



# **CGIAR Global Research Portfolio: Crops + Systems**

**Donor Meetings – Drop In Sessions (June 2022)**

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Global Director

Resilient Agri-Food Systems, CGIAR

# Agenda:

- Opening/ Initial Remarks (RAFS SGD + SDs) – 10 min
- Initiatives: Detailed Presentations (Leads/ Co leads) – 10 to 15 min each
  - EIA
  - Plant Health
  - Nature+
  - SI MFS
  - UPU
- Q&A (All participants) – 40 to 50 min

# AFRICA AND SOUTH ASIA: 2022 MEGA CHALLENGE

- Number of hungry people: now 700+ mln  
mainly in SA and SSA
- 2 billion more people in 2050 mainly in SA and SSA
- Climate change reducing yields, especially in SA and SSA
  - Drought
  - Heat
- +COVID
- + Ukraine war !!!
  - Food Prices
  - Fertilizer cost
  - Energy cost



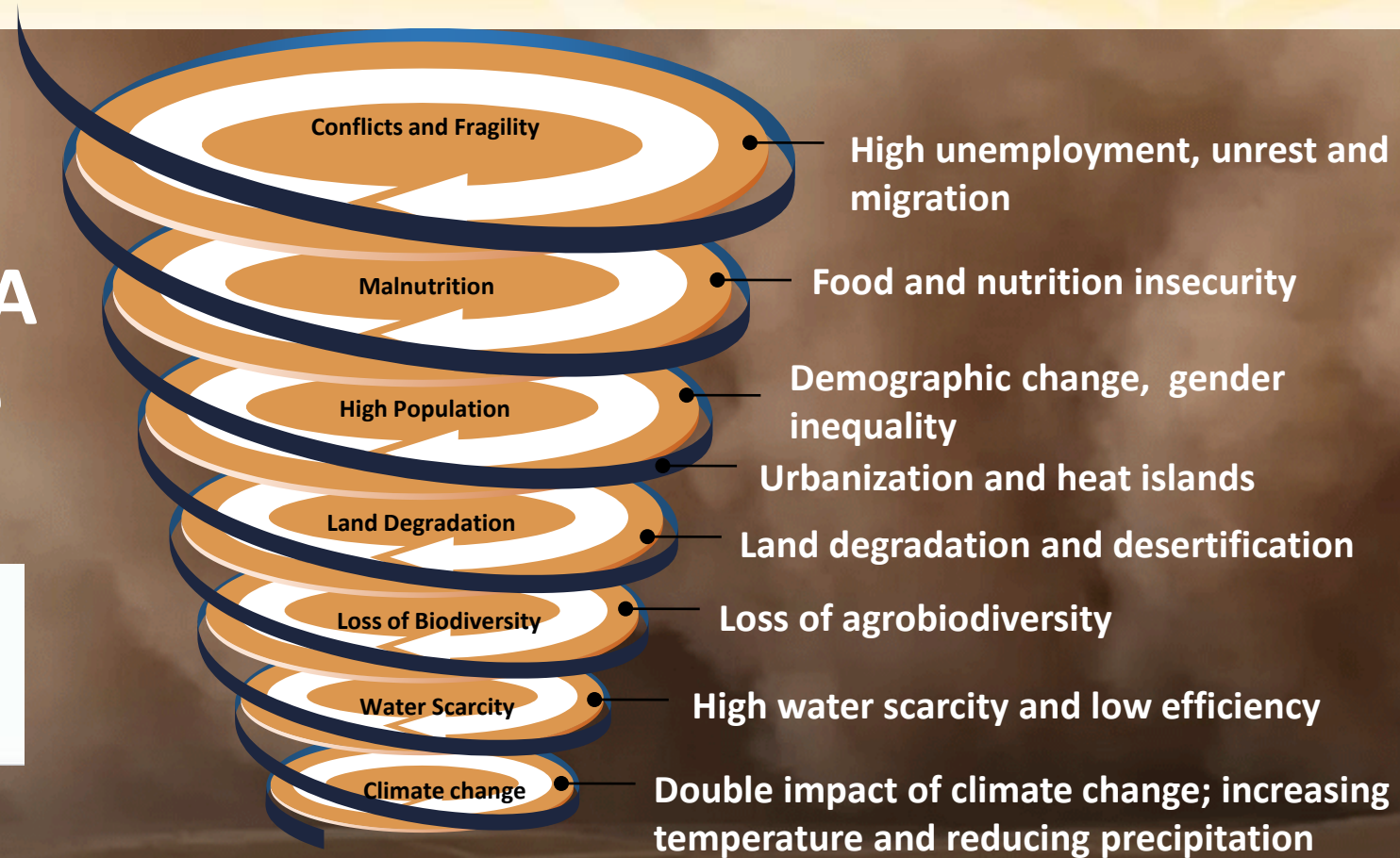
Need Action: CGIAR with partners support innovations at scale



# 2022 MEGA Challenge



BY 2030



But with only nine harvests left, we need to move fast to accomplish our vision of thriving and resilient dryland livelihoods

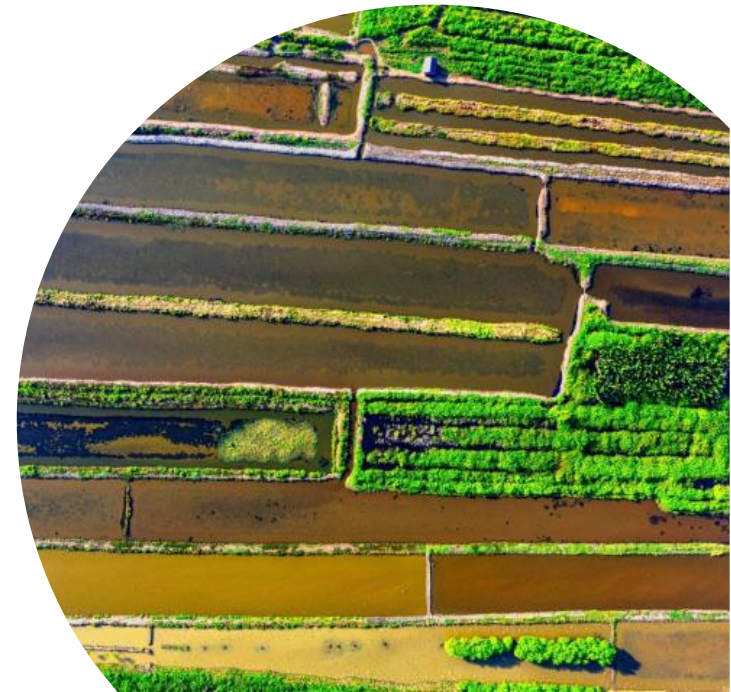


# RAFS OVERARCHING OBJECTIVE

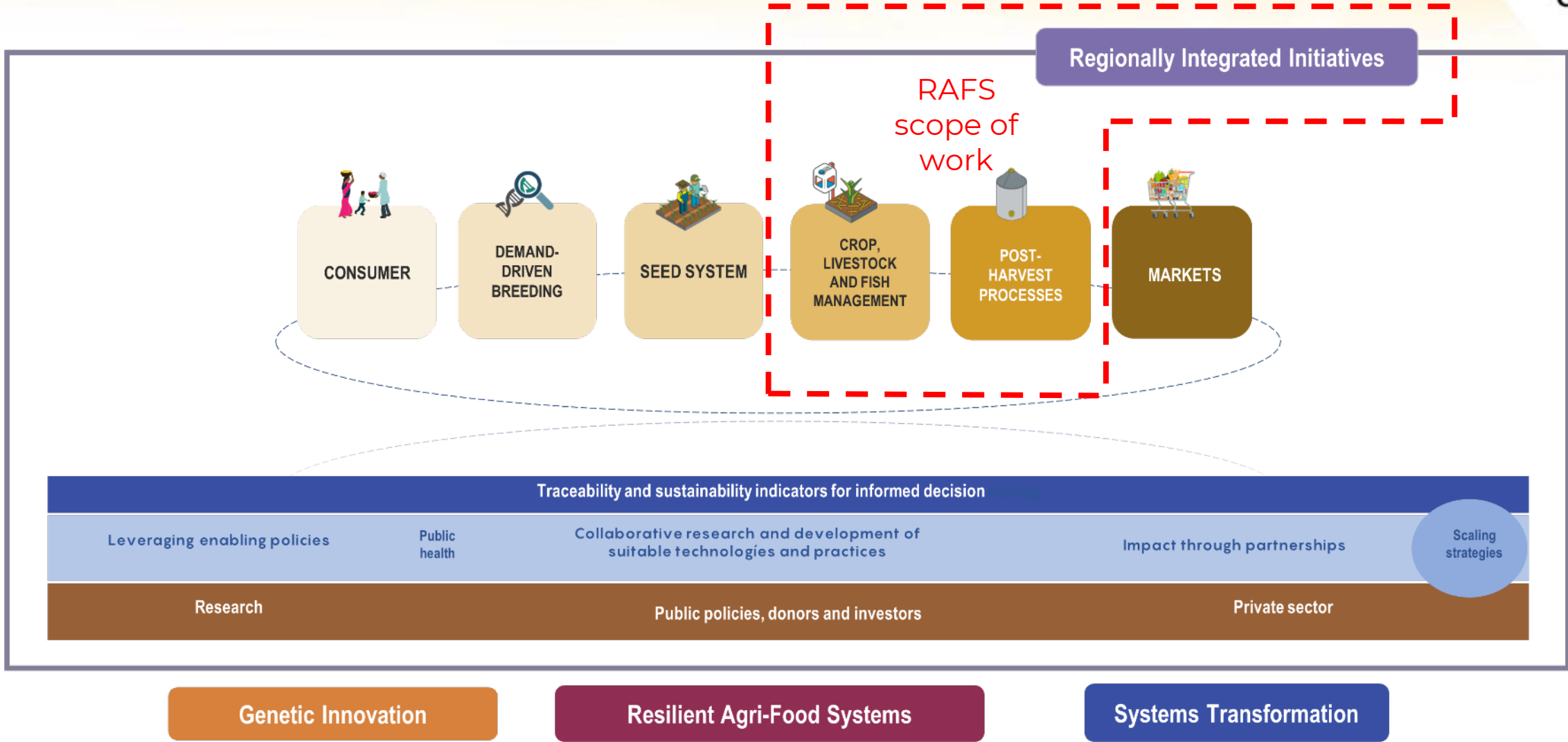
Contribute to regional Agri-Food systems transformation for affordable sufficient and healthy diets produced within planetary boundaries in a climate crisis

## What challenges does RAFS aim to address?

- Gaps in agricultural productivity
- Increasing demand for more nutritious food
- Threats to human health
- The expanding environmental footprint of agriculture
- Vulnerability of smallholder farmers and food producers
- Unequal access to inputs and innovations experienced by women and youth.

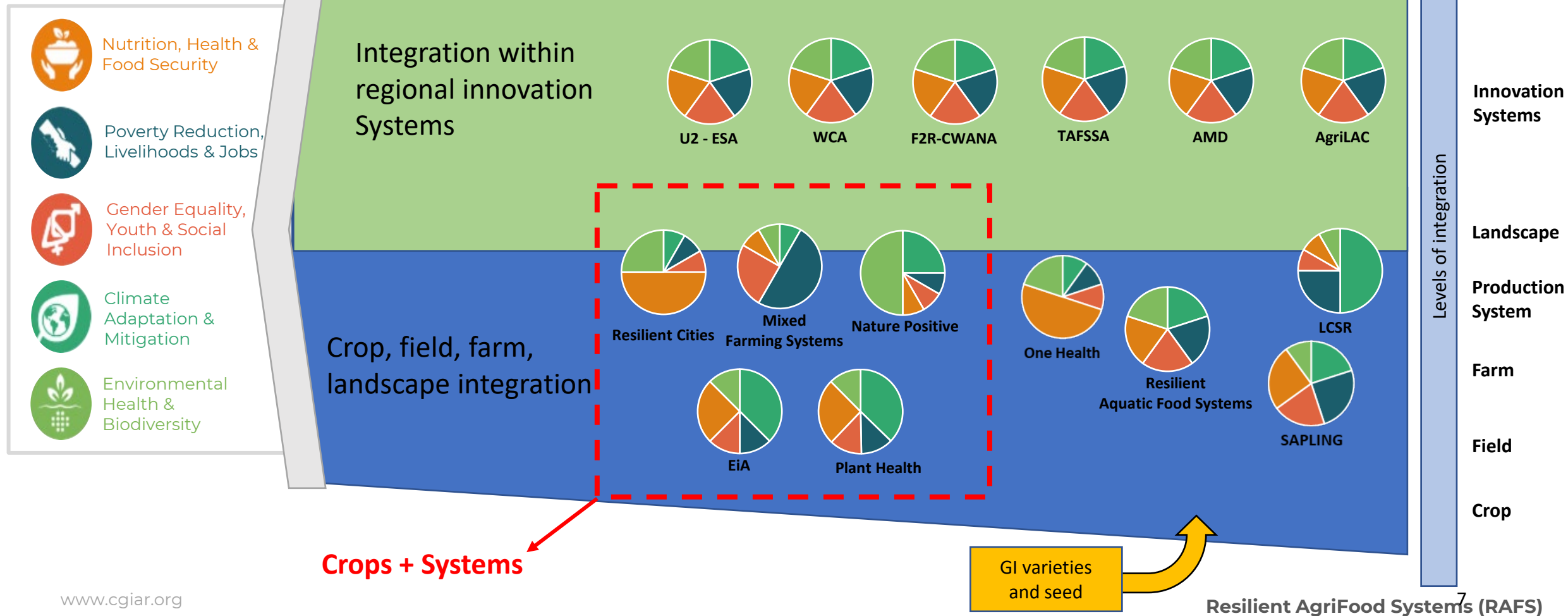


# RAFS: The integrative, cross-disciplinary science group for CGIAR's research on agri-food systems



As the 'heart' of the Agri-Food System, RAFS is the integrating science group assuring farm-level impact and coherence between CGIAR's work in genetics with markets and policy

# Resilient Agri-Food Systems Integration at different levels





# CROPS + SYSTEMS INITIATIVES - OVERVIEW

The RAFS area and specifically the crop/system initiative operate at the heart of current challenges facing the planet and more specifically the global south, including climate change, low productivity, declining soil health, greenhouse gas emissions, and environmental degradation and presents entry points addressing each of those, sometimes simultaneously.

Crop management + Systems are essential for the realization of the genetic potential of farmers' existing or new varieties. Without sustainability-oriented crop management that includes agronomy, plant health, cropping systems, and landscape management, there could be limitations to achieve the return to investment in breeding efforts, or for farmers to be more competitive with existing varieties and land races.

Sustainability-oriented crop management can contribute to reduce significantly the carbon foot print coming from agriculture, by optimizing input utilization, reducing yield gaps, and increasing productivity per unit of area and input, and increasing farmer competitiveness to respond to emerging market demands.

Robust and resilient agri-food systems begin with healthy crops. Healthy crops are indeed key to ensuring food and nutritional security and livelihoods for millions of smallholder farmers in the world's poorest countries.

Sustainable crops systems relies on biodiversity for the provision of several ecosystem services, include nutrient cycles and management, pollination, pests and diseases controls. In addition, as population grows, it is important that a larger part of the land sharing has greater level of biodiversity to create small green corridors for wild species to be able to move across habitats.

This group of Initiatives wants to enable sustainable crop production within planetary boundaries and responding to changing socio-economic demand. Urbanization is the main driver of change on the demand side, determining what is grown, where, how and by whom.

# COMPARATIVE ADVANTAGE

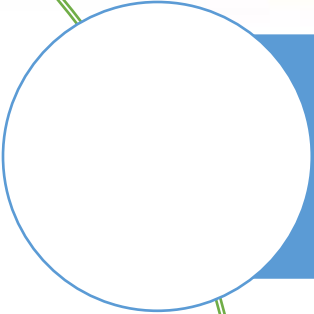
The CGIAR has the advantage of working with more than 15 crops that are essential components of agri-food systems in the Global South, and has an accumulated experience that can develop and mobilize crop management innovations much faster than before to contribute to the SDGs and reduce the effect of the emerging global food crisis.

CGIAR is the global leader in management of several major crops and plant health threats through its impactful R4D on pests, diseases, and weeds. The collaborative networks/alliances/consortia coordinated by OneCGIAR (e.g., the Alliance for banana bunchy top disease control in Africa; MusaNet; FAW R4D International Consortium; MLN Phytosanitary Community of Practice; mycotoxins) make crucial contributions to characterization, diagnostics, monitoring, surveillance, epidemiology, participatory experimentation, integrated management of existing and emerging pests and diseases, knowledge/technology transfer, etc.

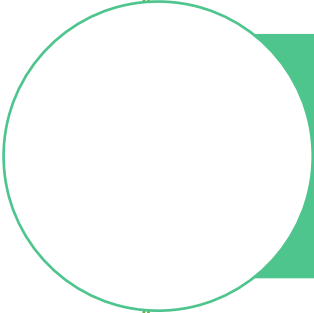
CGIAR and innovation partners have excellent expertise and a strong track-record in developing and deploying eco-friendly plant health innovations, including host plant resistance, biological control, biopesticides, agro-ecological approaches, etc. for sustainable plant health management.

The network of CGIAR Germplasm Health Units across the tropical s provides phytosanitary services for major food crops (e.g., cassava, banana, maize, wheat, rice, potato, food and feed legumes, etc.), supports production of clean seed/planting materials, and strengthens technical expertise of local institutions, including National Plant Protection Organizations (NPPOs).

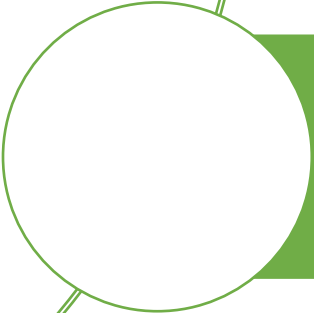
# COMPARATIVE ADVANTAGE

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The group of initiatives build in over ten years of testing and implementation of sustainable practices, some of which are validated and which can be upscaled in these groups of initiatives. In addition, the initiatives brought together new and innovative ways and partnerships with actors that can cover some gaps that exists in the CGIAR, e.g. with conservation groups such as WWF.

