



With support from:



RCC Asia and the Pacific
Collaboration for Climate Action



RCC MENA and South Asia
Collaboration for Climate Action

Technical Workshop on Cross Linkages among Food Systems Actors and Aligning Food Systems in National Adaptation Plans (NAPs) and Nationally Determined Contributions (NDCs)

25-26 November 2025
JW Marriott, Bangkok, Thailand





Opening remarks

- **Jun Ichihara**, Institute for Global Environmental Strategies
- **Catherine Hazel Aguilar**, Crop Trust
- **Yuqing “Ariel” Yu**, Moderator



Session 1. Setting the Stage

- **Julie Amoroso-Garbin**, UNFCCC Regional Collaboration Centre for Asia and the Pacific

Session 1. Setting the Stage

About the workshop:

- Two-day technical workshop which aims to generate inputs and information from the three countries: ***Laos, Pakistan and Vietnam*** on cross linkages among food systems actors and aligning food systems in NAPs and NDCs



Session 1. Setting the Stage

This set of activities aim to:

- **Enhance collaboration among food system actors** to strengthen cross-sectoral coordination and achieve agriculture-related targets in NAPs and NDCs
- **Increase understanding of the roles, interlinkages, and contributions of agrifood system stakeholders** toward the SDG 2030 and global climate goals
- **Promote knowledge and technology exchange** to support adaptation planning and implementation
- **Formulate policy recommendations and identify priority actions** to integrate agrifood systems more effectively into national climate and development frameworks



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Session 1. Setting the Stage

Program overview:

Day 1	Day 2
Session 1: Setting the stage	Session 6: Understanding Stakeholder Roles in Agrifood Systems for Achieving Climate Goals (Country breakouts)
Session 2: Agrifood Systems in Global, National and Local Contexts	Session 7: Mapping Contributions and Dependence Across Agrifood Systems Actors (Systems dynamics diagram)
Session 3: Country presentations: Agriculture and agrifood system-related targets and priorities in NAPs and NDCs	Session 8: Shaping Policy Recommendations for Enhanced Stakeholder Engagement in Food Systems
Session 4: Visioning Implementation Pathways for Food Systems Transformations through NAPs and NDCs	Session 9: Workshop Synthesis
Session 5: Towards Implementation – Finance and Technology Needs for Agrifood Systems	

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Session 1. Setting the Stage

- Interactive activity: Human BINGO!
- Time: 20 minutes

Has been part of a cross-border initiative	Works with UN or other partners	Works for a genebank	Has participated in seed conservation projects
Aware of the Convergence Initiative on FS	Advocated for women in agriculture	Works/ed on food system policy	Speaks more than two languages
Has worked on climate finance for agriculture and food systems	Has coordinated a regional climate initiative	Can recite at least 5 of the SDGs	Not a first-timer in Thailand
Has published works on food systems	Has participated in the UNFCCC process	Has been to the Svalbard Seed Vault	Has brought a vegetable
Has traveled to 3 or more Asia-Pacific countries	Not from ASEAN member states	Contribute to NAP	

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With support from:



Photo opportunity



With support from:



Coffee/Tea Break



Session 2: Agrifood Systems in Global, National and Local Contexts

- **Catherine Hazel Aguilar, Crop Trust**
- **Julie Amoroso-Garbin, UNFCCC RCC Asia-Pacific**
- **Rathana Peou Norbert-Munns, FAO**
- **Israel Jegillos, WFP**



Seed Systems for Resilient and Inclusive Agrifood Systems

Catherine Hazel M. Aguilar
catherine.aguilar@croptrust.org
24 November 2025

Defining Seed Systems

"The institutions, organizations, individuals, networks, and their relationships involved in the production, selection, storage, exchange, dissemination, and use of seed" (McGuire & Sperling, 2016)

Technical Dimension

- Varietal development
- Multiplication
- Quality control
- Distribution infrastructure

Institutional Dimension

- Regulatory frameworks
- Certification schemes
- Intellectual property regimes

Social Dimension

- Farmer networks
- Knowledge systems
- Exchange practices
- Cultural norms

Economic Dimension

- Markets
- Value chains
- Pricing mechanisms
- Investment flows

Why Seed Systems Matter

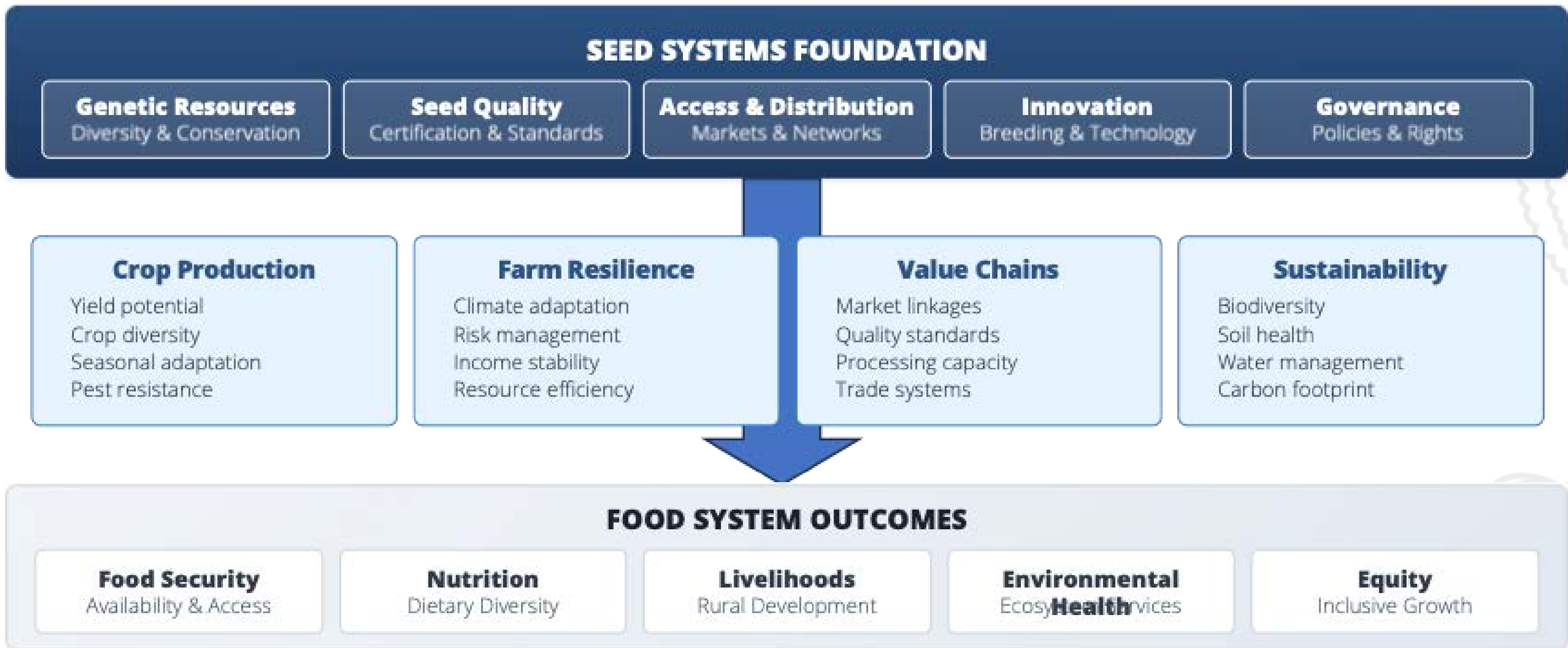
Seed systems are foundational to food security, nutrition, livelihoods, and environmental sustainability.

- Seeds determine what crops farmers grow and what foods are available
- Variety characteristics shape yield, nutrition, processing, and market value
- Seed access influences farmer adaptation and resilience capacity
- Agrobiodiversity flows through seed systems support ecosystem services



Seed Systems as Food System Foundation

The Critical Role of Seeds in Building Sustainable Food Systems





Understanding Seed System Diversity

Seed systems are diverse and pluralistic, comprising formal, informal, and intermediate pathways.

