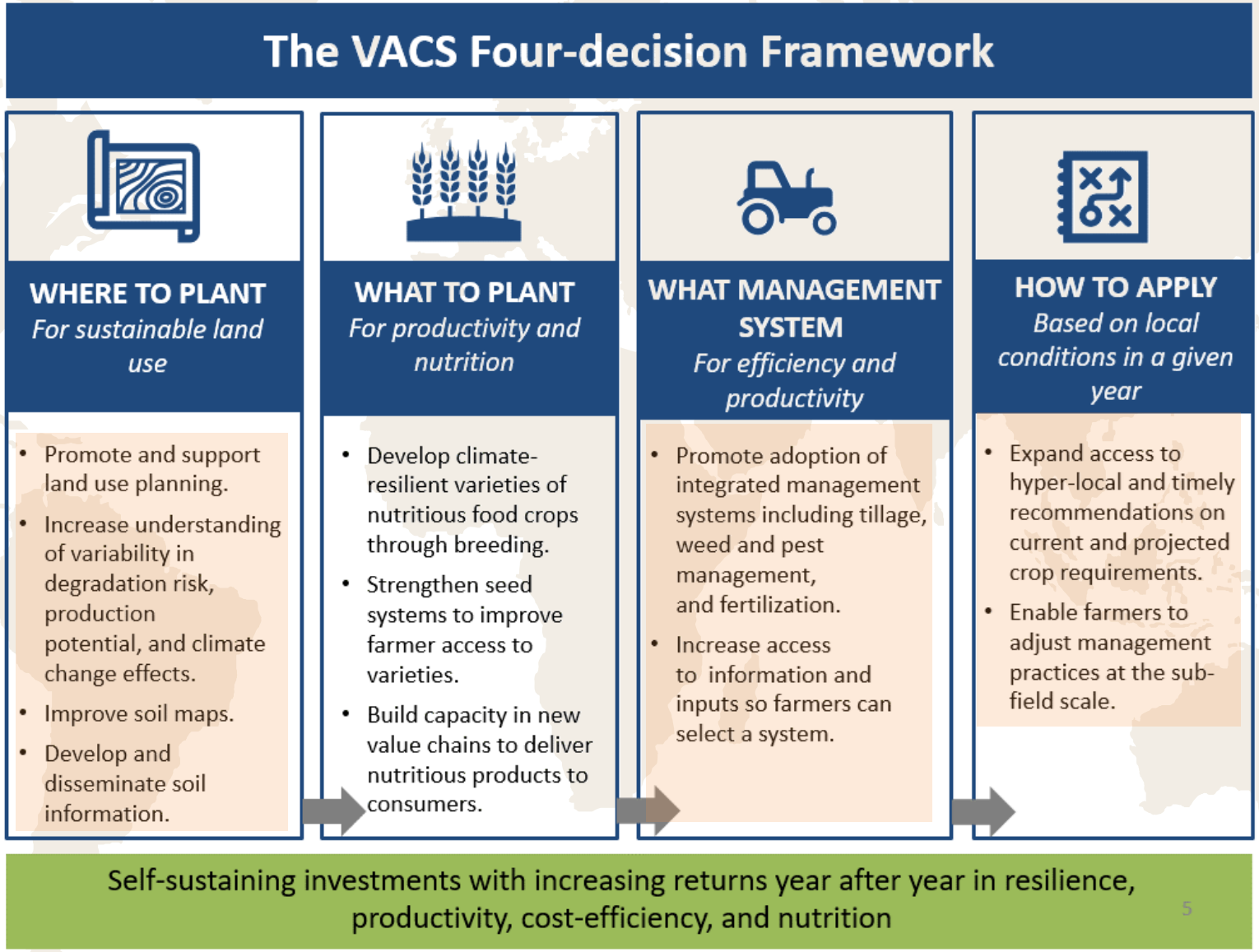
Change the Conversation

- **Stakeholders in the food security, nutrition, climate, biodiversity, water, gender and poverty alleviation communities** connect their agendas and recognize opportunity crops and soil health as a means of advancing their objectives.