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These groups show that the CGIAR is committed to produce food within planetary boundaries and that technologies and approaches exist to this end and will bring those approaches to scale, whenever relevant and based on context. The initiatives will work together to ensure that they share approaches and technologies, monitoring of certain indicators so that the total is more than the sum of the parts and that achievements are accelerated and can be implemented at larger scale.

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Through this group of Initiatives, the CGIAR's core strengths are being applied to the complex global challenge of feeding a changing world within planetary boundaries. CGIAR is well positioned to design and implement a systems approach as is required here – working at multiple scales from field to landscape in key countries as well as globally, integrating biophysical and social science approaches and methodologies, and working on both supply and demand side drivers of agrifood systems. In addition, the Initiatives are strengthening science, research and institutional capacities amongst national and regional partners for pursuing systems approaches.



# UPDATES / ADDITIONAL ACTIONS



Comprehensive process to update Initiatives based on ISDC feedback, including Initiative data on Theories of Change, Results Frameworks, Partners, Innovation Packages, etc.



Revised CGIAR Results Framework , including specific/ additional targets, i.e. co defined Action Area (AA) Targets



Harnessing CGIAR MELIA capacity – revised Technical Reporting Arrangement and Performance and Results Management Framework



CGIAR Research Portfolio/ Initiatives Introduction and Stakeholder Dialogue; all the initiatives have been launched



Initiatives' Leadership teams have been confirmed and initiatives are being implemented

# STRUCTURE OF CGIAR'S INITIATIVE PORTFOLIO




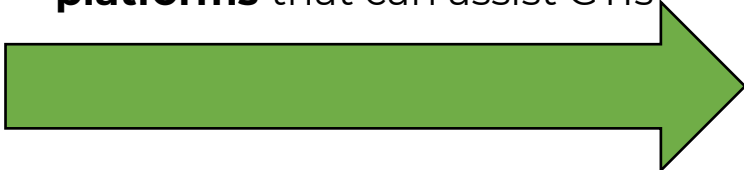
## Global Thematic Initiatives (GTIs)

- Largely building on strong existing capacities
- Investigates **thematic issues that by nature are not specific to a single region** or country
- Strong focus on **genetic innovations, management of crops, livestock, fish, foresight and policy**
- Delivering **broad research insights**, knowledge, technologies
- Global relevance: May not always be applicable in the regional context

## Regionally Integrated Initiatives (RIIs)

- **Long histories** of bilateral **systems research**
- Responsive to **pressing, regionally unique and relevant agri-food systems crises**
- Highly participatory, **partner demand responsive**
- **Links innovations across CGIAR** to amplify impact at scale
- Conducts **research on unique topics of regional and national importance** beyond the scope of the GTIs

- 
- **Articulates demand** for integrative research from the regions and national partners
  - **Offers 'plug-in' opportunities** for GTIs
  - Forms and sustains **innovation platforms** that can assist GTIs

- 
- Tools, technologies, knowledge
  - **Insights from global research** that can be regionally applied
  - **Opportunities for national researchers to engage with global programs**



Research support, research monitoring and evaluation

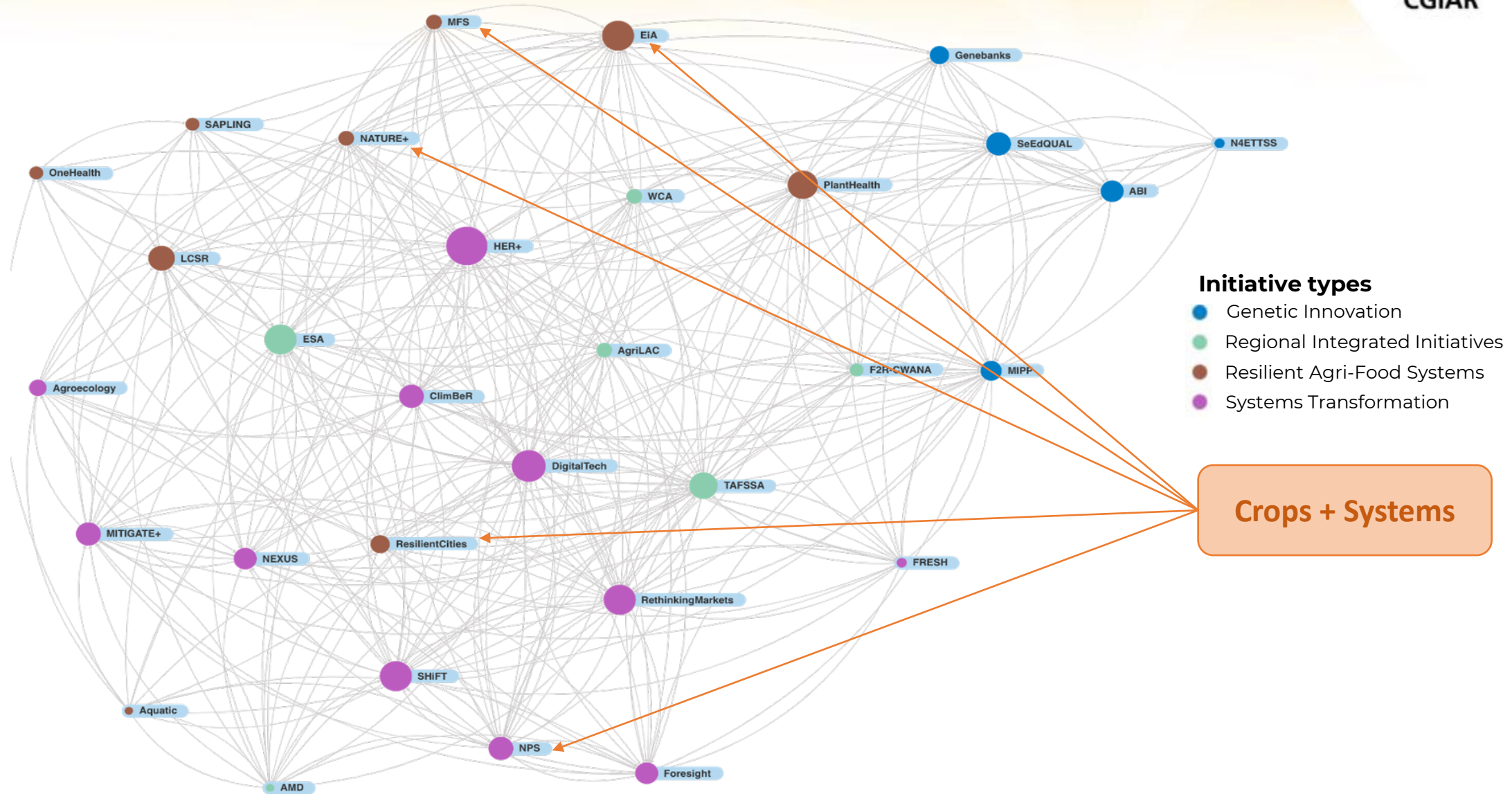


**CGIAR Research Platforms**





# INITIATIVES NESTED THEORIES OF CHANGE AND MULTIPLE INTERCONNECTIONS WITH THE RAFS / RIIS



# END-GAME: INNOVATION PORTFOLIO MANAGEMENT AVOIDING OVERLAP AND FACILITATING A STAGE GATING PROCESS FOR INNOVATIONS (ESCHBORN PRINCIPLE)



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Filter by CGIAR Action Areas

Filter by CGIAR Impact Areas

Filter by Sustainable Development Goals

Filter by Regions of Implementation

### CGIAR Innovation Profile (2538 on 1 Jan 2022)

<span style="color: #00a0c0;">■</span> Resilient Agrifood Systems	807	<span style="color: #0070c0;">■</span> Genetic Innovation	1430
<span style="color: #0056b3;">■</span> Systems Transformation	301		

### Scaling Readiness of CGIAR Innovation Packages

Filters:

- Action Area(s)
- Country/ies
- Region(s)
- SDGs focus
- Impact Area focus
- Rising STAR Innovations
- Relative CGIAR investment
- Year(s)

### CGIAR Innovation Portfolio Management and Stage-Gating

Discovery	Pilot	Accelerate	Scale
<i>(Low Readiness, Low Use)</i>	<i>(Medium Readiness, Low Use)</i>	<i>(High Readiness, Medium Use)</i>	<i>(High Readiness, High Use)</i>
USD 200M CGIAR investment in 2022	USD 400M CGIAR investment in 2022	USD 300M CGIAR investment in 2022	USD 200M CGIAR investment in 2022

### Countries of Implementation

# HOW IS DUPLICATION AVOIDED, AND HOW ARE SYNERGIES ACHIEVED?



## COORDINATION

By the RAFS Science Group and led by a Principal and Co-Principal Investigator with strong systems science and collaboration credentials, supported by Regional Directors and Country Conveners (Task Force)

## COMMUNICATION

Regular coordination meetings across the Science Groups and with GE&I

## SYNERGIES

Within regions and countries, cross-initiative scientific and technical coordination is addressed by Science Group Regional and Country Leads

## PARTNERSHIP

Regional Directors and their country teams (a) facilitate partner engagement and operations, (b) flag risks of duplication, and (c) aid in priority setting

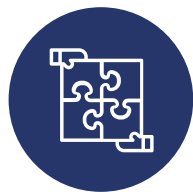
## ACCOUNTABILITY

GTI and RII leads accountable for cooperative planning, implementation

## ADAPTIVE MANAGEMENT

Inception period learning, adjustments, and fine-tuning

## This assures



Internal and external scientific synergies



Internal portfolio coherence: coordination between RIIs and global thematic initiatives



External portfolio coherence: Alignment with partners' demand



Maximization of research investments and partnerships



**Thank You!**



# Resilient Agri-food Systems/ Regionally Integrated Initiates

**Excellence in agronomy  
for sustainable intensification  
and climate adaptation**

**30 June 2022**  
(Time CEST)



# Initiative Overview

## Main objective, main impact areas

EiA aims to deliver **agronomic gain** for millions of smallholder farming households (i.e., those with less than 5 ha of land) in prioritized farming systems by 2030; uptake of agronomic solutions at scale **will generate measurable impacts** on livelihoods, food and nutrition security, resource use, soil health, climate resilience, and climate change mitigation, particularly among women and young farmers.

### Agronomic gain Key Performance Indicators



Yield, Yield Quality,  
and Profitability



Climate adaptation,  
Yield Stability,  
and Reduced Risk



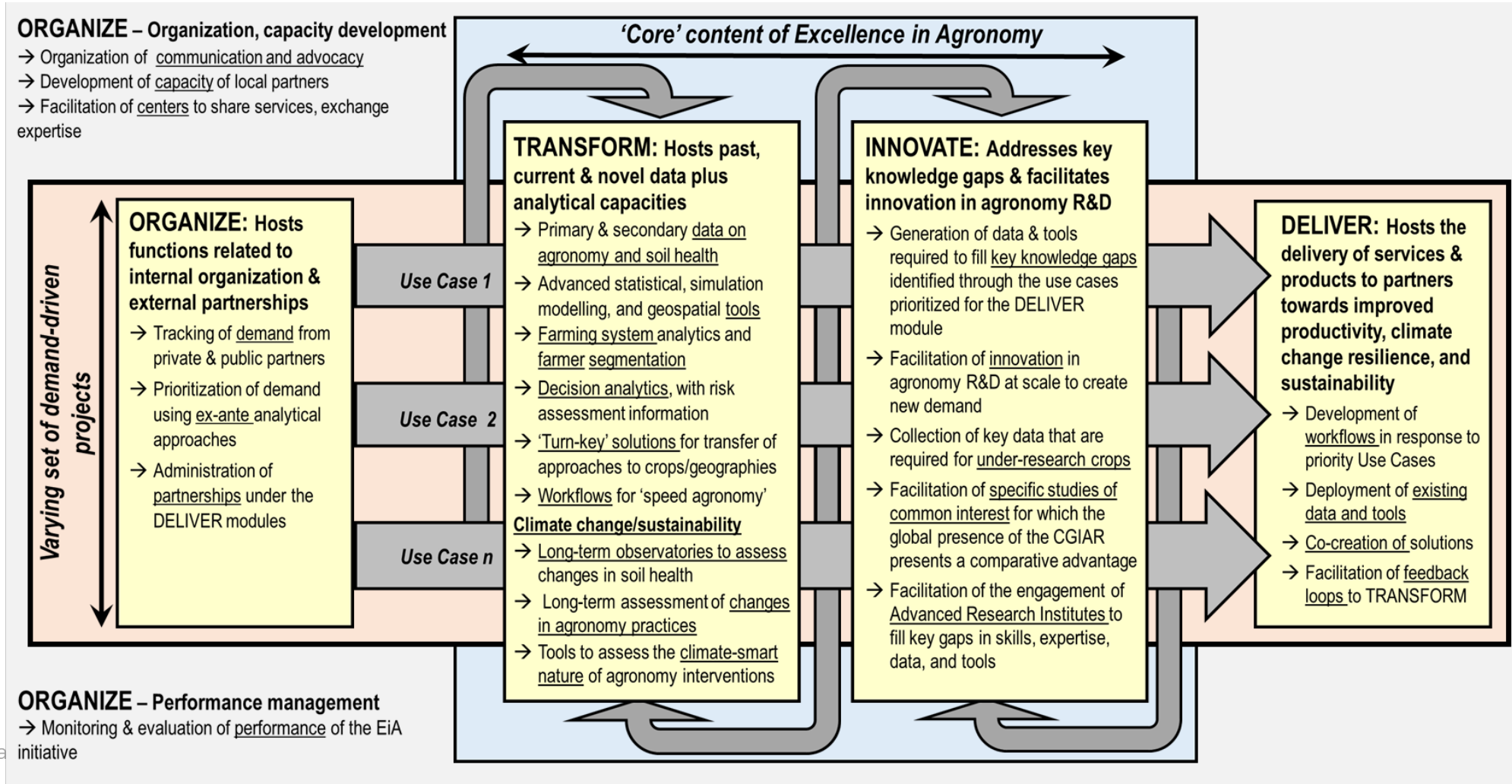
Resource Use  
Efficiency (nutrients,  
water, labour)



Soil Health

# Initiative Overview

## 4 interlinked Work Packages, facilitate the development and delivery of agronomic solutions at scale



# Initiative Overview

## Cohort I Use Cases



Cropping calendar advisories for smallholder maize farmers and extension agents in the Guinea Savannah zone



Co-development of digital solutions to deliver fertilizer and time of planting advice for rice, maize, and cassava



Accelerating the use of digital tools for delivering agronomic advice in potato-based cropping systems



Co-development of targeted fertilizer advisory services to improve NUE, reduce cost and enhance productivity

Digital Green



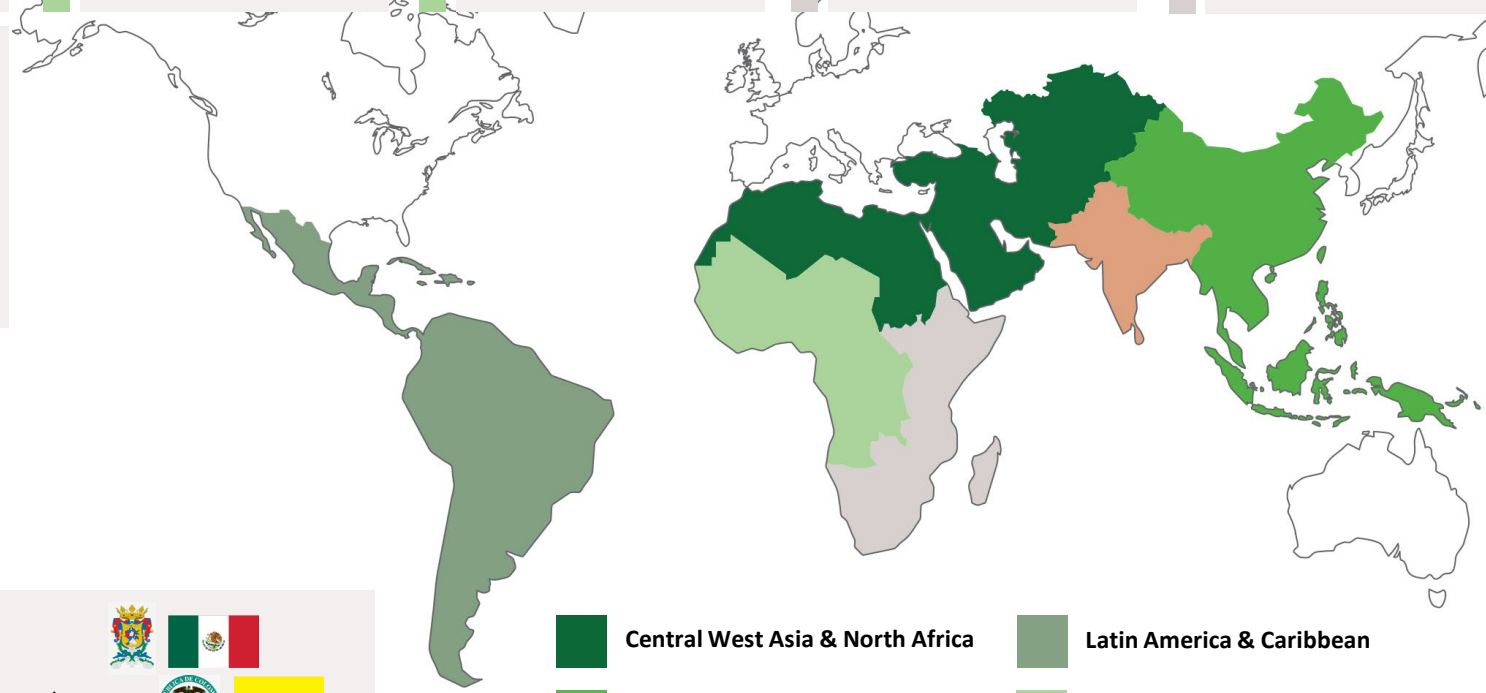
Co-development of agronomy and climate advisory tools for high yielding and high quality wheat production



Web-based advisory for in-season yield potential & water productivity of irrigated wheat-based systems



Testing hyperlocal digital agronomic advisory services and the delivery pathways in rice-based cropping systems