Understanding Seed System Diversity

- Formal systems provide certified seed through regulated commercial channels
- Informal systems enable farmer seed saving, exchange, and local markets
- Intermediate systems bridge formal and informal through community-based approaches



Understanding Seed System Diversity

Formal Seed System

Structured & Commercially Oriented

Quality Assurance

- DUS criteria for variety registration
- Certified seed production protocols
- Standardized processing & labeling

Market Orientation

- Commercial marketing channels
- Focus on economically viable crops
- Serves recurrent market demand

Key Actors

- Seed companies & enterprises
- Government certification agencies
- Research institutions
- Agro-dealers & distributors

Characteristics

- High uniformity & predictability
- Legal variety protection
- Capital intensive operations

Farmer Seed System

Community-Based & Locally Managed

Local Management

- On-farm seed selection & saving
- Traditional variety maintenance
- Community-based quality control

Exchange Networks

- Social networks & trust-based
- Local markets & barter systems
- Farmer-to-farmer exchange

Key Actors

- Smallholder farmers
- Community seed producers
- Local traders & markets
- Traditional leaders

Characteristics

- High genetic diversity
- Local adaptation & resilience
- Low cost & accessible



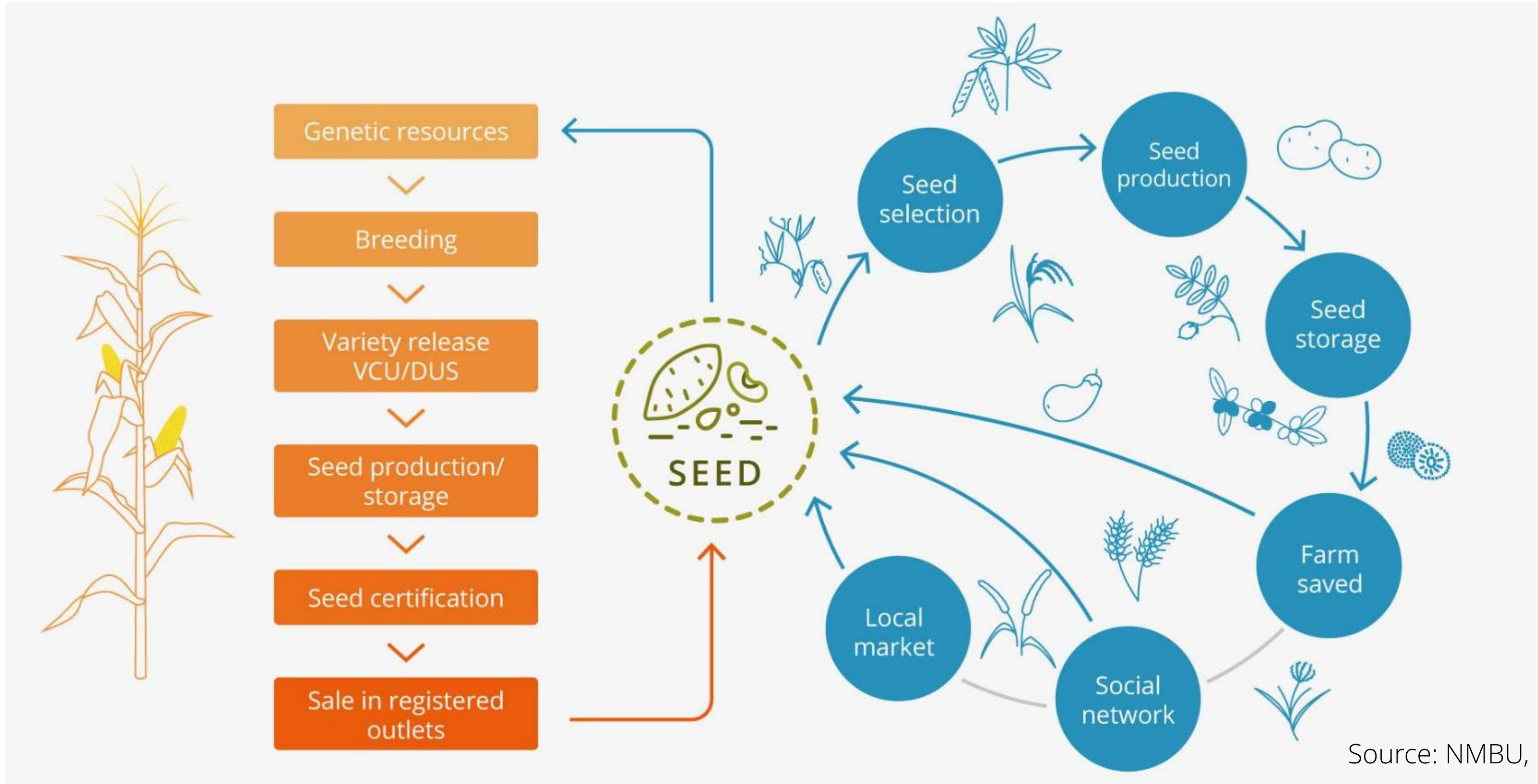
Seed System Complementarity



formal and informal systems are complementary rather than mutually exclusive.

- Farmers utilize multiple seed sources simultaneously
- Different crops and contexts require different seed system approaches
- Linkages and interdependencies exist between formal and informal pathways

FORMAL SEED SYSTEMS FARMER SEED SYSTEMS



Source: NMBU, BOLD WP3

Seed Security Framework

Seed security consists of four interconnected elements that determine farmer resilience:

- **Availability:** Adequate seed supply at appropriate times
- **Access:** Means to obtain seed through cash, credit, barter, or exchange
- **Quality:** Physical, physiological attributes and seed health
- **Suitability:** Locally adapted varieties meeting farmer preferences

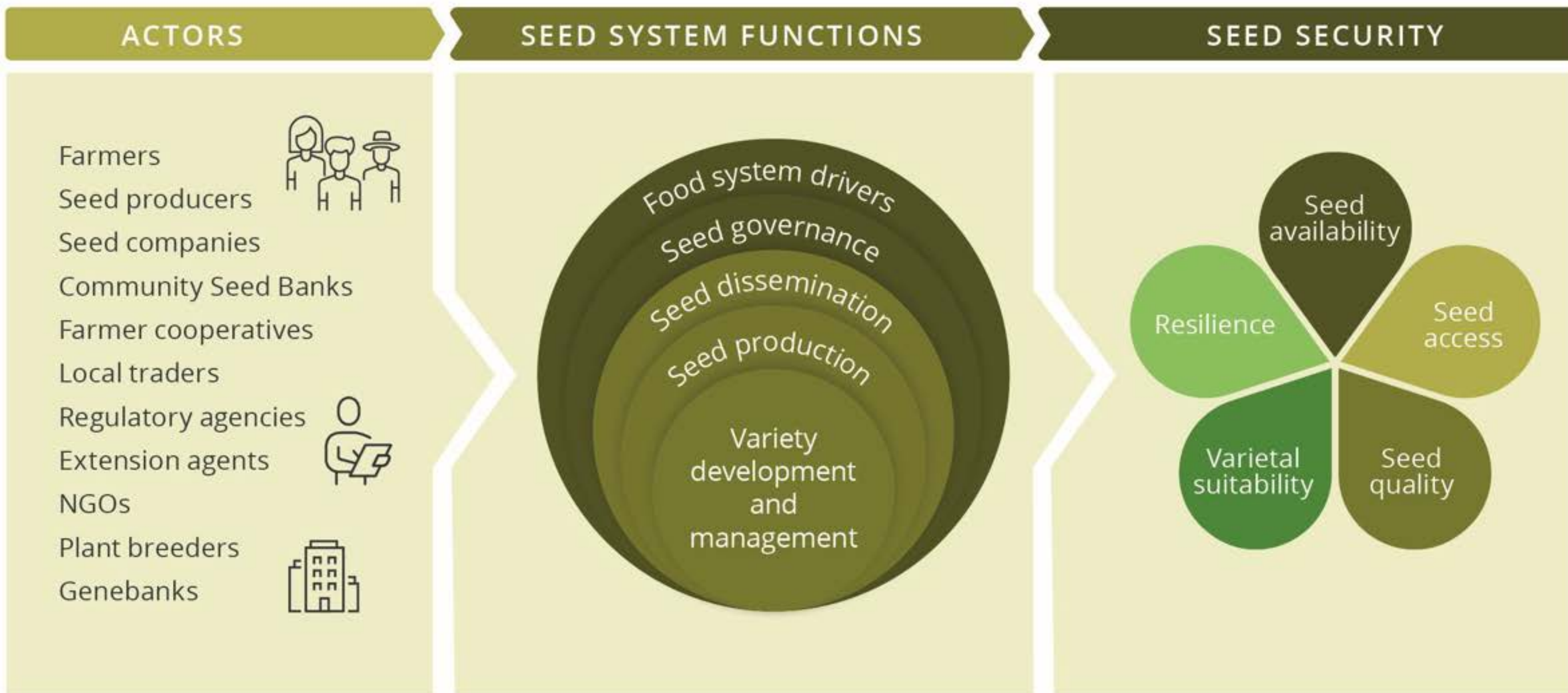


Mapping Seed System Actors and Flows

Seed systems involve multiple interconnected actors operating across formal and informal domains.