SoilFER

- Is an integrated, data-driven framework consisting of two projects funded by **the US Department of State** and the **Japanese government (MoFA),** involving seven countries.
- It is a comprehensive framework aimed at increasing the resilience of agri-food systems by providing data-driven answers to:
  - Where to plant
  - What to plant
  - Which management system to adopt
  - How to apply

The Vision for Adapted Crops and Soils (VACS)



SoilFER

The US, Department of State
USD 30M

May 2023 – May 2027

Global + 5 Countries

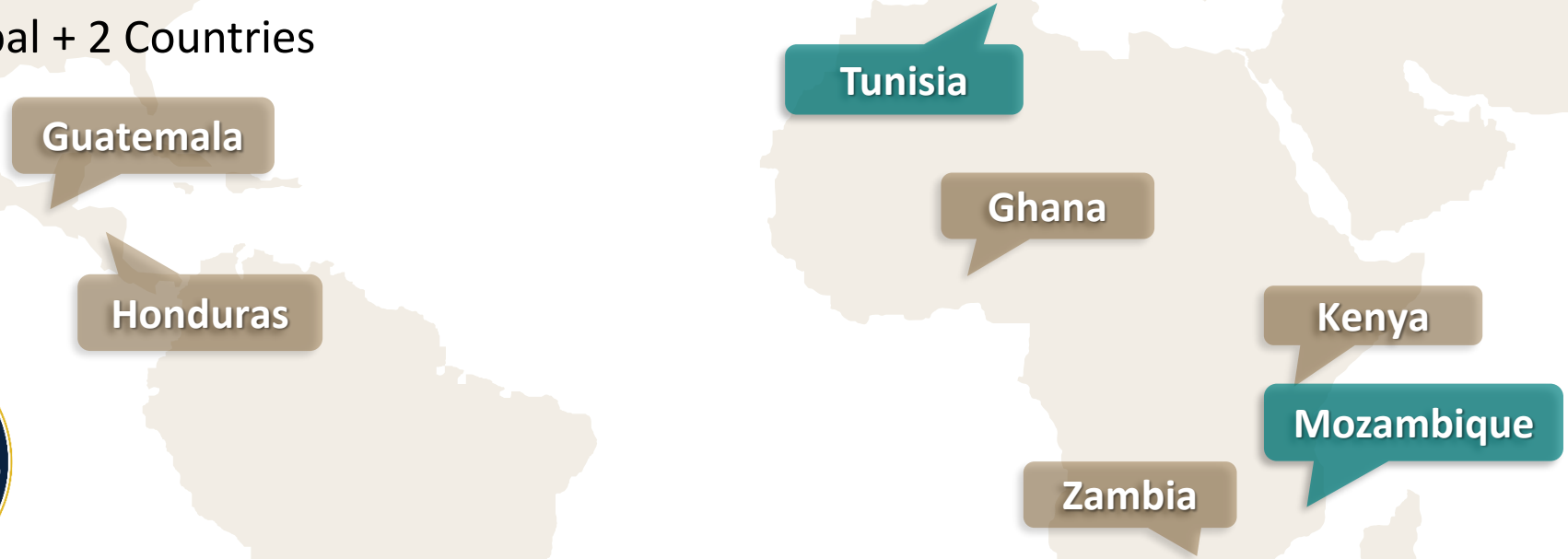
Japan, MOFA
USD 6M

May 2024

Global + 2 Countries

Activities

- Soil sampling
- Soil analyses, and laboratory improvement
- Soil mapping
- Global Crop Decision Support Platform
- Land Use Planning at Farm Level
- Strengthening Institutional Framework
- Crop Models



1

DATA

- Soil Sampling Campaign
- Harmonization and Collection of Legacy Data
- Soil Analysis (Soil labs)
- National Soil Analytical Databases
- National Spectral Libraries
- National Soil Information Systems (NSIS)
- Laboratory Information Management Systems (LIMS)