Central West Asia & North Africa



Latin America & Caribbean



South East Asia & Pacific



West & Central Africa



South Asia



East & Southern Africa

**Smart farming systems at the local level:**

Sustainability assessment and targeted data-driven recommendations for smallholder farmers



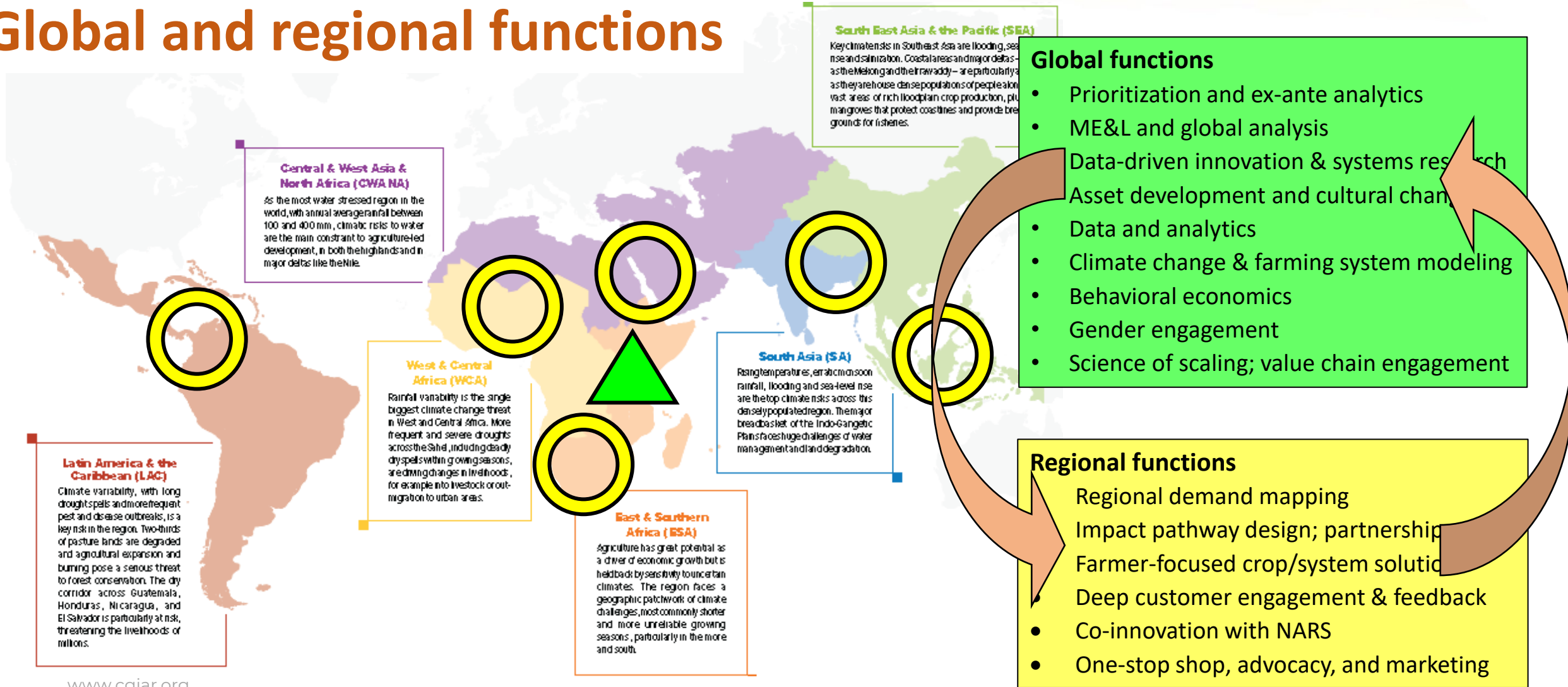
Optimizing productivity, profitability and environmental sustainability using mechanized and precise direct-seeded rice



Managing time in the rice-based cropping systems of South Asia



## Global and regional functions



### Global functions

- Prioritization and ex-ante analytics
- ME&L and global analysis
- Data-driven innovation & systems research
- Asset development and cultural change
- Data and analytics
- Climate change & farming system modeling
- Behavioral economics
- Gender engagement
- Science of scaling; value chain engagement

### Regional functions

- Regional demand mapping
- Impact pathway design; partnerships
- Farmer-focused crop/system solutions
- Deep customer engagement & feedback
- Co-innovation with NARS
- One-stop shop, advocacy, and marketing

## Key EiA teams

Initiative leadership			
Initiative components	Name	Center	Location
Initiative Lead	Bernard Vanlauwe	IITA	Nairobi, Kenya
DELIVER	Mandla Nkomo	IITA	Nairobi, Kenya
TRANSFORM	Medha Devare	IITA	Montpellier, France
INNOVATE	Sieglinde Snapp	CIMMYT	Texcoco, Mexico
ORGANIZE	Madonna Casimero	IRRI	Los Banos, Philippines

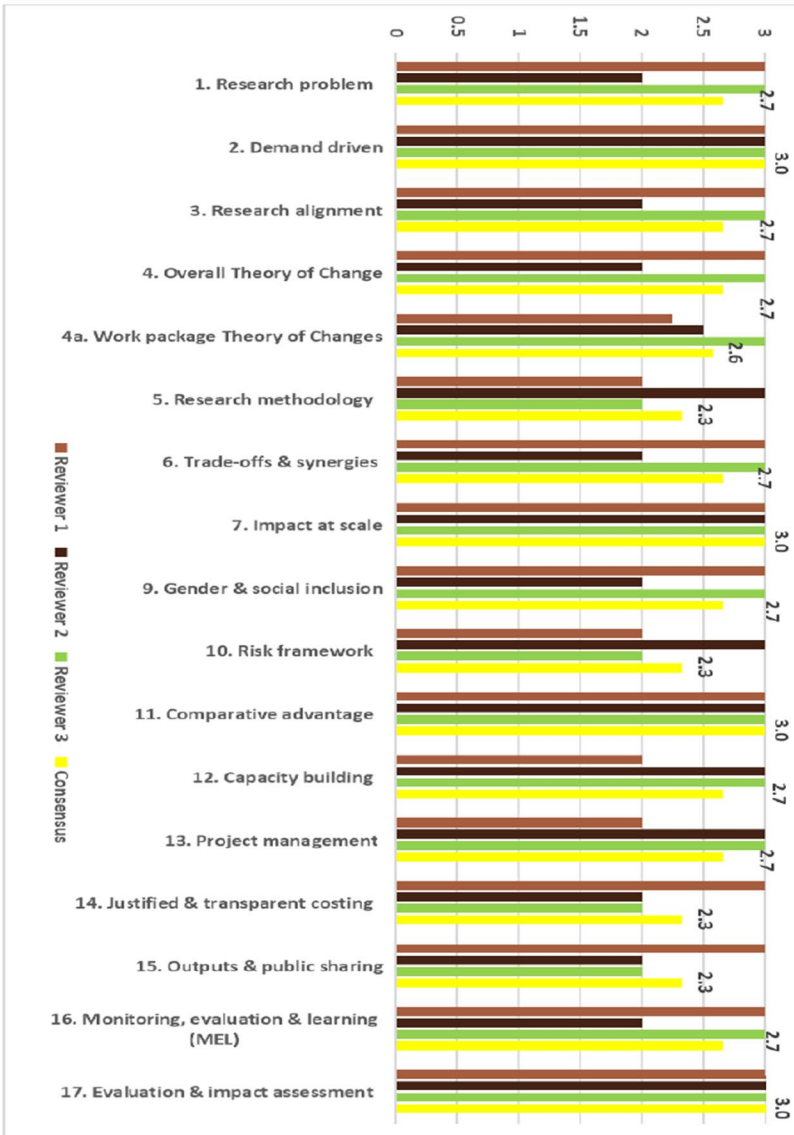
Regional team leaders			
Region	Name	Center	Location
WCA	Fred Kizito	Alliance	Accra, Ghana
ESA	Tesfaye Sida	CIMMYT	Addis Ababa, Ethiopia
LAC	Nele Verhulst	CIMMYT	Texcoco, Mexico
CWANA	Vinay Nangia	ICARDA	Rabat, Morocco
S-Asia; SE-Asia	Virender Kumar	IRRI	Los Banos, Philippines

Center Focal Points		
Center	Name	Location
AfricaRice	Kazuki Saito	Bouake, Côte d'Ivoire
Alliance	Job Kihara	Nairobi, Kenya
CIMMYT	Sieglinde Snapp	Texcoco, Mexico
CIP	Elke Vandamme	Kigali, Rwanda
ICARDA	Vinay Nangia	Rabat, Morocco
ICRAF	Leigh Ann Winowiecki	Nairobi, Kenya
ICRISAT	Rebbie Harawa	Nairobi, Kenya
IITA	Christine Kreye	Ibadan, Nigeria
IRRI	Virender Kumar	Los Banos, Philippines
IWMI	Lisa Rebelo	Colombo, Sri Lanka

Use Case facilitators			
UseCase	Name	Center	Location
CARI-WA	Kazuki Saito	AfricaRice	Bouake, Côte d'Ivoire
SNS-Rwanda	Elke Vandamme	CIP	Kigali, Rwanda
Fert-Ethiopia	Gizaw Desta	ICRISAT	Addis Ababa, Ethiopia
DigGreen-Ethiopia	Lulseged Desta	Alliance	Addis Ababa, Ethiopia
SAA-Nigeria	Alpha Kamara	IITA	Kano, Nigeria
GAIP-Ghana	Fred Kizito	Alliance	Accra, Ghana
Planting-S-Asia	Sudhanshu Singh	IRRI	Hyderabad, India
DSRC-SE-Asia	Rica Flor	IRRI	Phnom-Penh, Cambodia
Govt-Egypt	Ajit Govind	ICARDA	Cairo, Egypt
Govt-LatAm	Nele Verhulst	CIMMYT	Texcoco, Mexico
CocoaSoils-WCA	Richard Asare	IITA	Accra, Ghana
RainfAlliance-WA	Leonard Rusinamhodz	IITA	Accra, Ghana
OneAcreFund-EA	Job kihara	Alliance	Nairobi, Kenya
OLAM-DR Congo	Kokou Kintche	IITA	Bukavu, DR Congo
Solidaridad-Malawi	Isaiah Nyagumbo	CIMMYT	Harare, Zimbabwe
DSRC-Vietnam	Hung Van Nguyen	IRRI	Los Banos, Philippines
CA-Morocco	Rachid Mossadek	ICARDA	Rabat, Morocco
SPROUT-EA	Kalpana Sharma	CIP	Nairobi, Kenya
BAYGAP-EA	Jorge Andrade	CIP	Lima, Peru

Working Group leadership			
Working Group	Name	Center	Location
WG1: Climate adaptation	Lisa Rebelo	IWMI	Colombo, Sri Lanka
WG2: Soil health	Mirjam Pulleman	Alliance	Cali, Colombia
WG3: Agronomic fortification	Job kihara	Alliance	Nairobi, Kenya
WG4: Mechanization; weed mgt	Jelle Van Loon	CIMMYT	Texcoco, Mexico
WG5: Behavioral change	Meklit Chernet	IITA	Nairobi, Kenya
WG6: Gender and agronomy	Steven Cole	IITA	Arusha, Tanzania
WG7: Farming systems	Elke Vandamme	CIP	Kigali, Rwanda

# Response to ISDC Comments



## Strengths

- The conceptual basis is well supported...
- The prominence of scaling partners/ farmers in informing the research and in facilitating the extension of recommendations was well described...
- The impacts of EiA are strongly oriented towards the critical areas of food security, gender, climate change adaptation, and mitigation and environmental health.

## Weaknesses

- The risk assessment should be strengthened...
- In work package 2, it is not clear where the data needed for this activity will come from initially....
- Additional justification on how the budgets were developed...

# Response to ISDC Comments

## Weakness 1: The risk assessment should be strengthened....

→ **Response:** *The Use Case model and its underlying due diligence processes are expected to address many of the risks associated with partner performance and uptake of agronomic solutions.*

## Weakness 2: Furthermore, data to action does not occur automatically...

→ **Response:** *Correct; the Use Case model is meant to contain the relevant partnerships that facilitate the application of recommendations.*

## Weakness 3: The word “mitigation” appears as an ornament because actual actions for mitigation are not included, even marginally.

→ **Response:** *We accept that ‘mitigation’ is referred to without much detail; we have direct mitigation-related activities:*

- (i) An indicator related to the agronomic gain KPI framework focusses on reducing product based GHG emissions by 25% and another indicator focusses on soil health, which is directly related to soil organic carbon;*
- (ii) All MVPs will be made climate adaptation/mitigation explicit by ensuring that recommendations/solutions included in the MVP directly address climate change; and*
- (iii) The priority research theme on perennials for livelihoods and conservation will focus on increasing productivity and profitability of perennials (e.g., cocoa, coffee) aligned with zero deforestation.*



# Implementation to date

- 1.** Development and agreement on **Clusters of Activities (CoAs) and Activities** under each Work Package → ***Submitted with the proposal in September 2021***
- 2.** **Agreement on budget and Accountable/Responsible (RACI)** status for all CoAs and Activities (Center + contact person) → ***September – December 2021***
- 3.** **Implementation workshop** in Nairobi (over 90 participants, over 95% attendance rate) → ***20-22 April 2022***
- 4.** Development of **Implementation Plans** for all CoAs and Activities → ***January – June 2022***
- 5.** **EiA leadership retreat** in Naivasha, Kenya → ***8-10 June 2022***
- 6.** **Regional launching events** in SSA with FARA (noting that other regional launching events will happen in coordination with the Regional Integrated Initiatives) → ***June - July 2022***
- 7.** **EiA learning event**, in preparation for the 2022 annual report → ***November 2022***



# Implementation to date

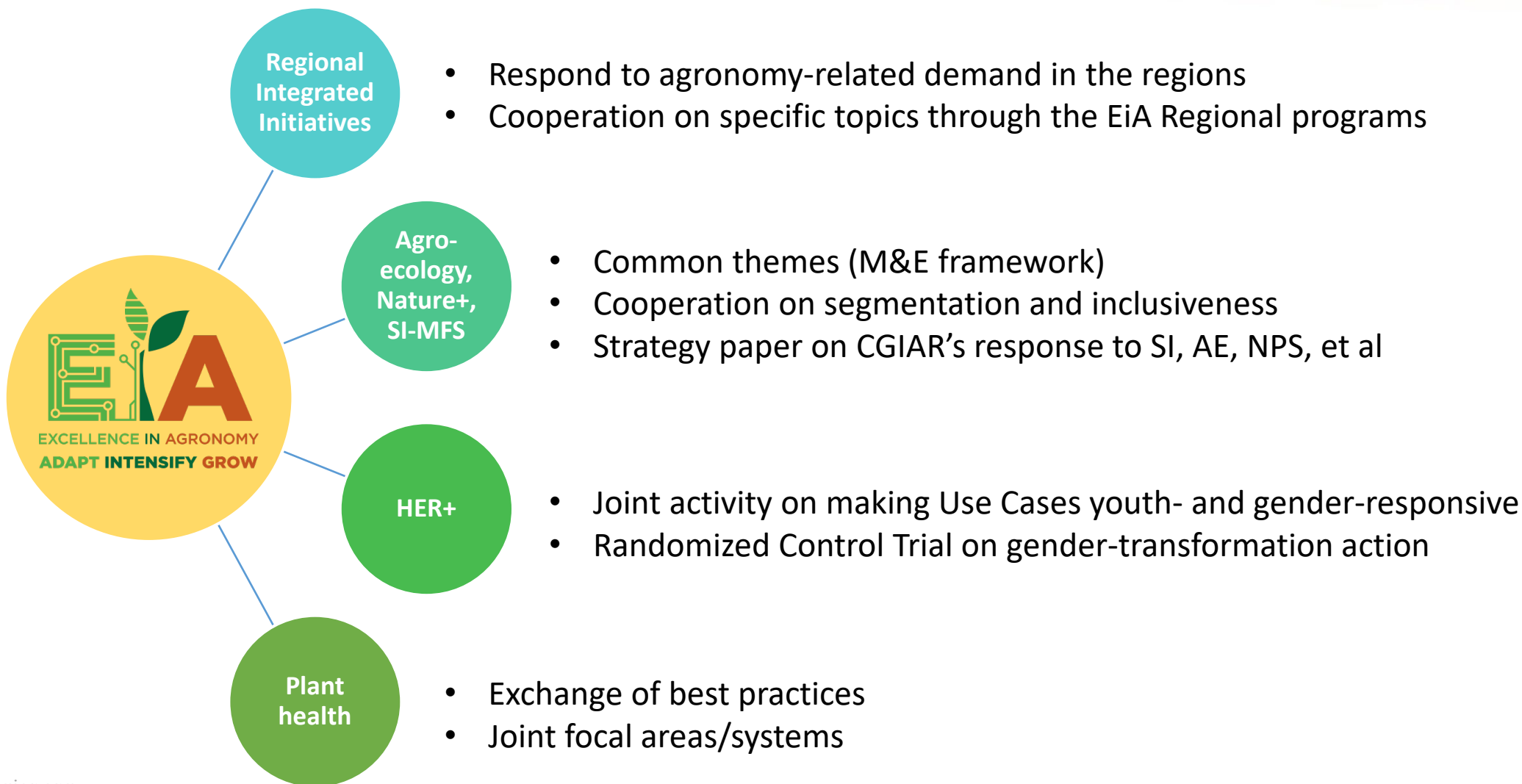
## EiA implementation workshop, 20-22 April, Nairobi, Kenya





- 1.** Survey with **National Agricultural Research systems** on priority capacity needs; joint launching of EiA Regional programs with regional organizations (e.g., FARA in Africa)
- 2.** Cohort I and cohort II Use case development through a due diligence process with direct engagement of **public and private sector demand partners** and other **service providers**)
- 3.** Engagement of **farming communities** through the Use Cases and the due diligence process
- 4.** Active sub-agreements with **Advanced Research Institutes** (Rothamsted Research UK, WUR Netherlands, SLU Sweden, Cornell University USA, ETH Switzerland,

# Collaboration with other Initiatives





# Challenges / risks – and mitigations of these

## Opportunities

### Many opportunities...

- The first **CGIAR-wide effort** on agronomy since the end of the SWNM consortium
- **Cross-learning**, complimentary expertise; sharing of data and analytical tools
- **South-South** transfer of best practices
- Putting agronomy R&D straight into the **scaling and development** processes
- **'One-Stop Shop'** for agronomy R&D solutions
- Agronomy in response to global challenges, e.g., **climate change** adaptation

## Challenges

- **Stability of funding** : Agronomy R&D is a multi-year venture and requires stable funding.
- **Staff FTE and reporting lines**: Effective engagement of teams given lack of direct reporting/ accountability; many colleagues have 25-50% FTE mapped to EiA and a larger number of people for whom EiA is the main task is key.
- **Attitude change**: EiA is operationalized on the KASH model of behavioral change – Knowledge, Attitude, Skills, and Habits; while the focus has been on K and S, it is A and H where change endures.
- **Stage-gating**: EiA aims to be a ‘fail-fast’ Initiative and is assessing how to ensure agile lesson-learning within the initiative and with CGIAR and other partners.
- **Cross-Initiative interactions**: While the focus has been on implementation EiA, we see opportunities to cooperate with other Initiatives, currently organized on an ad-hoc basis.