- **Upstream:** Genebanks, breeders, prebreeding programs, foundation seed producers
- **Midstream:** Certified seed companies, community seed banks, farmer cooperatives
- **Downstream:** Agro-dealers, local markets, farmer-to-farmer networks
- **Cross-cutting:** Extension services, regulatory bodies, humanitarian organizations

Five Pillars of Inclusive Seed Systems

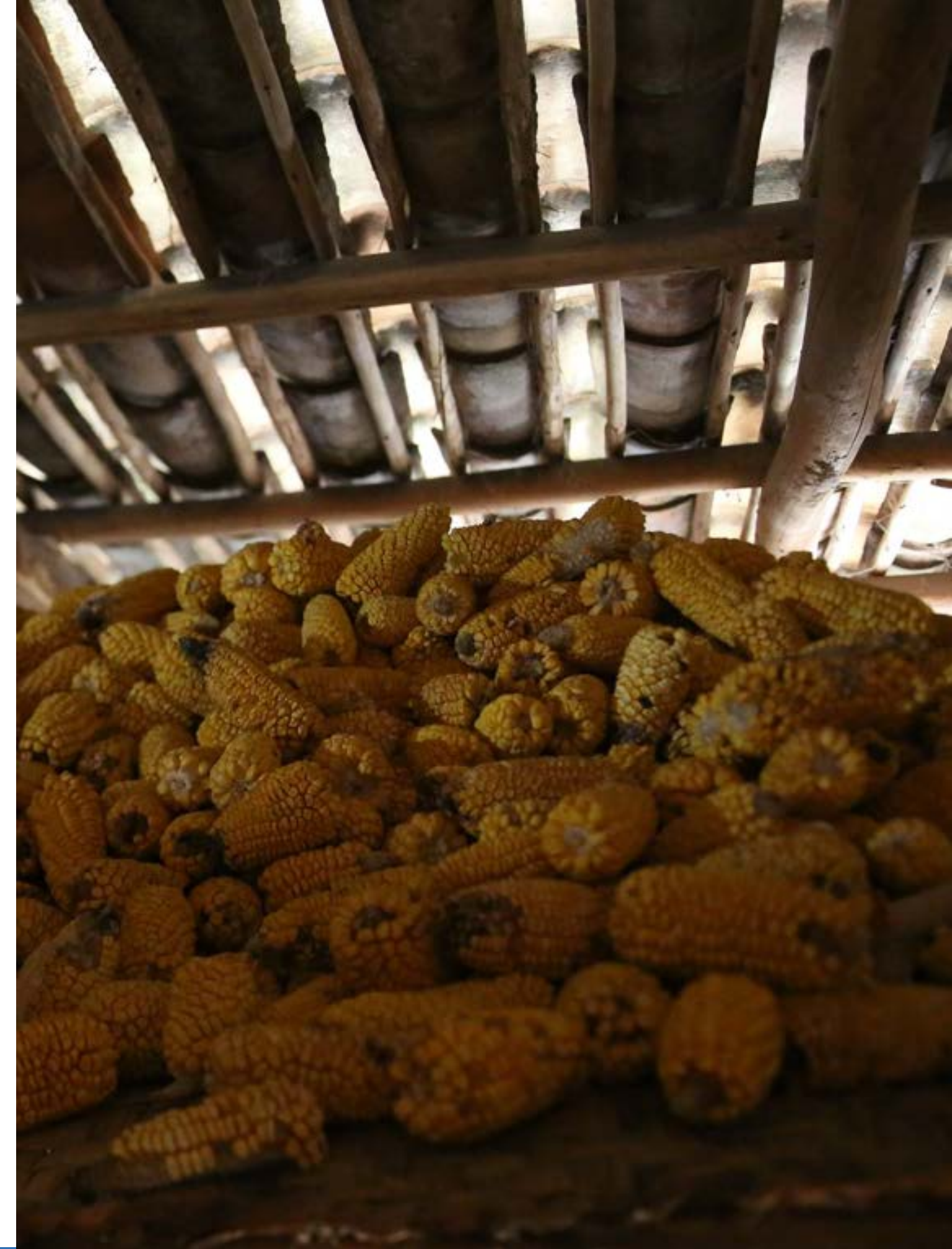


Source: NMBU, BOLD WP3

Resilience in Seed Systems

Resilient seed systems depend on diversity, flexibility, and the capacity to respond to multiple stresses.

- Built on agricultural biodiversity and local seed diversity
- Include environmental, social, and economic resilience dimensions
- Require functioning formal and informal systems that complement each other



Climate Change and Seed-Food System Nexus

- Climate impacts propagate through seed systems to food security outcomes
- Seed systems enable climate adaptation but require genetic diversity
- Production system shifts alter seed demand and variety requirements
- Climate-related seed insecurity triggers food system disruptions
- Resilient seed systems buffer food systems against climate shocks



Three Principles for Resilient Seed Systems

Guiding framework for seed system development (Westengen et al., 2023)

- **Do No Harm:** Build on farmer seed systems, avoid policies that outlaw customary practices
- **Diversity:** Maintain diversity of crops, varieties, institutions, and actors
- **Seed Security:** Ensure availability, access, quality, stability, sustainability, and agency

***No one-size-fits-all.** Efforts to strengthen seed systems must acknowledge contextual differences. Needs differ by crop, farmer, and environment, so a variety of pathways are required rather than a single blueprint.*

Seed Systems and Climate Action

How do seed systems connect with NAPs and NDCs?

- What **seed system practices are already supporting climate adaptation** in your contexts?
- Which **actors and networks are maintaining crop diversity and enabling farmer access** to adapted varieties?
- Where are the **gaps** between on-the-ground seed system realities and national climate commitments?
- What would **meaningful inclusion of seed system actors** in NAP/NDC processes actually look like?

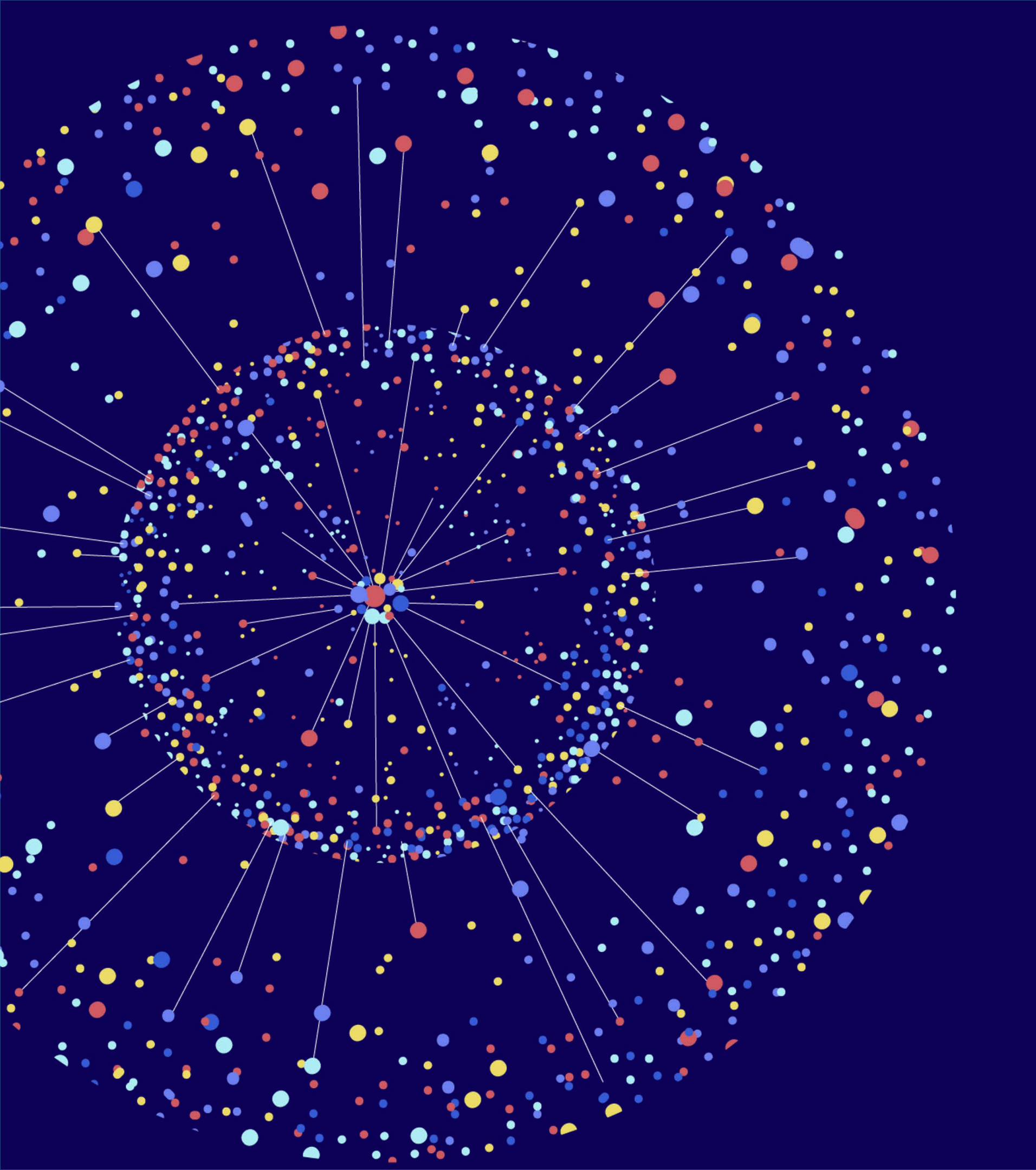




Securing our food, forever.