2

INFORMATION + KNOWLEDGE

- National Nutrient and Nutrient Budget Maps
- National Soil Property Maps
- Crop Suitability Maps
- Fully Integrated National Soil Information System (NSIS)
- Soil Monitoring System for select
- Decision Support Tools (DST) and System (DSS) – fertilizer, crop, management

3

ACTION

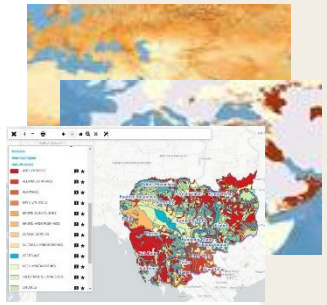
- Fertilizer Decision Support for farmers and governments
- Decision Support for Crop Suitability including *Opportunity Crops**
- Capacity Development and Outreach Programme
- Socioeconomic, financial and cost-benefit analysis for Fertilizers and SSM

National Components

* The Vision for Adapted Crops and Soils (VACS)

Beneficiaries (Governments)

National High Resolution Digital Soil Maps



- Soil Nutrient, Nutrient Budget Maps (Time Series)
- Soil Property Maps
- Soil Threats
- Crop Suitability Map

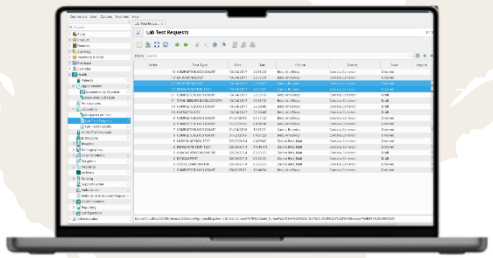
Integrated National Soil Information Systems (NSIS)

- Connected with LIMS
- Monitoring System
- Spectral Services (Libraries and Calibration Services)
- National Level Decision Support Systems (DSS)

Capacity Development Programme – Government Staff

- Soil Data Management
- Digital Soil Mapping
- Soil Organic Carbon Sequestration Modeling
- Trainings on using NSIS & FerSIS Applications

Beneficiaries (Laboratories)



(LIMS) Laboratory Information Management System

- Central Sample and Analysis Management
- Built-in QA/QC, Data Validation Tools
- Connected to the NSIS & Internet
- Stock Management (Reagents & Supplies)

Modernization of the National Laboratories & Capacity Development

- Trainings (Wet & Dry Chemistry, Safety, Procurement, QA/QC)
- Fully equipped for all soil and fertilizer analysis
- Increased technical & technological capacities
- Spectral Libraries and Calibration services

Beneficiaries (Farmers)

Decision Support Tools

For instance:

- Fertilizer Recommendations
- Crop Suitability (incl VACS Crops)
- Vegetation Index
- Management Practices

Soil Doctors Programme

- Peer-to-Peer Training
- Improve the capacity of farmers on sustainable soil management while supporting national governments and stakeholders in addressing the needs of their rural communities.

Communication and Awareness raising

- Podcasts for Farmers in Local Languages
- Radio Programmes
- Webinars and Seminars
- Trainings (Agro-Dealers)

Advice Services

- Amendment
- Sustainable Soil Management Practices
- Mitigation of Soil Threats

VACS Highlights– *Resource Mobilization*

Four Multi-Donor Funding Mechanisms coordinated via an Implementer's Group

IFAD

CGIAR

FAO

Crop Trust

More than $200 million Mobilized

Japan
United Kingdom
United States
Netherlands
Norway
Germany
Italy
ADM
Cargill

VACS Champions

- **Private sector and other NGO commitments to increasing investment in diverse, climate-adapted crops grown in healthy soils.**
- **Self-selection, self-certification**
- **Public recognition and networking across organizations in the VACS universe**

VACS Community of Practice

Brings together the public and private sectors by providing a forum for discussions that explore challenges and opportunities associated with VACS. The objectives of the VACS COP are:

1. **Crowdsource solutions to VACS implementation challenges and approaches**
2. **Coordinate and collaborate on VACS and VACS-related activities across organizations**
3. **Forge new public-private and cross-sectoral partnerships.**

*The VACS Community of Practice currently includes **1,500 practitioners** from across the globe and across sectors and industries.*