# Q&A





# **CGIAR Plant Health Initiative: An Update**

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**Prasanna Boddupalli, Monica Carvajal,  
Lava Kumar, Alejandro Ortega-Beltran,  
Nozomi Kawarazuka & Yanyan Liu**



# CGIAR Plant Health Initiative

- **Changing climates + Human activities + Market globalization =** Increasing risks to agri-food systems through existing and emerging pests and diseases
- Massive economic and environmental implications → **US\$26.8 billion crop losses annually**



Fall Armyworm



MLN



Fusarium Wilt  
TR4



Ug99  
Stem Rust



*Tuta absoluta*



Potato Purple Top



Wheat  
Blast



Tar Spot  
Complex

**6 devastating epidemics** in Africa in the last 10 years

# CGIAR Plant Health Initiative

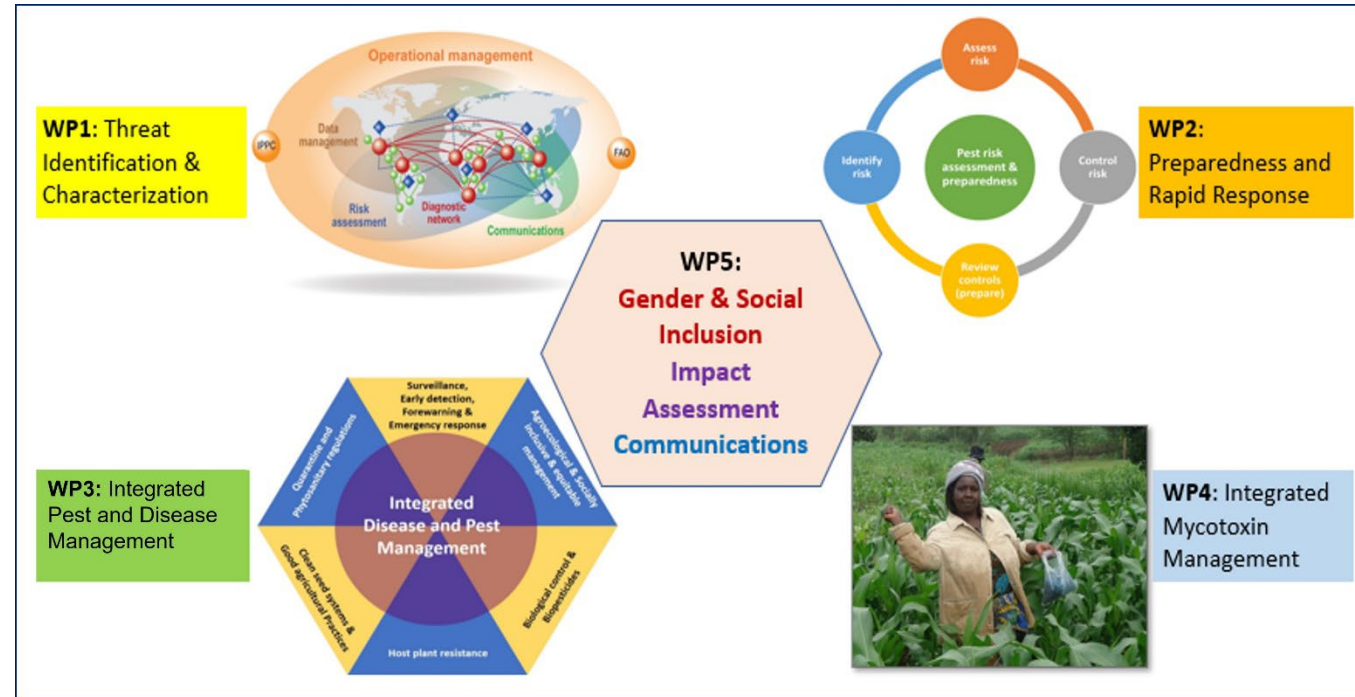
## Aim

To protect agri-food systems of the LMICs in Africa, Asia and Latin America from devastating pest and disease incursions/outbreaks, by leveraging/building viable networks across an array of national, regional and global institutions.

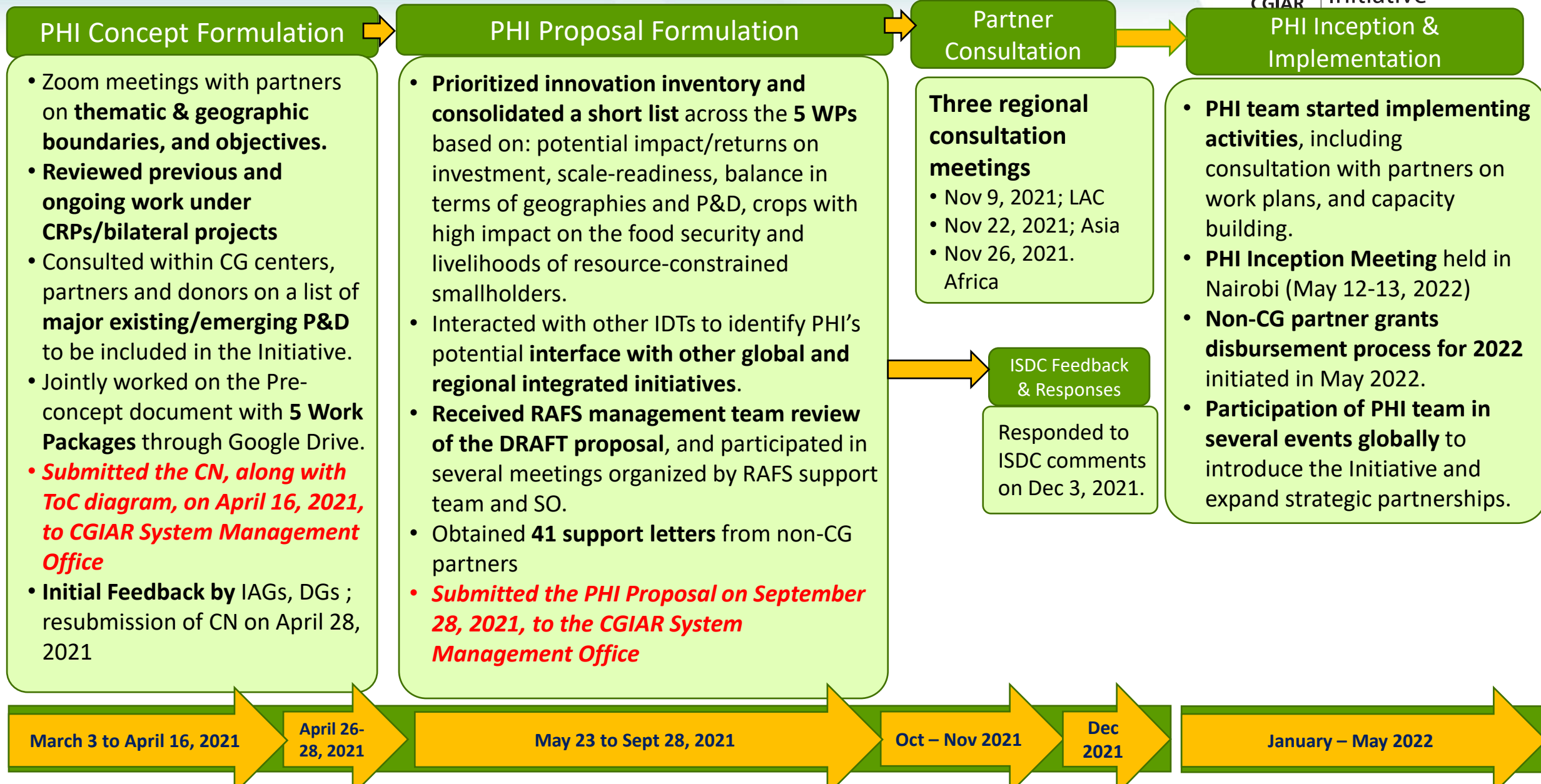
## Focus

High-impact and/or high-risk pests and diseases causing major food security shocks and severe economic impacts in the LMICs in Africa, Asia and Latin America.

## Five Work Packages



# Intensive Engagement with National Partners





# WPI: Establishing Regional Diagnostic Hubs, leveraging CGIAR Germplasm Health Units and NPPO Networks

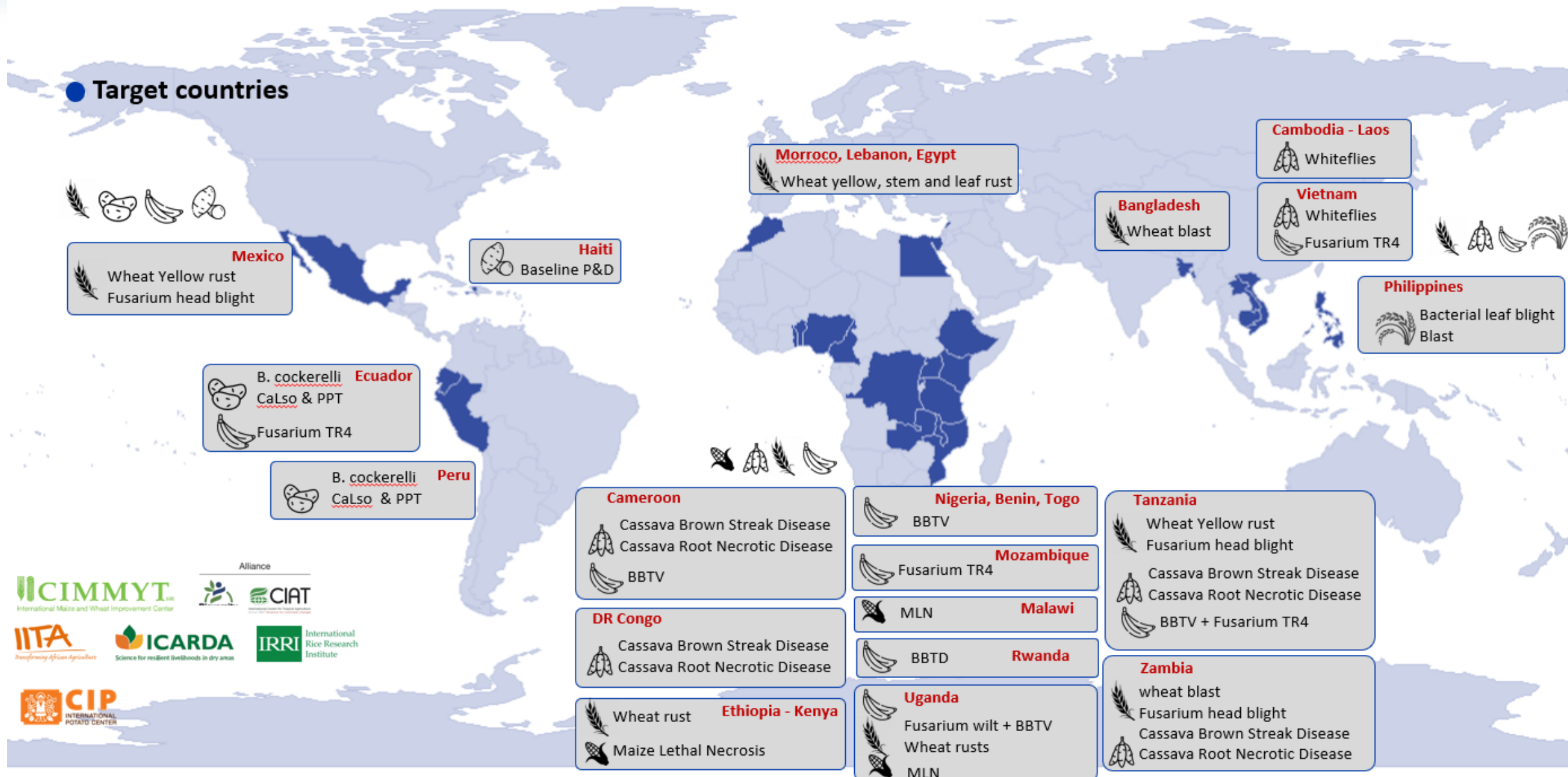


- CGIAR GHUs
- NPPOs, NARES, Farmers communities (Phase 1:



# WPI: Targeted surveillance activities through national partners in 25 target countries (Phase 1)

## Target countries

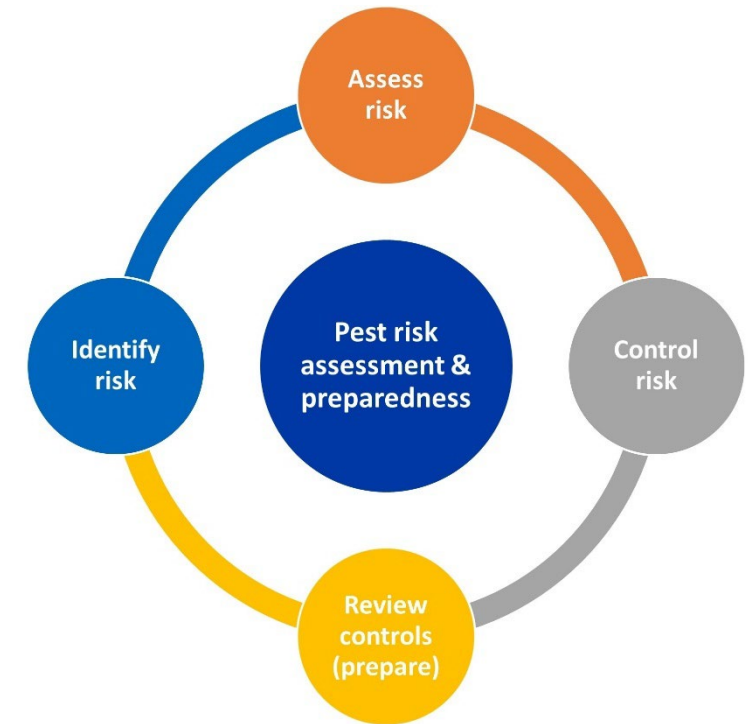


# WP2: Risk Assessment, Data Management and Guiding Preparedness for Rapid Response

1. Develop/enhance tools and standards for pests and diseases data management, risk assessment and prediction.
2. Facilitate preparedness and response plans against emerging pests and diseases.
3. Guide surveillance, integrated pest and disease management, and mycotoxin control.

## For example...

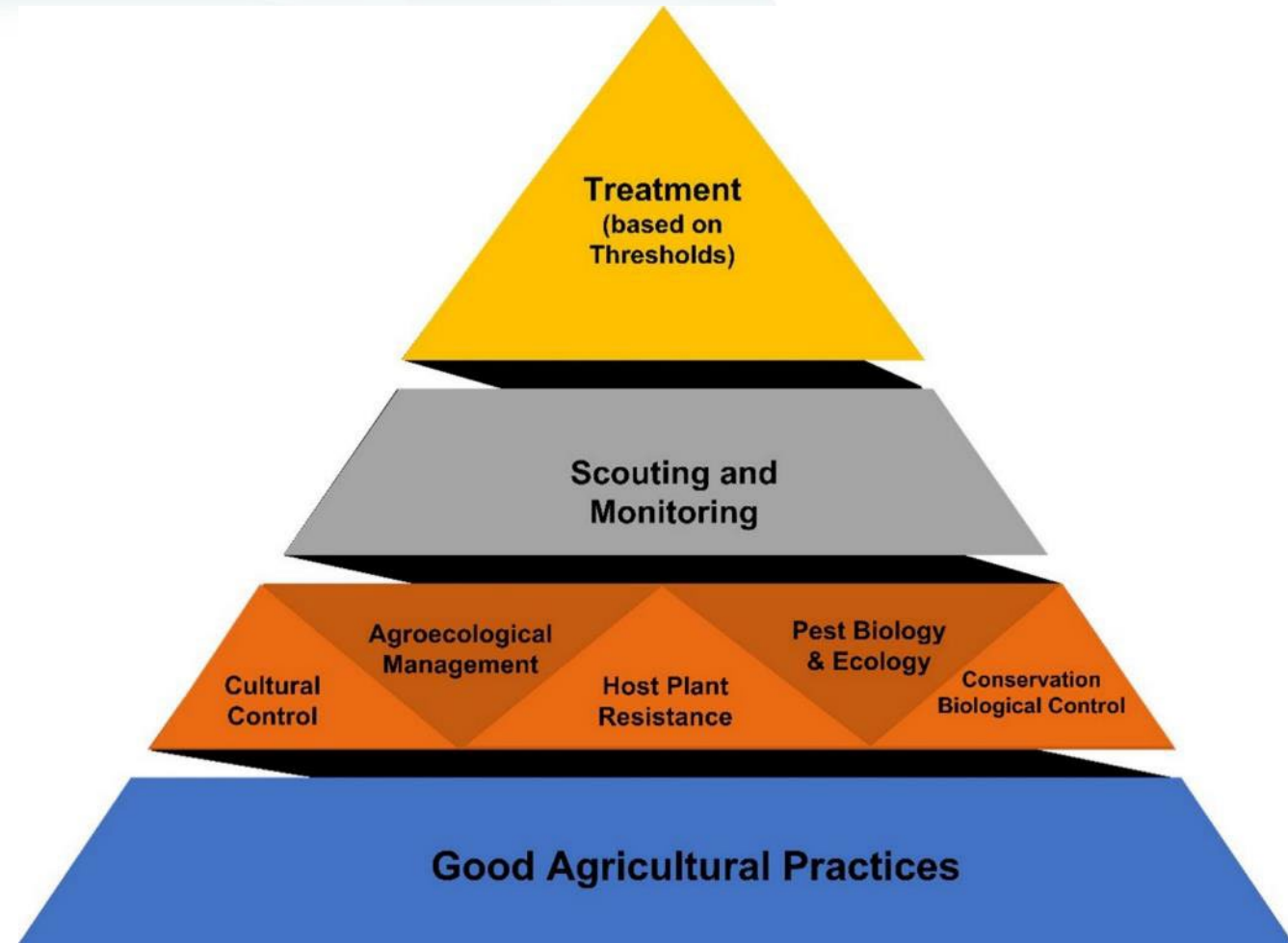
Banana disease occurrence data from the **Tumaini mobile app** mapped on the **PestDisPlace platform** → develop an **early warning system** for banana diseases, especially BBTD and BBXD.