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RCC Asia and the Pacific

Collaboration for Climate Action

Agriculture and Food Systems under the UNFCCC

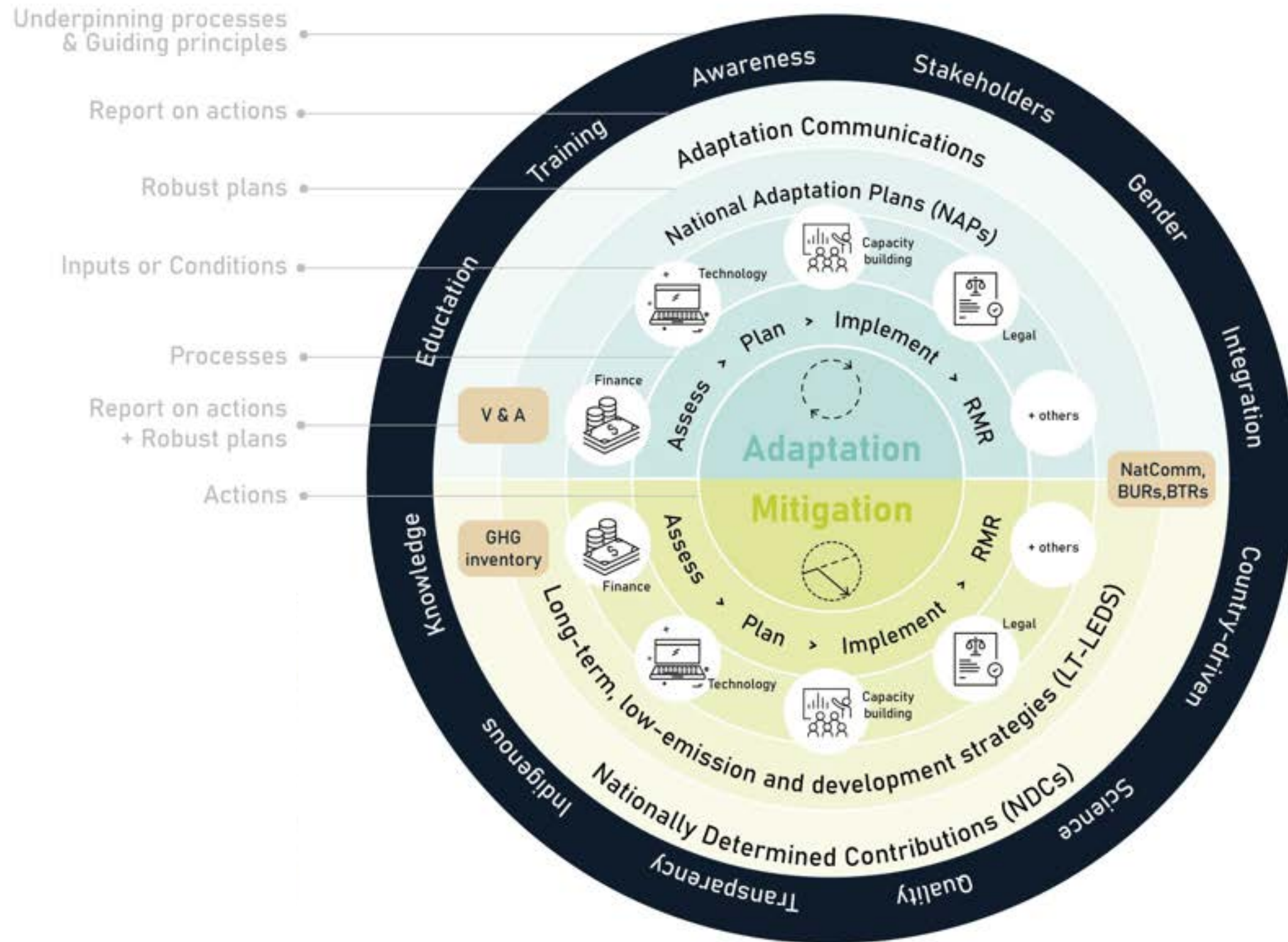
Julie Amoroso-Garbin

Regional Lead

UNFCCC RCC Asia Pacific

RCCAsiaPacific@unfccc.int

OVERVIEW OF ACTIONS UNDER THE UN CC REGIME



Countries must understand:

Support mechanisms

Financial mechanisms

- GREEN CLIMATE FUND
- gef | LDCF
- ADAPTATION FUND

+ other support

Intergovernmental Processes

- COP & Negotiations, etc.
- Transparency
- Global Stocktake (GST)

+ others

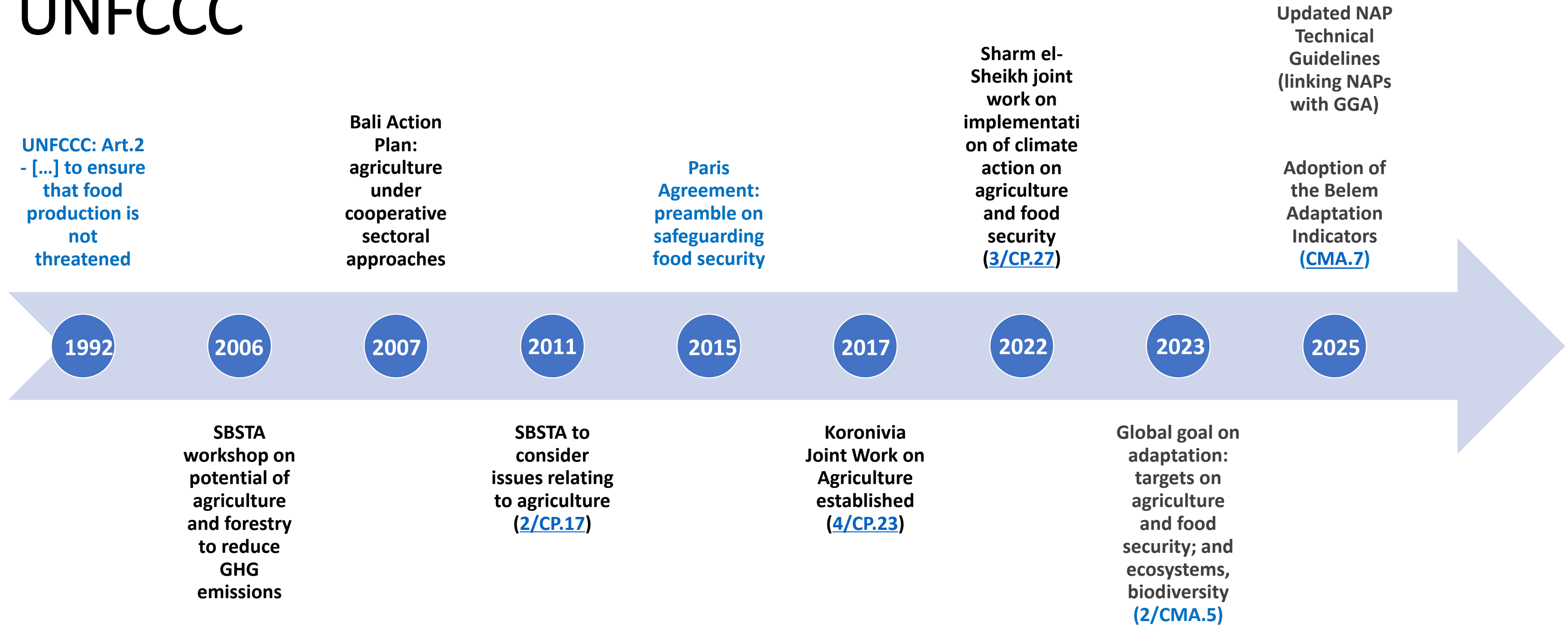
Wider landscape of global & regional frameworks

- SUSTAINABLE DEVELOPMENT GOALS
- SENDAI FRAMEWORK FOR DISASTER RISK REDUCTION 2015-2030

+ others

Source: LEG (2023). Paris Agreement alignment tool. Accessible at <https://unfccc.int/node/740>

Milestones on agriculture and food security under UNFCCC



Agriculture and food security related provisions under the UNFCCC

UNFCCC Article 2: The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that **food production** is not threatened and to enable economic development to proceed in a sustainable manner;