**Anticipate, Predict and Prepare against Plant Health Risks**

# WP3: Integrated Pest and Disease Management

Codeveloping, validating and deploying **eco-friendly, sustainable and integrated pest and disease management packages**, including **resistant varieties, biological control, environmentally safer pesticides and agro-ecological approaches** against major plant health threats (existing/emerging) in targeted countries in Africa, Asia and Latin America.



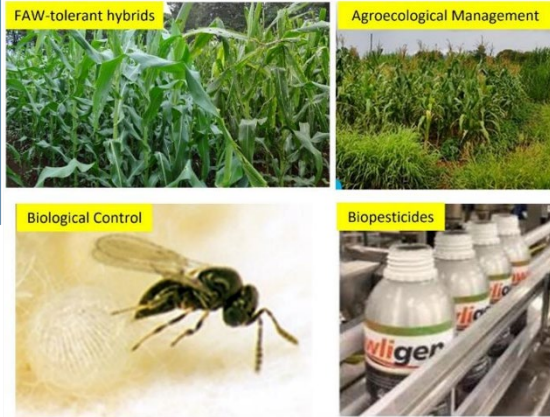
Source: Prasanna et al. (2021)



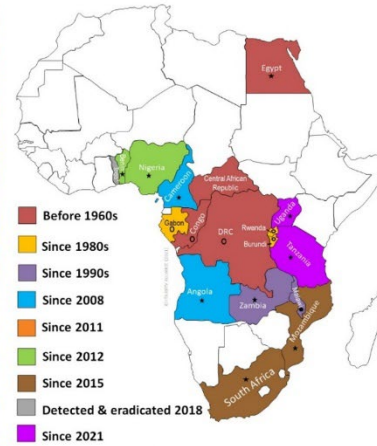
# PHI builds on a foundation of work on plant health management by CGIAR & Partners



## Fall Armyworm (FAW)

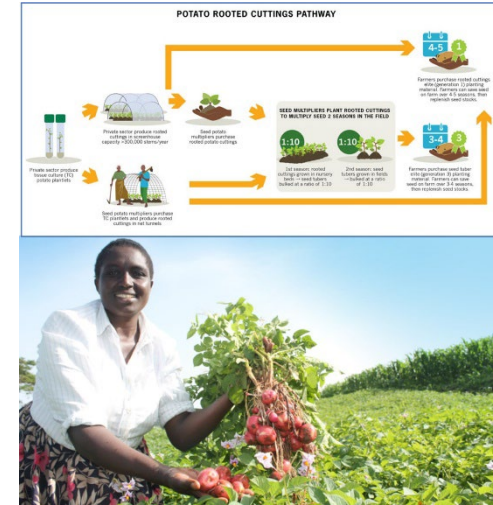


## Banana Bunchy Top Virus (BBTV)

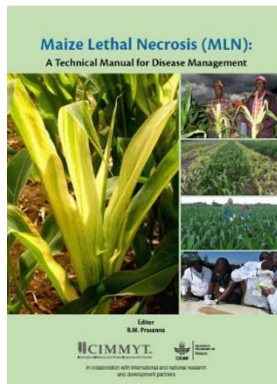


\* BBTV occurrence restricted to some parts of the country  
 o BBTV occur in all banana production regions in the country

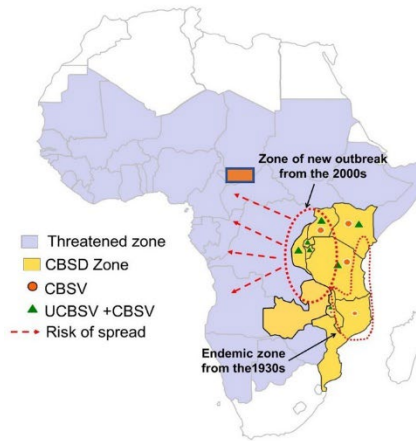
## Potato Disease Management



## Maize Lethal Necrosis (MLN)



## Cassava Brown Streak Disease (CBSD)





# WP3: Integrated Pest and Disease Management

## Prioritized Pests and Diseases for Phase 1 (2022-2024)

Crop Pests and Diseases	ESA	WCA	CWANA	S Asia	SE Asia	LAC
<b>Rice:</b> Brown plant hoppers, Stemborers, Thrips	Blue	Blue	White	Orange	Orange	White
<b>Wheat:</b> Fusarium head blight	Blue	White	White	White	White	Yellow
<b>Wheat:</b> Wheat blast	Blue	White	White	Orange	White	White
<b>Maize:</b> Maize lethal necrosis	Blue	White	White	White	White	White
<b>Maize, Sorghum &amp; Millets:</b> Fall armyworm	Blue	Blue	White	Orange	Orange	White
<b>Maize:</b> <i>Striga</i> spp. & <b>Food Legumes</b> (Cowpea, Fababean, Lentil): <i>Alectra vogelii</i> , <i>Orobanche</i> sp.	Blue	Blue	Blue	White	White	White
<b>Banana:</b> Fusarium wilt TR4, Xanthomonas and other Wilts	Blue	Blue	White	Orange	Orange	Yellow
<b>Banana:</b> Bunchy top	Blue	White	White	Orange	White	White
<b>Potato:</b> Late blight; Soil-borne diseases, including nematodes	Blue	White	White	Orange	White	Yellow
<b>Potato:</b> Purple top	Blue	White	White	White	White	Yellow
<b>Sweet Potato &amp; Cassava:</b> White flies	Blue	White	White	White	White	Yellow
<b>Cassava:</b> Cassava brown streak disease	Blue	Blue	White	White	White	White
<b>Yam:</b> Yam mosaic virus	White	Blue	White	White	White	White
<b>Food legumes</b> (Cowpea, Chickpea, Lentil): Pod borers ( <i>Maruca vitrata</i> , <i>Helicoverpa armigera</i> )	Blue	Blue	Blue	Orange	Orange	White
<b>Vegetables:</b> Aphids, Thrips & Fruit flies	Blue	Blue	White	Orange	Orange	White
<b>Tomato:</b> Tomato leaf miner ( <i>Tuta absoluta</i> ) & Fruit worm ( <i>Helicoverpa armigera</i> )	Blue	White	White	Orange	Orange	White

# WP3: Overcoming IPDM Integration & Adoption Barriers

- **Plant Health Innovation Platforms** in targeted countries for cocreation, validation and demonstration of IPDM Innovation Packages  
→ bringing together innovations from CGIAR, IARCs, NARES, ARIs, and Private sector
- Participatory engagement and collective actions of farming communities, with gender and social inclusion focus
- **Global Plant Health R4D Consortium**, leveraging existing networks established by CGIAR and partners to tackle different plant health threats

## Women as IPM Leaders

Empowering women as leaders in integrated pest management across Southeast Asia



## Unique opportunity

### Overcoming **Level 1 and Level 2 Integration Challenges**

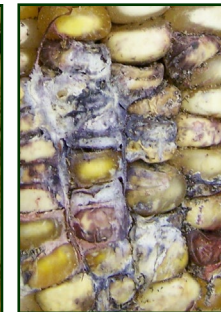
- Integrating different control tactics against a pest (e.g., FAW)
- Integrating different control tactics horizontally across different pest groups (e.g., Cassava pests)

# WP4: Tools and Processes for Protecting Food Chains from Mycotoxin Contamination

Designing and deploying innovations for reducing mycotoxin contamination to protect health, increase food/feed safety, enhance trade, diversify end-use, and boost income



Innovations	Crops	Target mycotoxin	Geographic Mapping				Scale Readiness		
			ESA	WCA	CWANA	LAC	Development	Pilot	Already in use
An integrated mycotoxin management (IMM) and traceability system from field-to-fork	Maize	Aflatoxins, Fumonisin					Kenya	Kenya	Nigeria, Senegal, The Gambia, Burkina Faso, Ghana, Kenya, Tanzania, Mali, Zambia
	Wheat	DON					Zambia, Mexico		
	Rice	Aflatoxins						Nigeria, Kenya	
Aflasafe, a bio-protectant against aflatoxin contamination	Maize, groundnut, sorghum	Aflatoxins						Mexico, Mali, Niger, Sudan, Rwanda, Uganda, Burundi, Togo	Nigeria, Senegal, The Gambia, Burkina Faso, Ghana, Kenya, Tanzania, Mozambique, Malawi, Zambia



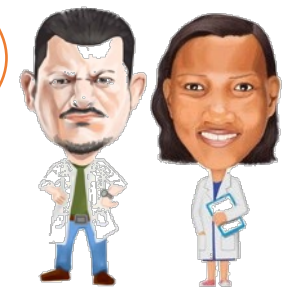


# WP5: Gender and Social Considerations in Design and Scaling of Plant Health Innovations



## Technological Innovations

**Fixed Adjusted**

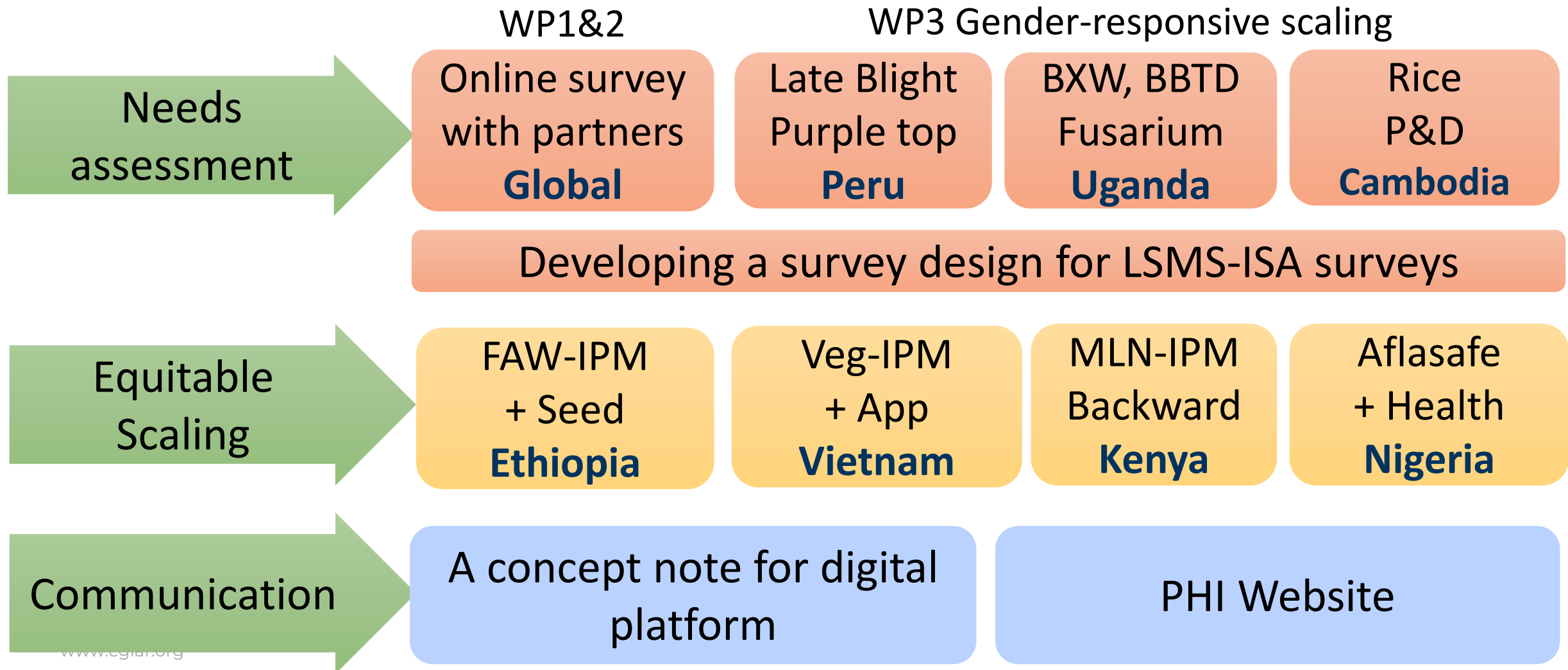


## System Innovations





# WP5: Year 1 Focus



# PHI Team: Experienced and Diverse...

## Inclusive Partnerships

- 9 CGIAR centers
- 3 IARCs (icipe, CABI & WorldVeg)
- 86 non-CG partners, including NARES and development partners, receiving sub-grants for 2022.

## Gender and Diversity in PHI Team

- PHI has a total of **120 staff from 9 CGIAR centers; women comprise 35%.**
- The Initiative Design Team comprises **26 scientists from 20 different nationalities**; 80% from Asia, Africa, and Latin America.
- **PHI management team: 50% women**
- PHI will prioritize opportunities for women and early-career scientists from the Global South to contribute to the Initiative.





# PHI Inception Meeting (May 12-13, 2022; Nairobi)



**258 participants (in-person + virtual)**  
from diverse institutions globally

- CGIAR Centers
- Representatives of Ministries of Agriculture, and NARES in Africa, Asia and Latin America
- National Plant Protection Organizations
- FAO/IPPC
- Advanced Research Institutions
- Regional organizations
- Private sector
- Funding agencies





# PHI Recognition & Outreach



Aflasafe Unit Dry Spore Innovation won the “Best Innovative Research Project of the Year” at the World Bioprotection Forum in the UK (May 23, 2022)



PHI-WP4 Aflasafe PPP Team (IITA & HarvestField) explained the technology to Dr Marco Ferroni (CGIAR System Board Chair), Dr Christian Borgemeister (IITA Board Chair), and other visitors at the Aflasafe production unit in Nigeria (May 31, 2022)



Jan Kreuze (CIP) presented CGIAR Initiatives on global plant virus diagnostics, surveillance and modelling at the 15<sup>th</sup> International Symposium on Plant Virus Epidemiology (June 5-8, 2022; Madrid, Spain)



Safaa Kumari (ICARDA) gave a keynote on “Legume and Cereal Viruses Epidemiology in the Arab and Mediterranean Region” at the 16<sup>th</sup> Congress of the Mediterranean Phytopathological Union at Cyprus (April 5, 2022)



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B.M. Prasanna gave a keynote on “Tackling Transboundary Threats: Fall Armyworm as a Case Study” at the ONE Conference in Brussels (June 23, 2022).



# PHI Capacity Building & Outreach Activities

## A few more examples



Plant Health Initiative



Rice Pathology Training Workshop in Burundi for training NARES Scientists and Research Assistants on Rice Viruses (May 9, 2022)



Training Workshop on Potato Viruses and Bacterial Wilt Pathogen Diagnostics using Field-deployable LAMP Assays at TOSCI-Tanzania (May 23-27, 2022)



African Union



Inter-African Phytosanitary Council

Meeting of the Virtual 14th Session of Steering Committee Inter-African Phytosanitary Council

Virtual presentation by Lava Kumar on “One CGIAR Plant Health Initiative: Strategy, Priorities for Africa, and Opportunities for Capacity Development and Partnerships”, at the African Union’s Inter-African Phytosanitary Council (May 15-16, 2022)

**Upcoming Workshop:** “Appraisal and Development of Strategies for Emergency Response and Containment of Bunchy Top Virus Threat to East African Bananas” (June 15, 2022)



A word cloud of 'thank you' in various languages and scripts, including: danke, 謝謝, ngiyabonga, teşekkür ederim, gracias, thank you, mochchakkeram, raibh maith agat, sukriya, kop khun krap, go raibh maith agat, obrigado, sagolun, sukriya, terima kasih, merci, danke, 謝謝, ngiyabonga, teşekkür ederim, gracias, thank you, mochchakkeram, raibh maith agat, sukriya, kop khun krap, go raibh maith agat, obrigado, sagolun, sukriya, terima kasih, merci, danke, 謝謝, ngiyabonga, teşekkür ederim, gracias, thank you, mochchakkeram, raibh maith agat, sukriya, kop khun krap, go raibh maith agat, obrigado, sagolun, sukriya, terima kasih, merci.



Plant Health Initiative



Nature-Positive Solutions  
for Shifting Agrifood  
Systems to More Resilient  
and Sustainable Pathways

# NATURE+

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**Nature-positive solutions for shifting agrifood systems  
to more resilient and sustainable pathways**



# Food System affects Nature and Humans

## Impact on Nature

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- ➔ 80% of deforestation
- ➔ 37% of GHG Emissions
- ➔ 86% of species extinction
- ➔ 70% of global water resources withdrawn



## Impact on Humans

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The homogenization of our food sources and diets has resulted in dramatically reduced

- (a) nutrition outcomes
- (b) farming incomes due to impoverished soil and water health, reduced crop resistance to pests and diseases, and poor waste management, which have collectively reduced the resilience of smallholder farming systems



# Unsustainable current conditions



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## The Economics of Agricultural System

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- Incentives to increase production and towards “Cheap Food”, less diversified and nutritious;
- Lack of accounting for biodiversity and natural resources depletion;
- True cost of food production (including environmental, social and health costs), is not visible or available;
- Business climate not always favorable to investments from the private sector along the value chains
- Current production and consumption practice is largely linear "take-make-dispose".

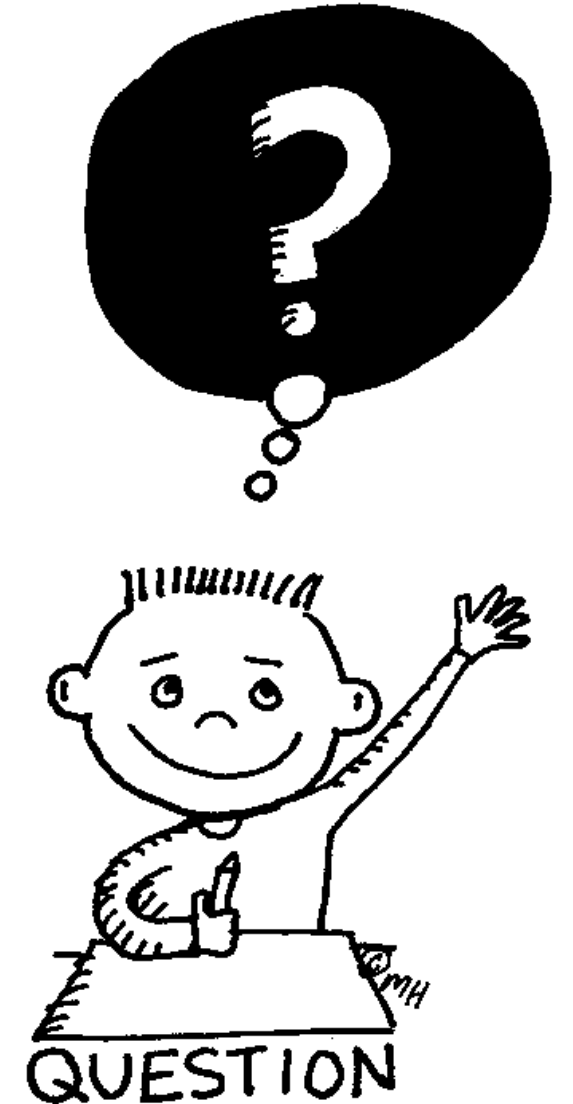


# Nature+ addresses these challenges

## Nature+ Action Research Question

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How can we re-imagine, co-create and implement agri-food systems that deliver food and livelihoods on the ground, while ensuring that agriculture is a net positive contributor to staying within planetary boundaries?



# What is Nature-Positive agriculture?



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## UN Food Systems Summit Definition

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- Ag. system based on **regenerative, non-depleting and nondestructive use of natural resources**
- **Stewardship** of the environment and biodiversity
- **Protect, sustainable manage and restore** the productive system
- Ensure **food security and nutrition** for a growing population

# Farms and Communities drive change

## Required Transformational Change

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- Ensure natural capital is conserved, used and accounted for in food systems to ensure true cost of food is captured
- Support smallholder farmers and indigenous people to be linked to the market, not through global value chains but through local and sustainable food systems
- Prevent deforestation, degradation and restore degraded land
- Manage waste by applying the principles of circular economy
- Ensure traditional knowledge is included in participatory research schemes
- Ensure useful technologies (drones, sensors) are also used to manage and monitor more complex production systems
- Reduce the carbon footprint of agricultural production systems
- Promote incentives for all of the above



# Nature+: a fa(i)r-reaching initiative (I)



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## Nature+ Approach

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**Objective:** this initiative will contribute to reshaping food production system in 5 countries and 10 rural communities, to meet growing food demand by working with farm- and community to tackle the root causes of environmental degradation and biodiversity loss from agricultural production and ensure that negative trends on natural assets are reversed.

**Vision:** NATURE+ will produce actionable science that enables the CGIAR and broader AR4D ecosystem to plan for nature-positive agricultural approaches that promote productivity in parallel with ZERO biodiversity loss, ZERO deforestation, ZERO land degradation, MINIMAL carbon and water footprint, ENHANCED water- and nutrient-cycle management, and ENHANCED equity outcomes

# Nature+: a fa(i)r-reaching initiative (II)

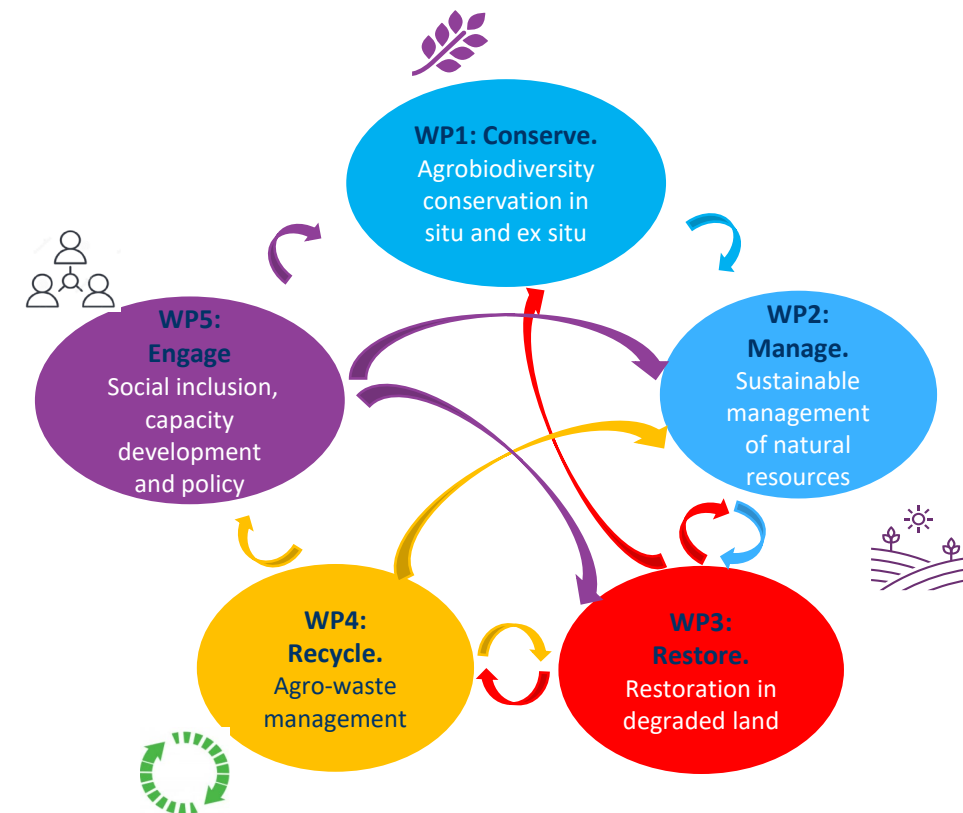


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## Nature+ Approach

- Create a multistakeholder platform with national and local stakeholders
- Investigate environmental challenges, production constraints and traditional nature-positive practices
- Co-develop an Action Plan with local communities
- Provide and monitor information on natural capital
- Identify required investment/investors supporting the changes in the communities
- Inform and build capacity of stakeholders to ensure that enabling environment and incentives for NPS are in place
- Collaborate with other initiatives to identify and co-develop nature-positive technologies.

## Nature+ Structure



# Nature+: a fa(i)r-reaching initiative (IV)



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## Nature-Positive Solutions per WP

### WP 1

- Farmer and seed diversity and security
- Ongoing evolution and self-regulation
- Adaptive traditional environmental practices
- Nature-based stocks
- Provisioning and cultural ecosystem services
- Natural infrastructure
- In-situ vs. ex-situ complementarity

### WP 2

- PVS and PPB of crops and varieties
- Development of resilient seed system
- Intercropping/ crop rotation schemes
- Clusters for implementation at larger scale
- Edges between farms to increase biodiversity and agroforestry
- NUS value-chains, incl. public procurement
- Water management

### WP 3

- Native tree species
- Genetically diverse seeds
- Climate smart seed zones
- Models of multiple benefits
- Rapid biodiversity assessments
- NUS value-chains
- NPS financing

### WP 4

- Compost production
- Biochar production
- Biogas and briquette fuel production
- Nature-based technologies (wetlands, ponds)
- Bioplastic production
- Animal feed production
- Plastic recycling

### WP 5

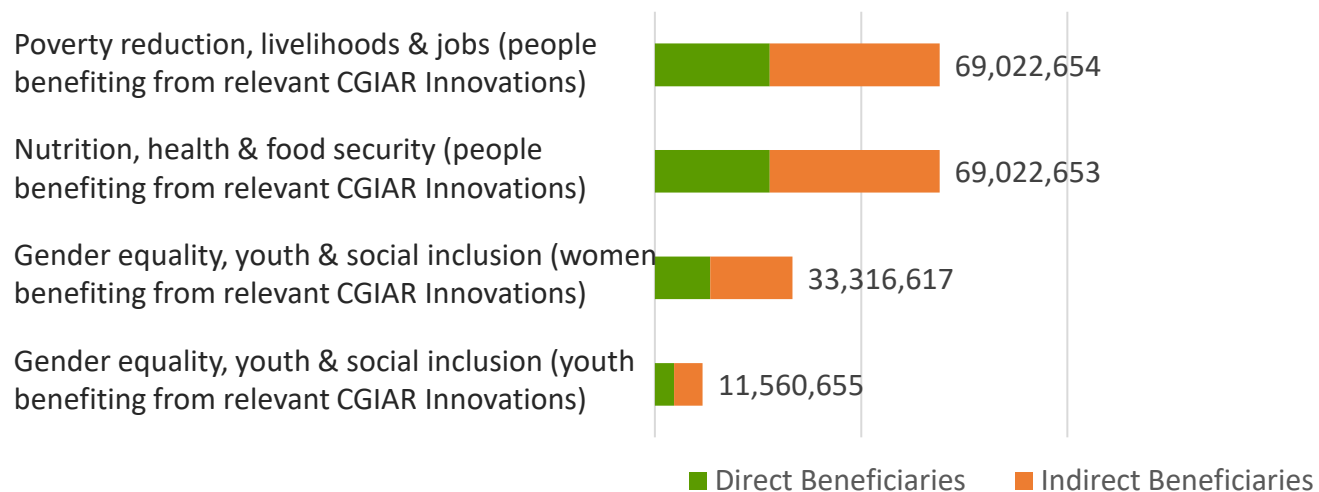
- Decision support tools
- True cost accounting
- System and enabling environment analysis tool

# Nature+: a fa(i)r-reaching initiative (V)



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## Projected 10-year Impact



### Direct + Indirect Impact

- 83M tonnes of CO2 averted
- 1.8M ha under improved management
- 900k ha of deforestation averted

## Partners

Partners	Examples
National institutions	Ministries of agriculture, environment, social inclusion
NGOs and CBOs	Farmer-based associations
Universities	e.g. Scuola S. Anna, Wageningen University, KLU, UCLA, national universities
Private actors	Banks, Global Alliance for Future of Food, Nestle India
International organizations and partnerships	ICRAF, IFAD, FAO, ITPGRFA, Crop Trust, World Economic Forum
Conservation organizations	WWF, IUCN, WRI, CI, UNEP, FOLU, TNC



# ISDC Review



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## NATURE+ Response

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- **Industrial Agriculture Narrative:**
- Industrial agriculture is root cause because public incentives and policies continue to encourage industrial agricultural systems over sustainable, nature-positive types of farming. Only one system of incentives is in place, which encourages even smallholder farmers to adopt unsustainable practice. In other words, we refer to industrial agricultural not based on the size of the farm but the political economy system that led to the negative impact of agriculture and which is still in place.
- **Specific Country Analysis:**
- Challenge analysis will be refined in target countries during start up, as we started already in Kenya and Burkina Faso.
- **Structure of the WPs**
- Perceived overlaps in WP design are explicitly designed feedback loops and synergies designed to support NATURE+ that are multidisciplinary and multi-thematic, including conservation, restoration and production and recycle.
- **Conservation and Use**
- Yes, conservation without utilization is ineffective; hence the IDT designed WP1 to focus on **conservation** and WP2 to focus on **using the outputs of conservation** (seeds) in production and value chains
- **Seed Systems**
- Novel aspect of seeds system intervention is focus on role of **informal** seed system actors (e.g., grain traders, small community seed businesses) in NPS and CGIAR technology outscaling

# Initiative implementation activities



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## Updates and Progress

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### Kick-off meetings

Kenya (May 2022), Burkina Faso (May 2022); India (planned July), Vietnam (planned August), Colombia (planned September)

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### Staff

TORs designed and 80% of required staff for implementation hired

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### Sites selected in Kenya and Burkina

**Kenya:** Kisumu, Vihiga, Turkana, Kajiado

**Burkina Faso:** Ouagadougou, Oubritenga, Bazèg, Boulkiemdé, Kouritenga

Multi stakeholder platform initiated

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### MELIA

Drafted baseline surveys for qualitative and quantitative data collection. Definition of required secondary data for each country and site ongoing

### Partnership

Key partners for implementation identified in Kenya, Burkina Faso and India, ongoing in other countries





Nature-Positive Solutions  
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# **Resilient Agri-food Systems/ Regionally Integrated Initiates**

*Resilient Cities Through Sustainable  
Urban and Peri-urban Agrifood Systems*

**30 June 2022**  
(13:00 – 15:00 CEST)

# Initiative Overview: Research objectives



## Goal:

Research and innovation that enable urban food systems to provide **healthy diets and decent jobs** for the urban poor, whilst helping to **reduce the environmental footprint** of rapid planetary urbanization.

Work Packages	Research priorities 2022-2025 (examples)		
	Assessments, tools, metrics	Technology adaptation	Planning and management
WP1: Efficient and safe food <b>production</b> in urban and peri-urban zones	Risk assessments in urban & peri-urban vegetable production. <a href="#">Kenya, Bangladesh</a>	Biofertilizers and biocontrol technologies to reduce agrochemical use. <a href="#">Peru</a>	GIS tools for land and water use planning in city catchments. <a href="#">Philippines</a>
WP2: Inclusive, profitable informal urban food <b>markets</b> & supply chains	Supply chain mapping of vegetables & animal source foods. <a href="#">Bangladesh, Peru</a>	Low-cost adaptation of solar-powered storage and CEA technologies. <a href="#">Kenya</a>	Guidelines for inclusive market upgrading ('model markets'). <a href="#">Bangladesh</a>
WP3: Strengthening circular <b>bio-economy</b> and food safety	Food waste assessments. <a href="#">Bangladesh, Kenya</a>	Biofertilizer and feed from food waste. <a href="#">Ghana, Sri Lanka</a>	Wastewater reuse guidelines. <a href="#">Ghana</a>
WP4: Improving urban <b>food environment</b> to enable healthy diets	Low-income food environment assessments. <a href="#">Kenya, Bangladesh</a>	Mobile food retailing technologies. <a href="#">Bangladesh</a>	Food environment guidelines for adolescents. <a href="#">Kenya, Peru</a>
WP5: Strengthening <b>capacity for research &amp; innovation</b>	Food sector monitoring tools in informal urban sector. <a href="#">Global</a>	New GIS and AI urban food research technologies. <a href="#">Global</a>	Lean Launchpads for young urban food entrepreneurs. <a href="#">Peru.</a>

# Initiative overview: Expected outcomes

## CGIAR Impact Areas



## Initiative Outcomes by 2030

2M urban poor reduce risk of NCDs and CDs  
1.5M urban poor increase micronutrient intake

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4M jobs and enterprise opportunities in the food sector

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6M ha under improved management for food production and ecosystem services

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3.6M women and youth with greater opportunities

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\$100M invested in better urban [food] waste management

# Initiative Overview: Initiative team and locations

**6 Centers:** CIP, ILRI, IITA, IWMI, IFPRI; and WorldVeg

- Each Work Package Lead from a different Center
- 51% female, 49% male
- 20 nationalities, 80% staff from Global South
- 89% work-based in Global South
- 49% early career, 37% midcareer, 14% senior level





# Response to ISDC Comments

ISDC recommendations	Response and follow-up
<p><i>Flesh out major directions ..... and <b>how the most promising areas from previous research will be fast tracked.....</b></i></p>	<ul style="list-style-type: none"> <li>Completed CoSAI <a href="#">review of recent CGIAR and non-CGIAR research and innovations in urban and peri-urban agriculture</a> and identified fast-track starting points for the Initiative.</li> <li>Have facilitated co-design of research and scaling plans for each Work Package and in most priority countries.</li> </ul>
<p><i>Strengthen the components .....concerned with <b>implementation and scaling.....</b> ensuring <b>strong co-design with the range of partners.....</b></i></p>	<ul style="list-style-type: none"> <li>Implementation plans have been developed over past 6 months, jointly with local and national partners from different levels of government, civil society, and private sector as well as with research and scaling partners.</li> </ul>
<p><i>Consider <b>strengthening trade aspects,</b> including elements such as transport, storage and marketing innovations.</i></p>	<ul style="list-style-type: none"> <li>We do address technologies (storage, retail, digital logistics, food safety, waste reduction, resource recovery) as well as related business models and supportive policy options.</li> <li>Focus on ‘food catchment’ of cities; detailed research on <i>regional and international</i> trade is outside the scope of this Initiative but will link with Markets and Value Chains initiative in this regard.</li> </ul>
<p><i>Include radically new approaches ....., such as <b>vertical farming, cellular and plant-based animal food substitutes.</b></i></p>	<ul style="list-style-type: none"> <li>We will examine advanced technology innovations with the objective to better understand their potential contribution to CGIAR impact areas.</li> <li>Recently completed with CoSAI a <a href="#">review of Controlled Environment Agriculture (CEA)</a> in this context.</li> </ul>

# Implementation to date



## Research

### WP1 (Production)

- Research protocols co-developed with local/national partners, scoping missions, and field evaluations (Nairobi, Addis Ababa, Manila and Dhaka): Studies on vegetable seed and seedling systems; Impact evaluation of urban agriculture programs; Youth involvement in urban agriculture

### WP2 (Informal markets)

- Assignments/recruitments of new researchers and detailed work planning with local and national partners in the Philippines, Peru, Bangladesh and Kenya
- Publications under development on food safety in informal markets in Dhaka, and urban food markets in West Africa.

### WP3 (Circular bioeconomy)

- Review of *WHO 2006 Wastewater Reuse Guidelines* finalized: Options for 'safe food' labeling tested, wastewater-freshwater swaps for climate change adaptation proposed.
- Publication: *Review of food waste recovery for peri-urban livestock farms in Sri Lanka*.
- *Guidelines for Risk Assessment and Risk Mitigation related to Water Quality*: Collaboration with FAO.