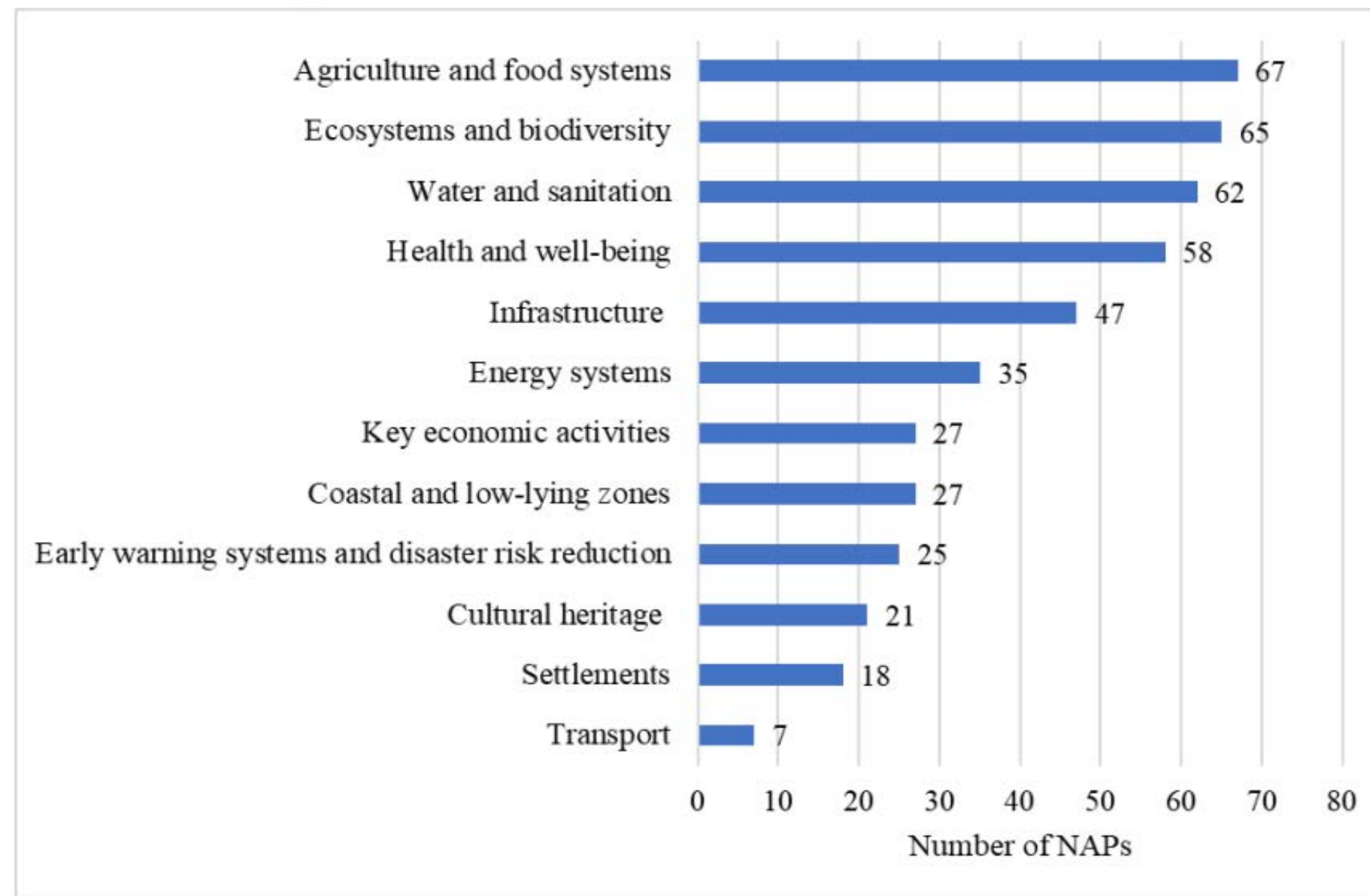
Paris Agreement: [preamble] *Recognizing* the fundamental priority of **safeguarding food security and ending hunger**, and the particular vulnerabilities of food production systems to the adverse impacts of climate change;

Global Goal on Adaptation

- **(b):** Attaining **climate-resilient food and agricultural** production and supply and distribution of food, as well as increasing **sustainable and regenerative production** and equitable access to adequate food and nutrition for all;
- **(d):** Reducing climate impacts on **ecosystems and biodiversity**, and accelerating the use of ecosystem-based adaptation and nature-based solutions, including through their management, enhancement, restoration and conservation and the protection of terrestrial, inland water, mountain, marine and coastal ecosystems;

Agriculture and food security remains a top priority for countries

Sectors identified in national adaptation plans submitted by developing country Parties as at 30 September 2025



Source: NAPs submitted on NAP Central.

Note: Sectors such as tourism, mining and industry are included under key economic activities.

Examples of projects and programmes that address the GGA thematic target on [Sustainable Food and Nutrition Security for All](#)

Asia-Pacific: Nepal's AF project on improving community-level storage of seeds and crops post-harvest to reduce food loss and improve farmers' market readiness and access.

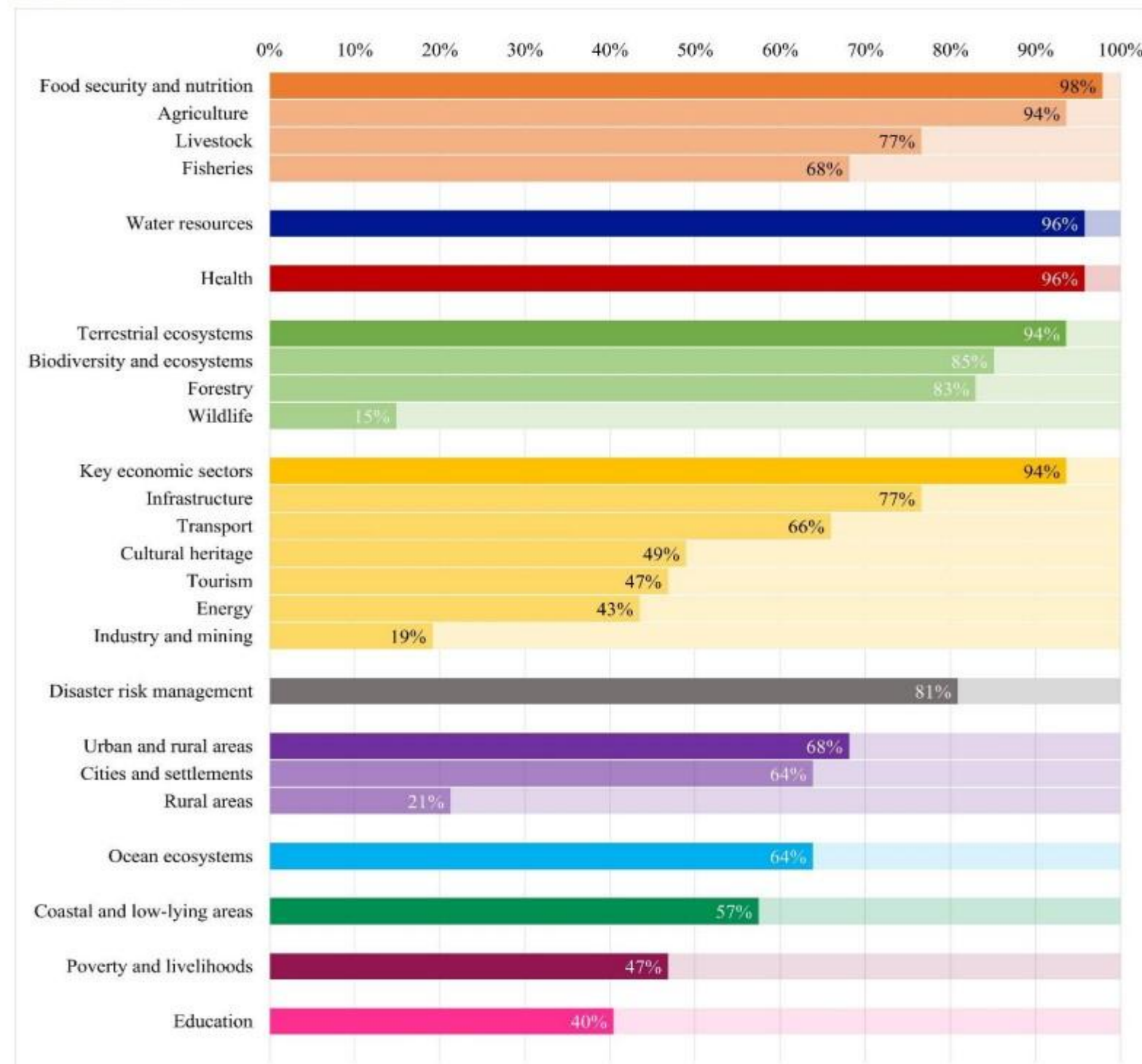
Other examples:

- Promoting climate-resilient agroprocessing, solar-powered cold storage, hermetic grain storage and improved rural road connectivity
- Promoting resilient staple food production and service delivery to vulnerable populations through women-led MSMEs
- Implementing integrated approaches to climate resilient agriculture and water management to support agropastoral resilience

Source: Progress in the process to formulate and implement national adaptation plans. Report by the secretariat. Published 21 October 2025

Agriculture and food security remains a top priority for countries

Share of adaptation components of nationally determined contributions referring to specific adaptation priority areas and sectors



2025 NDC Synthesis Report:

- 73% of Parties included an adaptation component in the new NDCs, with 98% focused on the priority areas of food security and nutrition.
- The share of Parties that identified synergies between adaptation and mitigation, particularly in the terrestrial and ocean ecosystems, food security and nutrition, water resources and health sectors, increased to 81%.
- 92% of Parties outlined technology priorities and needs in support of mitigation; 72% in support of adaptation. For adaptation, the most frequently cited priorities were agrifood systems and the water sector.
- 41% of Parties reported on legal and policy frameworks related to agriculture and food security specifically.
- Approx. 76% of the Parties reporting costed finance needs identified adaptation needs including those related to agriculture and food security.