### WP4 (Food environment):

- Urban nutrition situation analysis in progress (Kenya, Ghana, Ethiopia, Philippines, Peru and Bangladesh)
- Development/testing of new programming tools: *Food Recognition Algorithm + Nudging Insights (FRANI)* in Ghana; food environment assessment tools underway in Sri Lanka

### WP5 (evidence base and research & innovation capacities):

- *Bangladesh Urban Food System Profile* under development (for launch in November)
- World Bank – CGIAR Urban Food Systems Webinar series launched with events on informal markets (March) and governance (June).
- Lean Launchpad (agri-food innovation platform) design and partnership model agreed with Universidad Nacional Agraria, Peru and Lima 2035 private sector alliance.

# Implementation to date



## External engagements

### **World Bank – CGIAR Community of Practice on Urban Food Systems**

- Launched Nov 2021; CGIAR scientists contributing to webinar series
- Initiative commissioned to produce 'Food for an Urban Planet' publication (Future of Food series)

### **FAO – Green Cities Initiative**

- Joined Advisory Committee for developing a Regional Action Plan for Africa targeting 300 cities

### **Food Forward Consortium** (led by EAT Foundation with C40 City Network)

- Discussing participation under the 'Cities' priority area; to be launched at COP27 (Nov 2022)
- Joint funding proposal to Green Climate Fund under discussion

### **Nairobi City Government Food System Strategy**

- Joined the Food Liaison Advisory Group to provide evidence and raise researchable issues

### **Rockefeller Foundation Food 2050**

- Collaboration with Award Winners (India, Kenya) building on Lima 2035 Food Vision
- Contributing to Good Food Strategy with a view of additional funding

### **ETH Zürich – Singapore Future Cities Laboratory**

- Discussing research collaboration with their new *Agropolitan Territories* program in Asia

### **Swiss Development Cooperation**

- Invited to join evaluation team of SDC rural-urban program with a view of future funding (August)

# Partner engagement + Inception Meetings



Dates	Engagement	Purpose/outcomes
During proposal development to November 2021	18 meetings with 20 stakeholder groups (>400 individuals) in 8 countries	<ul style="list-style-type: none"><li>• To capture their priorities for Initiative design</li><li>• Initiative work packages reflect broad stakeholder priorities</li></ul>
February – June 2022	Stakeholder meetings in Bangladesh, Ethiopia, Kenya, and Peru	<ul style="list-style-type: none"><li>• To capture country-specific stakeholder research priorities under each work package</li><li>• To develop joint work plans for each work package, including CGIAR and partners</li></ul>
April 2022	Initiative Management Meeting	<ul style="list-style-type: none"><li>• To integrate work plans across work packages and countries, incorporating stakeholder priorities</li><li>• To agree on adaptive management mechanisms for continued co-creation with partners</li></ul>
November 2022 (planned)	Global Inception Meeting	<ul style="list-style-type: none"><li>• Partners to present results and lessons from Inception Phase and initial Year 1 research</li></ul>



# Collaboration with other Initiatives/ synergies



# Challenges / risks – and mitigations of these



<b>CGIAR-internal</b>	<b>Mitigating action</b>
Not all Centers and Initiatives open to collaborative approach	Work with those most like-minded
Slow pace of staffing, fragmentation and overload of staff FTEs (assigned to many projects, Initiatives)	Design core team roles with larger FTE allocations
'Assigned' focal points for operations areas are very hands-off – need to deal with the actual tasks ourselves (finance, P&C, communications)	In key cases, recruit full-time operations personnel
Bringing in new scientists from additional centers faces institutional hurdles	For Year 2 budget, update team composition to include these new competencies
<b>External</b>	
Funding – several donors interested, but hesitant to commit	Intensify direct dialogue with funders
Local/national partner roles and budget shares quite limited at this stage	Increased roles and budgets for national and local partners from Year 2
New international research and development partners in 'urban' space need to see value-added from CGIAR	Involve new partners in technical support group; co-develop key research activities

<https://www.cgiar.org>



**Thank you!**

# Q&A







Sustainable  
Intensification of  
Mixed Farming Systems

# Overview: Sustainable Intensification of Mixed Farming Systems Initiative

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Fred Kizito<sup>1</sup> and Santiago Lopez Ridaura<sup>2</sup>

<sup>1</sup>International Institute of Tropical Agriculture (IITA) and <sup>2</sup>International Maize and Wheat Improvement Center (CIMMYT)

One CGIAR Resilient Agrifood Systems Science Group meeting with the Independent Science for Development Council (ISDC)

30 July 2022

# CGIAR entities



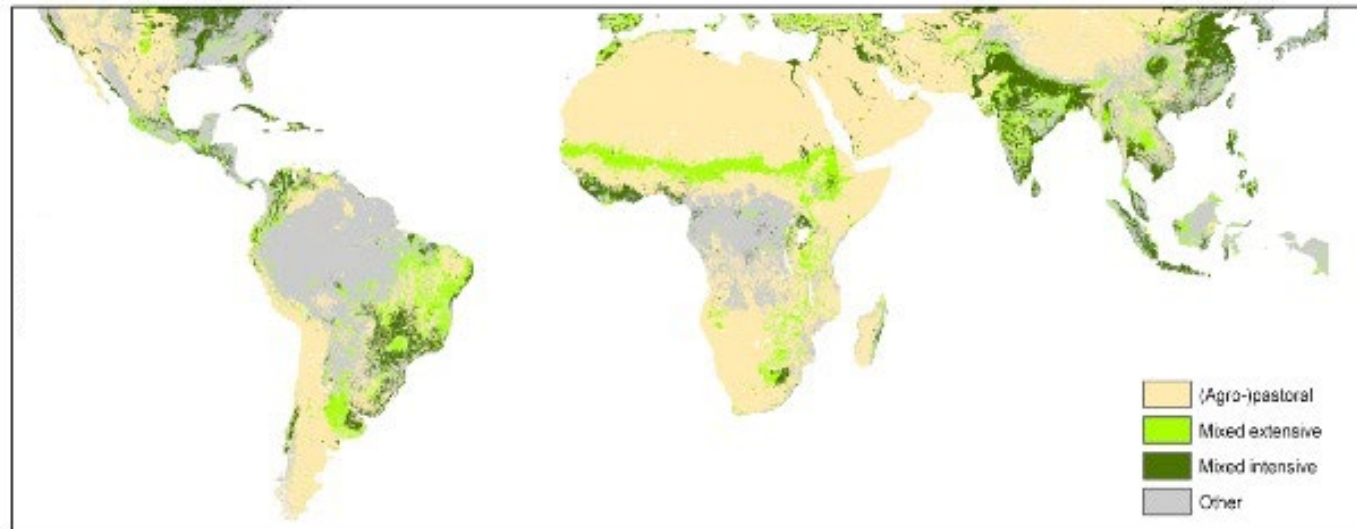
Sustainable  
Intensification of  
Mixed Farming Systems



# Research challenge

Most agricultural production in the global south happens in Mixed Farming Systems (MFS)

- Mixed crop-livestock systems are considered to cover 2.5 billion Ha of land globally and, in the Tropics, they supply around 75% of the milk, 60% of the meat and between 40 and 86 % of the maize, rice, sorghum and millet consumed (Thornton et al 2017).
- However, most agricultural R&D has been “component-focused” which often limits scaling and the potential for impact at scale and amplifies trade-offs between livelihood objectives of MFS actors.



(Thornton et al 2017).

# The approach

The Sustainable Intensification (i.e., production of more food on the same piece of land while reducing the negative environmental impacts) of Mixed Farming Systems can deliver critical outcomes that result in multiple impacts at scale, minimize sectoral trade-offs and leverage/maximize synergies in MFS.

**‘Livelihood lens’** considers technical, socio-economic, cultural conditions and all the different objectives of rural families (income, food, risk, cultural values)



## Sustainable Intensification of MFS

- Integrates genetic, ecological, and socio-economic innovations & information
- Increases productivity per unit land, labor, capital, etc.
- Considers whole-farm & household issues
- Ensures efficient, prudent use of inputs
- Conserves or enhances natural resources
- Increases resilience, equity & reduces risks

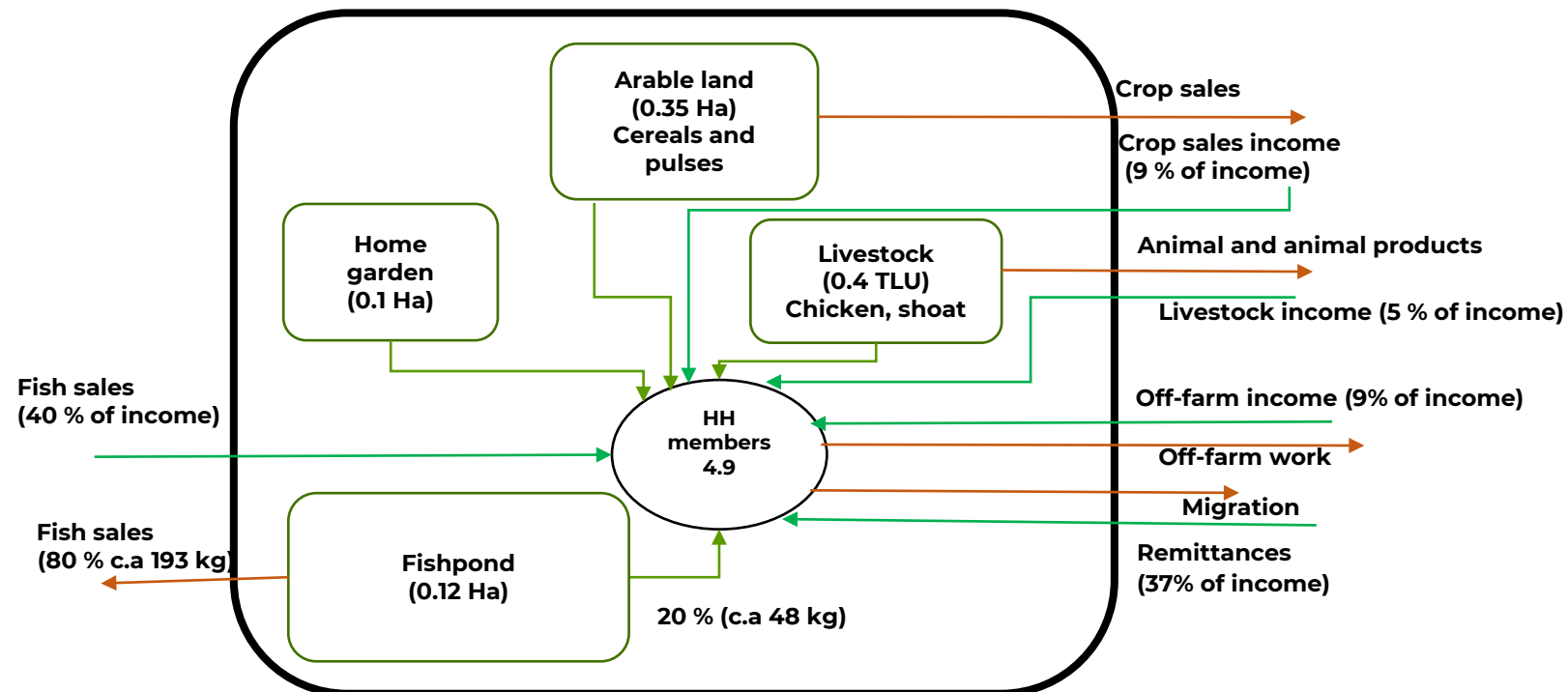


# Systems approach



The 'Systems approach' considers all components of farming systems and their interactions and can be applied at different levels of analysis and adapted to context.

Farm Household Type 2 (14%).  
Small scale diversified household with off farm income





# Pictorial: mixed crop-livestock systems



Sustainable  
Intensification of  
Mixed Farming Systems





# Geographic prioritization

## Selection of MFS / countries for SI-MFS

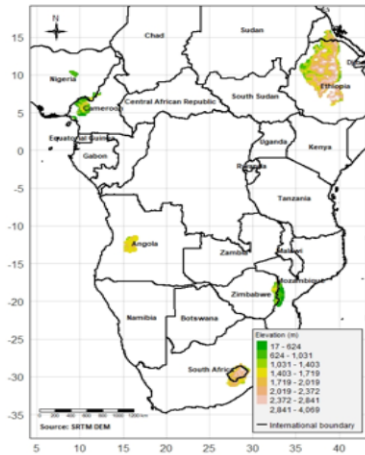
System	Region	Country	Justification
Cereal-root crops mixed	West Africa	Ghana	Important system across West African Savannahs, many entry points, high child mortality, Ghana: good data base, government support, good working environment, partners, donor interest, opportunities with EiA
Highland mixed	East Africa	Ethiopia	Highly divers system, representative for other East African highlands, many entry points, high child stunting, Ethiopia: huge population, good data base, support from government, partners, donor interest, opportunities with SAPLING, EiA, NPS
Maize mixed	Southern Africa	Malawi	Widespread system in ESA, highly at risk due to CC, many entry points, Malawi: high rural population, need for intensification due to low land/capita, high poverty level, opportunities with RII, good data available, partners
Highland mixed	South Asia	Nepal	Diverse system, high CC risk, many entry points, Nepal: high rural population, need for intensification due to low land/capita, good data base, good working environment, partners, opportunities with SAPLING, RII, NPS, donor interest
Rice mixed	South Asia	Bangladesh	Also relevant in India, high rural population, high poverty levels, need for intensification, good data base, partners, donor interest, opportunities with RII, EiA
Highland extensive mixed	Southeast Asia	Laos	Representative system for the region, many entry points, Laos: high poverty levels, good working environment, partners, opportunities with NPS, Agroecology, both systems connected in same province/district, rapid changes from one to the other
Upland intensive mixed	Southeast Asia	Laos	Representative system for the region, high CC risk, Laos: good working environment, partners, opportunities with Agroecology, NPS, both systems connected

# Focal farming systems

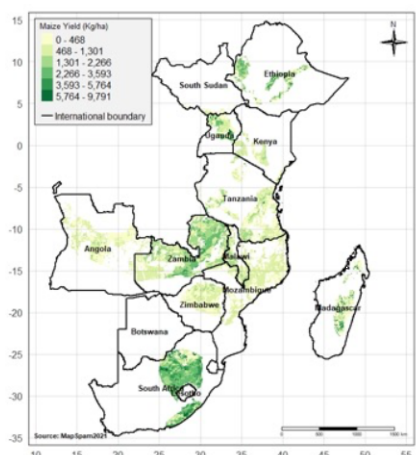


Sustainable Intensification of Mixed Farming Systems

**Highland mixed (Ethiopia)**



**Maize-mixed (Malawi)**



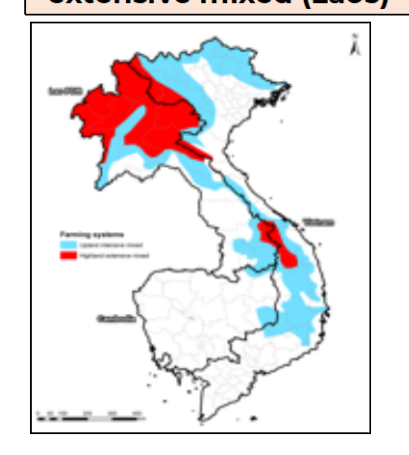
**Rice-mixed (Bangladesh)**



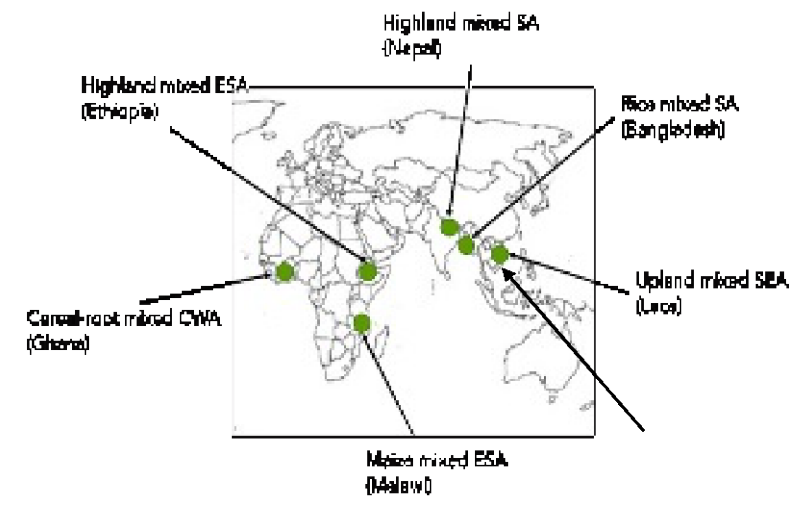
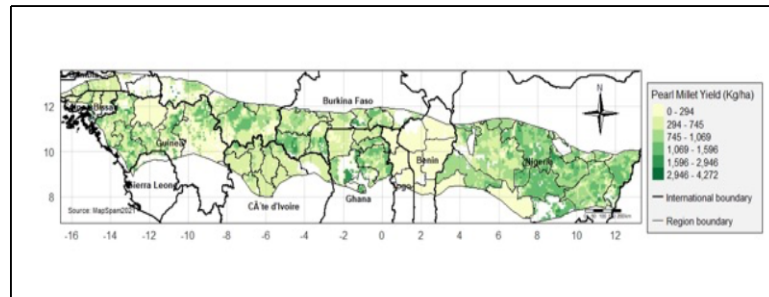
**Highland mixed (Nepal)**



**Upland intensive mixed and Highland extensive mixed (Laos)**

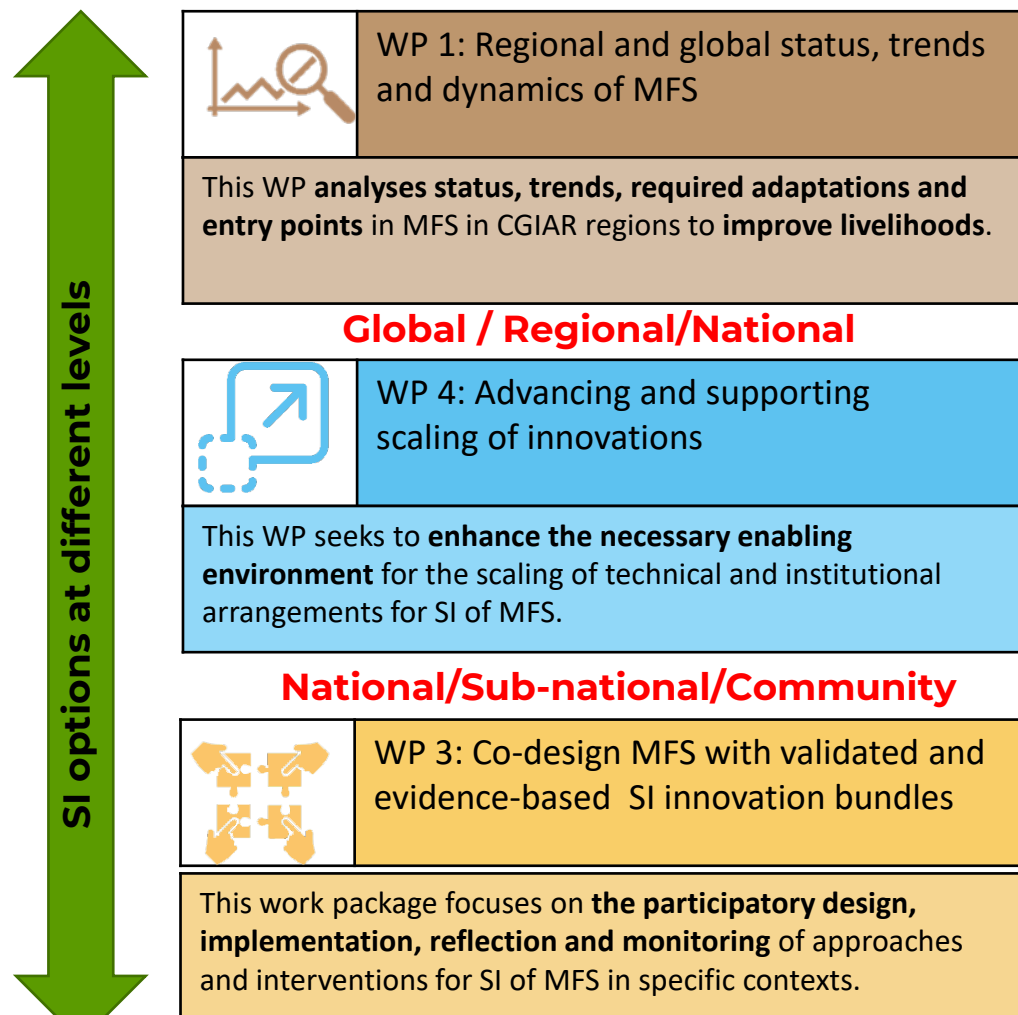


**Cereal-root mixed (Ghana)**



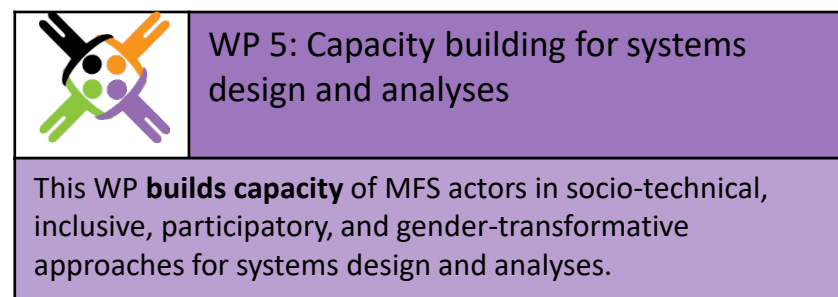
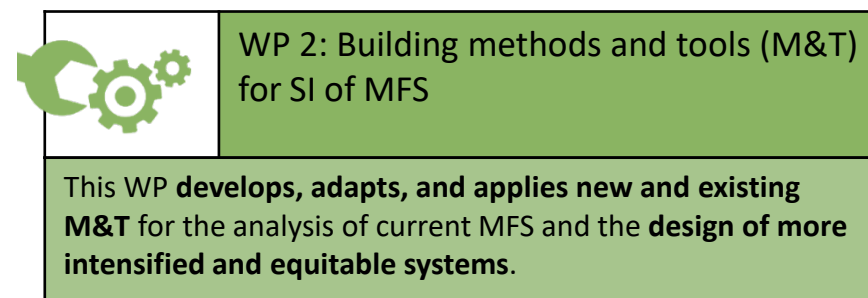


# 5 work packages



**Community/Farm Household/field/herd**

- **5 work packages**
  - **3 WPs implementing SI options at different levels (from local to global),**
  - **2 WPs for methodological and capacity development support, and**
- **4 Cross Cutting themes: Scaling Readiness, Gender, MELIA, Communication support.**



**Actor-centered Capacity Development and Methods and tools for systems analysis at different levels and scales**

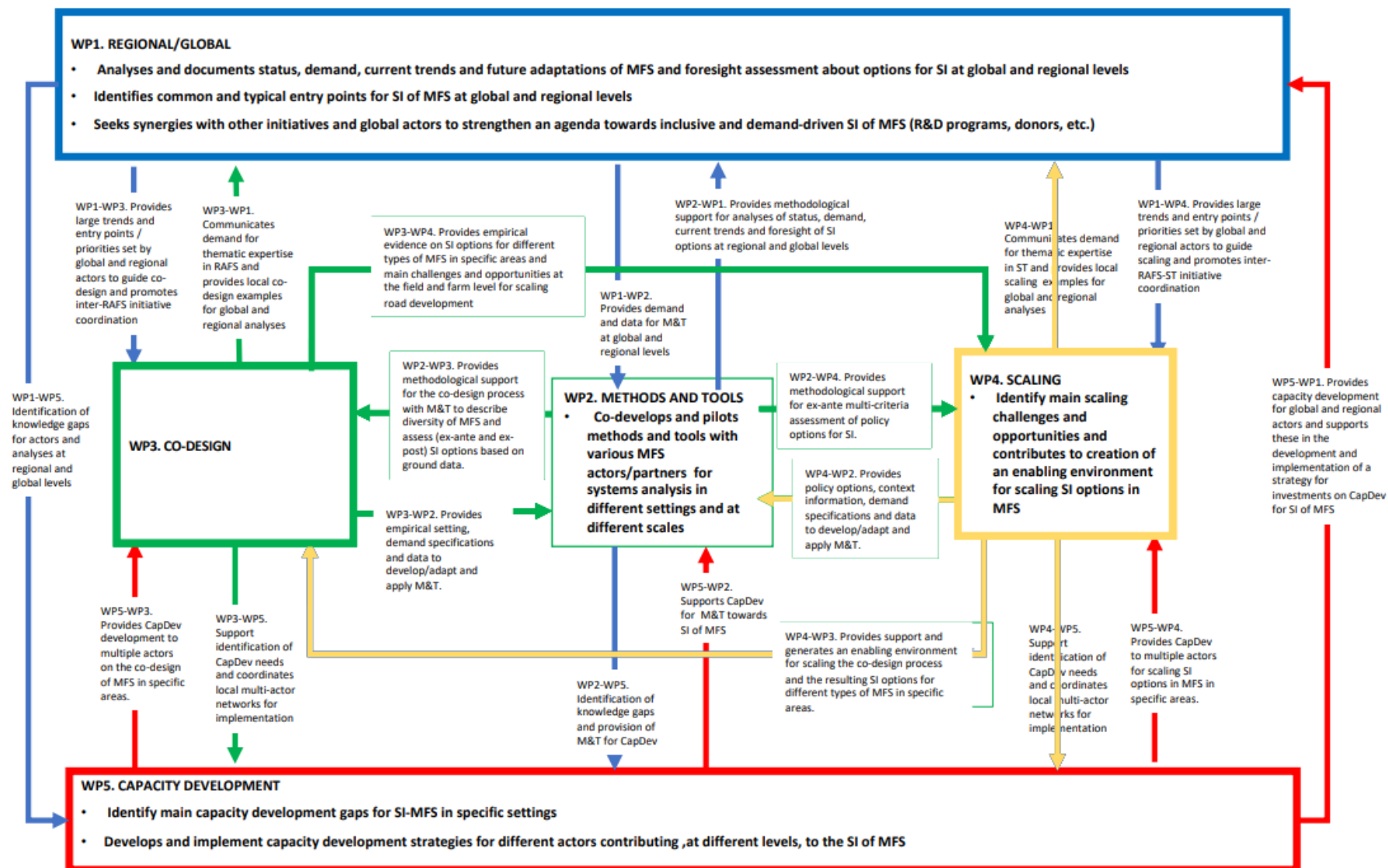
**Gender**

**Scale Readiness**

**MELIA**

**Comms**

# Work package inter-linkages



# On-going efforts within SI-MFS

- WP Planning, staffing and budgeting.
- Branding and reaching out to various partners.
- Inception workshop, 31 May – 2 June in Addis Ababa, Ethiopia.
- In 2022, rollout WP activities in 6 countries within 7 farming systems. Preliminary stakeholder assessments indicate that these have expressed interest and enthusiasm to work with us.
- Phase 4 positions: 7 lead positions on gender, multi-criteria assessments and scaling.
- Interim MT with WP leaders continuing up to June 2022 to be replaced by Phase 4 positions.



**Nutrition, health,  
and food security**



**Poverty reduction,  
livelihoods, jobs**



**Gender equality, youth,  
social inclusion**



**Climate adaptation and  
mitigation**



**Environmental health  
and biodiversity**



# Summary of proposal development process

- Pre-concept note submitted (16 April 2021)
- Feedback from experts on Pre-concept notes (28 April 2021)
- Stakeholder survey and engagements in 6 Countries (June 2022)
- IDT input, design and finalization of full proposal (April-Nov. 2022)
- Submission of Initiative full proposal (23 November 2021)
- Submission of Final Initiative Budget and POR & Budget (18 February 2022)
- **Feedback from ISDC (22 February 2022)**
- **Responses to ISDC (1 March 2022)**
- **Incorporation of ISDC Comments to Proposal (March –June: Ongoing)**
- **Official start date (1 April 2022)**
- Inception and planning meeting (31 May -2 June 2022)

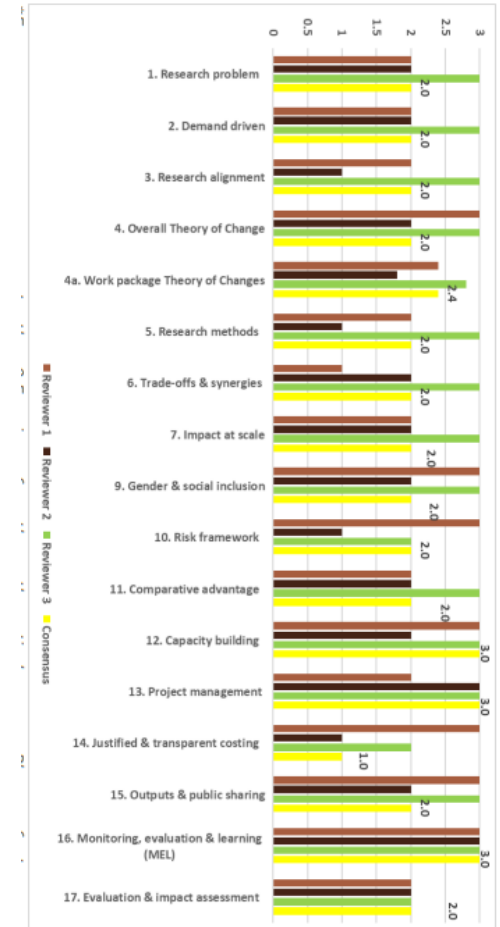


# Summary of ISDC feedback and initiative responses

- Described as a comprehensive and well-written proposal with notable strengths including the Work Packages and their integrated program logic and the MEL plan and the integration of both the biophysical and social dimensions of SI of MFS.
- Some weaknesses that could affect the potential of SI-MFS to achieve the impacts that it aspires to.
  - **Rethinking the impact statements** especially with regard to more appropriate performance indicators
  - **Improving the impact assessment plans**; further justification for the measurable three-year outcomes;
  - Need for a **more detailed budget breakdown and realistic budget for scaling readiness activities** due to the complexity inherent in scaling innovation packages.
  - Explicit **recognition of the risks posed by the COVID pandemic** and political instability in some of the target countries is also needed.

# Summary of ISDC feedback and initiative responses

- Feedback compiled by team and submitted to RAFS Directorate on 1 March 2022
- Leadership team started to make some changes to the submitted proposal structure- **specifically on MELIA and TOC (3 internal meetings by MELIA)**
- SI-MFS team attended **Webinar for Projected benefits as a means to address any ISDC needed changes** on 08/03/2022. Presentation by Gil Yaron was on “Learning from the CGIAR Projected Benefits Work: A rapid after-action review “
- A thought piece has been developed for the Initiative and can be accessed here: [SI-MFS\\_thought piece draft.docx](#)
- Current Proposal can be accessed HERE as [SI MFS Proposal](#)



# Updates: Initiative implementation activities and progress

- Pre-inception meetings by WPs 1, 2, 3, 4, 5, MELIA, COMMS and Gender as well as the 8 Centers held in the months of April through May
- A total of 30 meetings held (on average each time met about two times) for the pre-inception working groups.
- Field excursion visits by Co-lead for Asia for site co-identification and Partnership engagements (Nepal, Bangladesh) as well as Malawi April/May 2022
- **Inception and planning meeting** (31 May -2 June 2022).
- Pictorial presentation for the Inception meeting: [SI-MFS Inception Meeting](#)
- Ethiopia In-Country Partnership Meetings 13-14 June 2022 in Addis
- TAFSSA Nepal- Co-lead made a presentation on 10 June
- Ghana Cluster in-country pre-launch meetings: 15 June
- Launch in Ghana- mid-July
- Several other countries launch discussions in June/July
- TAFSSA Bangladesh will give a presentation on 4 July



# Update on initiative team, opportunities, and outreach



Sustainable Intensification of Mixed Farming Systems

## Implementation Leadership Team

Name	CGIAR entity	Gender	Name	CGIAR entity/organization	Gender
<b>Initiative leads</b>					
Lead	Fred Kizito (Lead)	CIAT	M	Santiago Lopez (Co-lead)	CIMMYT M
<b>Work package leads:</b>					
WP 1	Francis Muthoni (lead)	IITA	M	Name (co-lead)	Center M/F
WP 2	Santiago Lopez (lead)	CIMMYT	M	Name (co-lead)	Center M/F
WP3	Aymen Frija (lead)	ICARDA	M	Name (co-lead)	Center M/F
WP4	Fred Kizito (lead)	CIAT	M	Name (co-lead)	Center M/F
WP5	An Notenbaert (lead)	CIAT	F	Name (co-lead)	Center M/F
<b>Country leads:</b>					
			Country Support teams		
Country	Name	Center	M/F	Name	Center M/F
Nepal	Manohara	IWMI	F	TBD	CIMMYT F
Lao	Mary Otieno	CIAT	F	TBD	ILRI F
Ghana	Nurudeen Abdul Rahman	IITA	M	Powell Mponela	CIAT M
Ethiopia	Anthony Whitbread	ILRI	M	Aymen Frija	ICARDA M
Malawi	Lulseged Desta	CIAT	F	TBD	CIMMYT F
Bangladesh	Humayun Bandari	IRRI	M	Tim Krupnik	CIMMYT M

## Other assignments

Name	CGIAR entity/organization	Gender
<b>Work Package</b>		
Assignment	Center	M/F
WP1: Future dynamics assessments	Bao Quang	ICARDA M
WP2: Methods and Tools manual	Dina Najjar	ICARDA F
WP3: Compendium of strategies	Martina Cavicchioli	IITA F
WP4: Facilitation of scaling enabling environment	Sam Gamede	CIMMYT M
WP5: Launching of virtual institute	An Notenbaert	CIAT F

## Outreach across Initiatives and Centers

CGIAR entity / external partner	Date	Participants
EIA	Various dates (Feb 10; Mar 16)	7
Plant Health	Feb. 9	4
Nature Positive	Various dates (Dec 2021, Jan 20)	5
ESA (UU) RII	Feb 23	25
WCA RII	Mar 9	10
TAFSSA	Apr-May	10
<b>External partners</b>		
GIZ	Nov 23, 2021	03
FAO	Jan 18	04
Africa RISING, EIA, Plant Health	25 April	12
USAID Innovation Labs	14 April	6

## People and Culture

WP	Entity	Expertise
General (TBD)	CIAT	Malawi
WP1	IITA (2 Staff)	Geospatial analysis
WP2	Bioversity	Agrobiodiversity
WP3	Bioversity	Agrobiodiversity
WP4		
WP5		
Scaling		
Gender	IITA (2 Staff)	Gender Ghana/Malawi
MELIA		
Comms		

## Gender diversity by WP

WP	M	F
WP1	78%	23%
WP2	76%	24%
WP3	63%	38%
WP4	62%	38%
WP5	69%	31%
Scaling	89%	11%
Gender	25%	75%
MELIA	82%	18%
Comms	88%	13%



# Update on initiative team, opportunities and outreach

- One CGIAR in practice: Ideas for cooperation between NPS, AE, SI-MFS, and EiA
  - Common **assessment of key performance indicators** across the Initiatives
  - **Co-location of activities**, including cooperation on a global frameworks being used
  - Development of a **concept paper presenting a common vision** of popular paradigms
  - Joint **engagement in global events** including the COP27

# Main challenges and opportunities

- Entity level independence, Planning and implementation of activities has proved challenging to derive a coherent portfolio especially given the fact that each entity has the liberty to decide on how best they allocate their investments
- Opportunities exist in the context of:
  - Developed a **common planning template** that allows us to see a clear roadmap for each partner contribution
  - **Cross entity collaborations**
  - **Cross Initiative synergies** and complementarities
  - **Conduct Systems-related work** given the diversity of the portfolio
  - **Country cross learnings** for SI in MFS across agro-ecologies





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# Thank you

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[S.L.Ridaura@cgiar.org](mailto:S.L.Ridaura@cgiar.org)