Source: 2025 NDC Synthesis Report (available at <https://unfccc.int/documents/650664>)

Countries that have identified promoting genetic materials and gene banks as priorities

COUNTRY	ADAPTATION ACTION
NEPAL	<ul style="list-style-type: none">Strengthen the National Gene Bank to conserve local land species. Strengthen biotechnology laboratories to develop climate resilient crop varieties and animal breeds.
BANGLADESH	<ul style="list-style-type: none">Develop a Sundarban gene bank with gene inventories and recovery plans for endangered species; Research gene pool development and gene conservation
BHUTAN	<ul style="list-style-type: none">Explore, develop and promote climate resilient crop varieties and climate smart technologies
PAKISTAN	<ul style="list-style-type: none">Focusing on climate resilient crop varieties, regenerative agriculture practices for land preparation, sowing, and harvesting, efficient and sustainable fertilizer application, improved on-farm water management (OFWM), intercropping and crop diversification.
PHILIPPINES	<ul style="list-style-type: none">Conduct research and establish cross-bred/genetically-improved species capitalizing on strains identified by Corn Germplasm Utilization through Advanced Research and Development, PhilRice, and private biotech firms
SRI LANKA	<ul style="list-style-type: none">Germplasm improvement: Screen existing varieties/breeds for heat and water stress. Develop tolerant varieties (paddy, OFC, horticulture): Heat tolerant, Drought tolerant, Short age (early maturing), Develop heat tolerant breeds (Focus: livestock and poultry)

Other related initiatives on climate-resilient food systems

Climate Resilient Food Systems (CRFS) Alliance

A world where food systems are **sustainable, inclusive and resilient**, where food systems actors, including governments, private sector, the UN, civil society, academia, finance and **all stakeholders come together** towards preserving ecosystems and resources **to ensure healthy and nutritious foods for present and future generations**, whilst neutralizing the negative impact of production, transformation and consumption emissions, soil degradation, water depletion and biodiversity loss.

WHY FOOD SYSTEMS & CLIMATE CHANGE?



Whilst extreme weather events impact food systems and communities, at the same time, food systems, their production cycles, underlying diets and consumption are responsible for negative effects on ecosystems and the environment.

However, this does not have to be a downward spiral - we can reverse the negative relationship between food systems and climate change and turn it into a positive and mutually beneficial one.

WHAT NEEDS TO BE DONE?



To feed 9 billion people on the planet by mid-century, global food systems will need to operate efficiently while achieving the SDGs and meeting the 1.5C climate commitments.

To preserve a livable climate, greenhouse-gas emissions must be reduced by half by 2030 and to net zero by 2050. Bold, fast, and wide-ranging action needs to be taken by governments and businesses.

The **CRFS Alliance advocates for integrated food and climate nexus approach around 3 key areas with 9 themes**

CALLS TO ACTION



Make food systems more resilient to climate change induced shocks and stressors through access to climate finance, DRR and CRM approaches, early warning and climate risk insurance.

Make food systems more resilient to man-made shocks and stressors by addressing climate-food security- conflict interlinkages and building resilient local food systems

Make food systems more sustainable by mainstreaming regenerative agriculture, WEF nexus, preserving soil health and halting biodiversity loss.

Other related initiatives on climate-resilient food systems



<https://resiliencefrontiers.org>

Pathway 7: Regenerative food production

Objective:

Regenerative food production practices that work with nature will boost crop yields and surrounding ecosystems to ensure **no one goes hungry**.

Guided by the principles of permaculture, our food system will prioritise practices that improve agroecological health by, for example, strengthening water retention, returning nutrients to the soil, and restoring local biodiversity.

Using frontier technologies that harness artificial intelligence will build datasets that can be used to embed regenerative agriculture practices that can produce nutritious food that is accessible and affordable to all.

Important links

[NAP Central Home | NAP Central](#)

[Nationally Determined Contributions Registry | UNFCCC](#)

[UN Climate Change Conference - Belém, November 2025 | UNFCCC](#)

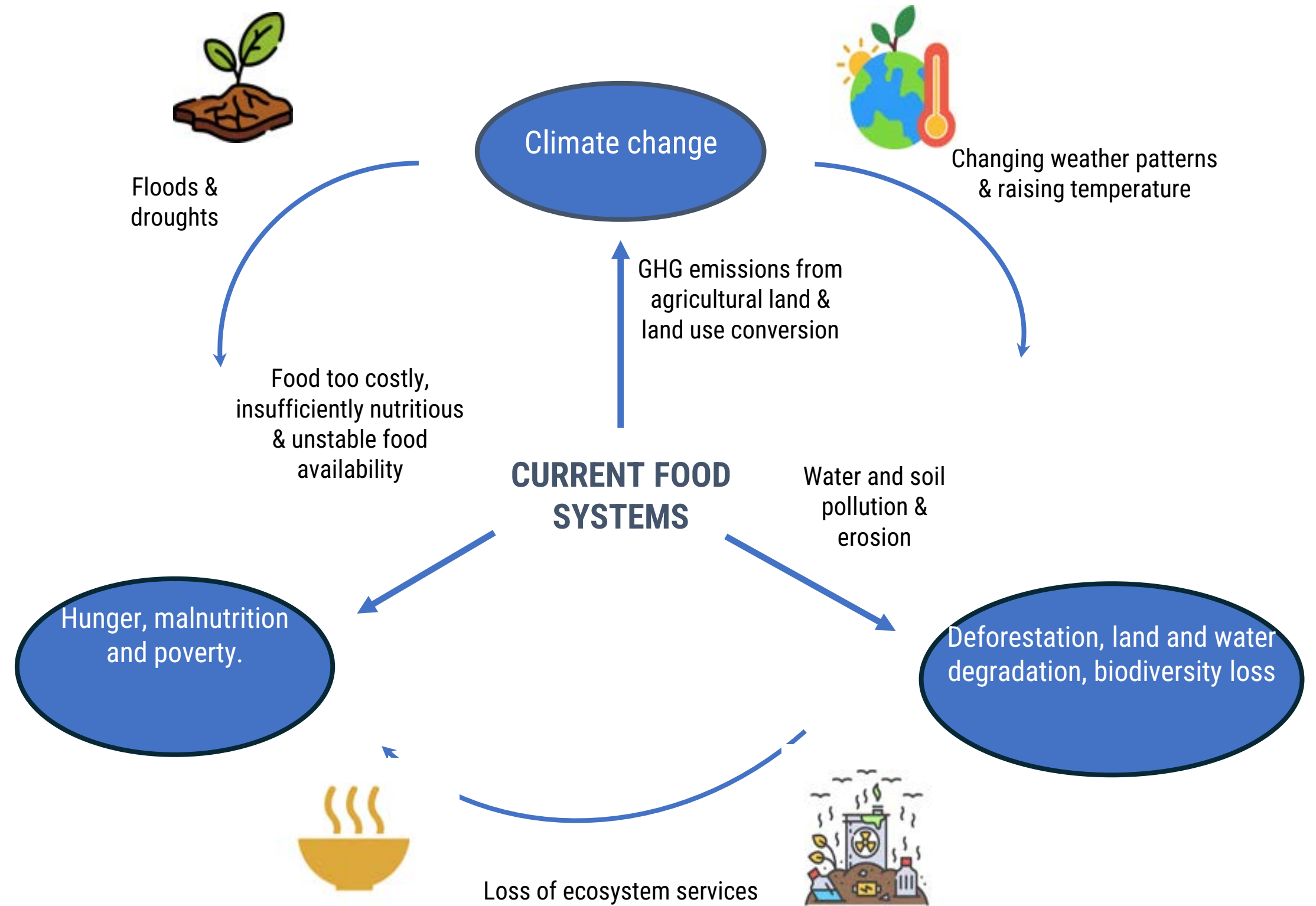
[RCC Asia and the Pacific | UNFCCC](#)

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Download the updated NAP technical guidelines here!

From Ambition to Alignment and Convergence: Food Systems Transformation in NDCs and NAPs



About the UN Food Systems Coordination Hub



- ✓ A UN Inter-Agency entity charged with coordinating UN efforts in supporting Member States in pursuing the 2021 UN Food Systems Summit outcomes as integral to accelerating the drive on achieving the SDGs

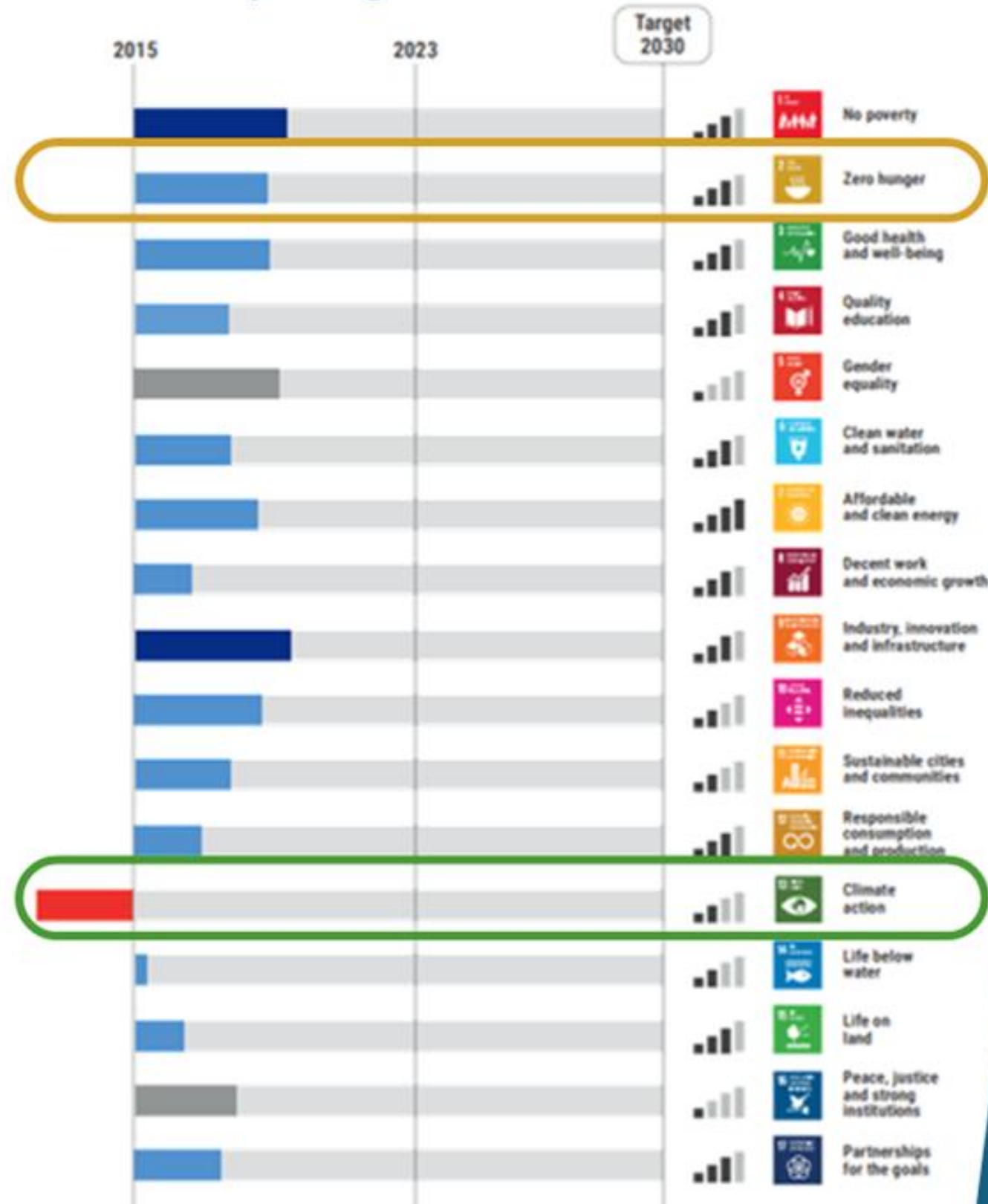
Vision: to stimulate and support action for SDGs-based food systems transformations towards Agenda 2030

Mission: to leverage wider UN system's capacities to serve countries through systemic, country-driven, customized support in translating their food systems commitments into effective actions to reach sustainable food systems by 2030.

The UN Food Systems Coordination Hub:

- Through a set of five interdependent clusters, fostering systematic coordination in pursuit of coherence, alignment and leveraging of resources towards shared purpose and goals on food systems transformation
- Lead player in convening the UN Food Systems Summit Stocktakes
- Continued support to National Food Systems Convenors (*access to information; peer learning platforms; linking to ecosystems of support, etc...*)

SDG progress in Asia & Pacific



Source: ESCAP. 2024. SDG Progress Report

Progress Regression Insufficient indicators Evidence strength

In Asia and the Pacific



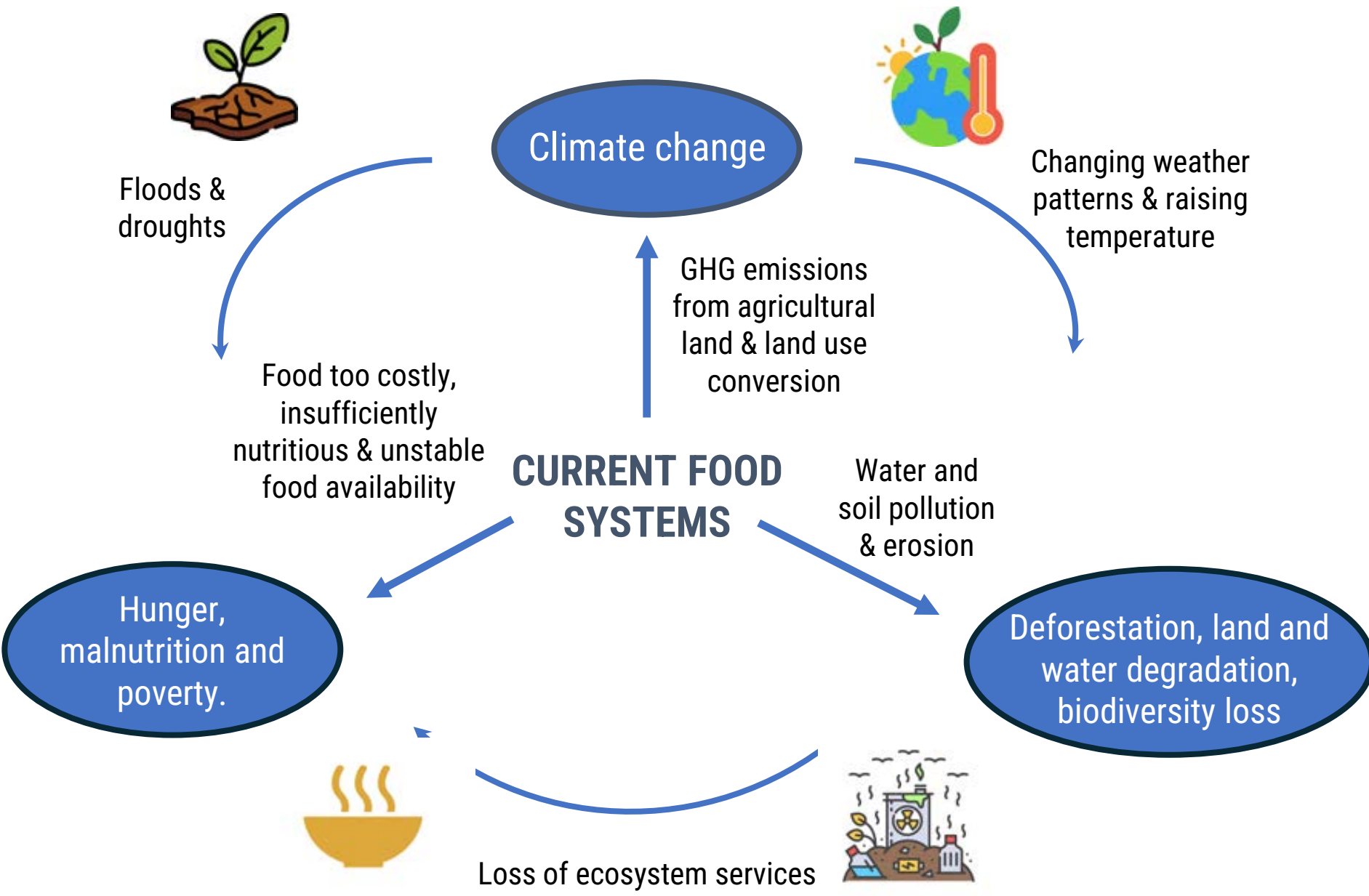
- **402 million** people are undernourished (56% of global total)
- **24%** of people are at moderate or severe food insecurity (compared to 17% in 2015)
- **44%** of people are unable to afford a healthy diet
- **1 billion** people are overweight or obese (40% of the global total)



- **Temperatures in Asia-Pacific have increased faster** than the global mean over the past 60 years.
- Increase frequency and intensity of extreme weather events. **6 of the top 10 countries most affected by climate disasters** are in the region
- **Agriculture bears almost half of the total climate impacts in the region**, especially from drought.
- **56%** of global GHG emissions are from the region.

Food systems, Climate Change, Hunger and Desertification

A Vicious Circle



Emissions

Food systems contribute one third of global greenhouse gas emissions annually (IPCC). Emissions stem from farming, land use, processing, packaging, transport, and retail.

Deforestation

Industrialized agriculture drove a sharp rise in global deforestation in the late 1900s. Agriculture is now linked to 75% of global deforestation (CGIAR).

Land degradation & desertification

Cross cutting: production and poverty)
75% of Earth's land is degraded (JRC). Drylands cover 50% of land and house 3 billion people. 9% of drylands are desertification hotspots, affecting 500 million (IPCC).

Water pollution

Farming uses 70% of global freshwater.
Water demand to exceed water supply by 40% in 2030,

Species loss

Biodiversity is declining rapidly, with farming threatening 86% of species at risk (UNEP).



The Convergence Initiative based in two urgent calls:



The **UN Secretary-General's Call to Action for Accelerated Food Systems Transformation** released at the UN Food Systems Summit Stocktaking Moment (UNFSS+2) in July 2023

Transformation released at the UN Food Systems Summit Stocktaking Moment (UNFSS+2) in July 2023



COP28 UAE Declaration on Sustainable Agriculture, Resilient Food Systems, and Climate Action

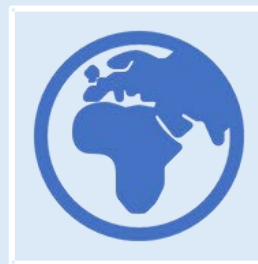
endorsed by the heads of 160 Member States.

Objective: Support national efforts to advance the alignment between the “food systems transformation (FST)” and “climate action (CA)” agendas to enable governments and stakeholders at the national level to strengthen synergetic action that will simultaneously support the achievement of the SDGs and the Paris Climate Agreement.

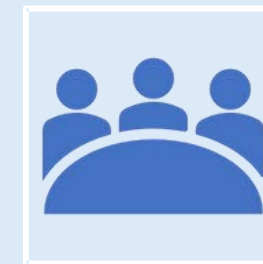
Outputs:



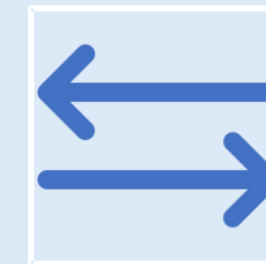
Convergence Action Blueprints (CABs) developed in 5-10 countries



Convergence Dialogues in 20 countries



5 regional capacity development workshops



Toolkit for enhancing capacity-building

The convergence process



FACILITATE (upon demand) national processes aimed at exploring and identifying alignment between the mandates and priorities of the FST and CA teams as well as opportunities for synergetic action.

EMPOWER the National Food Systems Convenors to advance such alignment through multi-sectoral co-design processes and peer-learning.



NURTURE links with relevant global and regional processes to ensure complementarity of action and avoid duplication of efforts and resources.

SAFEGUARD a whole-society approach to be followed via the active engagement of various stakeholders in an inclusive co-design process.

Convergence Initiative: Support national efforts to advance the alignment between the “food systems transformation (FST)” and “climate action (CA)” agendas to enable governments and stakeholders at the national level to strengthen synergetic action that will simultaneously support the achievement of the SDGs and the Paris Climate Agreement.



Governance

Cross-sectoral and multi-stakeholder **coordination mechanisms being established or strengthened**, and supported by multi-sector monitoring, evaluation and learning processes.



Policy

Convergence Action Blueprints are developed based on each country’s policy mechanisms and tools. The CAPs will be multi-dimensional frameworks with the objective to coordinate action towards improved outcomes. The FST Pathways, NDCs, NAPs, and other relevant national plans will provide the main dimensions to be considered for the CABs



Implementation

Programs, projects, and initiatives being implemented that reflect convergence and collaboration between multiple stakeholders across different sectors, including agriculture, environment, climate, health, and others. The implementation is based on countries’ priorities and targeted sectors. This requires **defining a voluntary monitoring framework** at the country level.

4 CAB Pillars

1 – Vision and Objectives

High-level **aspiration** of the CAB guided by the 2030 Agenda and the Paris Agreement goal.

A collective **working vision** that addresses the most pressing challenges in aligning food systems and climate policies to achieve mid-term and long-term sustainability, resilience, and inclusivity.

3 - Milestones

Aligned with Pillars 1 and 2 previously outlined, serving as **indicators of success** that reflect both short-term and long-term progress and are **supported by a workplan**. Milestones help ensure that the implementation of the CAB stays on track and can be adapted over time to respond to evolving national priorities.

2 – Key Convergence Areas

Intervention areas - addresses a crucial element necessary for the successful integration of food and climate strategies.

Interventions action(s): to respond to gaps and risk identified and to close these gaps, offering concrete pathways to overcome barriers and accelerate convergence.

4 – Monitoring and Evaluation

Nationally owned robust monitoring system that enables stakeholders to establish good governance to track progress, identify gaps, and adjust strategies to stay on course. In alignment with national legislation and priorities, KPIs will be determined with national ownership processes.

Landing the Vision; The Road to UNFSS+4



5
REGIONAL PREPARATORY MEETINGS

+1
GLOBAL PREPARATORY MEETINGS

107 COUNTRIES

159
NATIONAL FOOD SYSTEMS CONVENORS

130
NATIONAL PATHWAYS FOR FOOD SYSTEMS TRANSFORMATION

63% with implementation plans
62% embedded in climate, biodiversity & development plans

16
FOOD SYSTEMS SOLUTIONS DIALOGUES

11
CONVERGENCE INITIATIVE WORKSHOPS

114
COUNTRY PROGRESS REVIEWS

1
GLOBAL YOUTH CONFERENCE

169
COUNTRIES DELIVERING SCHOOL MEAL PROGRAMMES

\$17.8 B
DISBURSED BY INTERNATIONAL FINANCIAL INSTITUTIONS TO SUPPORT LOW- AND MIDDLE-INCOME COUNTRIES





3500+
ATTENDEES



145+
NATIONAL DELEGATIONS



700+
NON-STATE ACTORS



UNFSS+4 Documentation



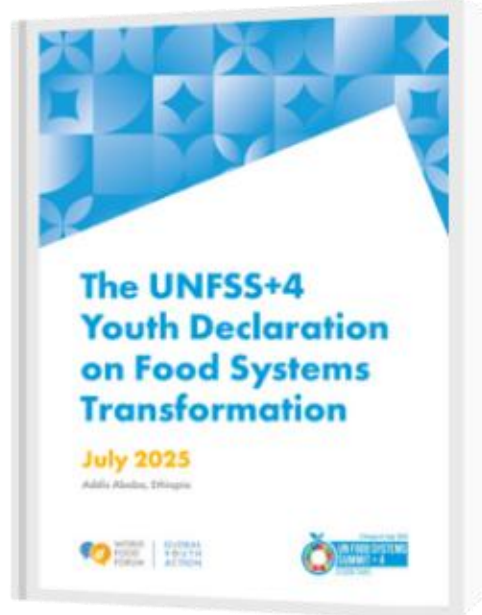
UNFSS+4 SECRETARY-GENERAL CALL TO ACTION



REPORT OF THE UN SECRETARY-GENERAL



INDEPENDENT STAKEHOLDERS' REPORT



THE UNFSS+4 YOUTH DECLARATION ON FOOD SYSTEMS TRANSFORMATION

Six Priority Action Areas

The Call to Action urges urgent investment and collaboration across six critical domains:

1. Delivering in Complex Settings

Support and fund innovation in fragile and conflict-affected contexts.

2. Deepening Dialogue, Policy & Coordination

Strengthen cross-sectoral governance and multi-stakeholder collaboration in implementing national pathways.

3. Expanding Finance & Investment

Align and scale public, private, and development finance to drive country-led food systems transformation.

4. Integrating Environmental, Economic & Social Dimensions

Ensure development is ecologically sound, economically viable, and socially inclusive.

5. Harnessing Science, AI & New Technologies Responsibly

Deploy evidence-based tools to drive transformation, while managing risks and ensuring ethics.

6. Empowering Youth Through Intergenerational Collaboration

Promote youth leadership as co-drivers of food systems transformation



The UN Food Systems Coordination Hub



FSS-Hub@fao.org



[@foodsystems](#)



unfoodsystemshub.org





World Food
Programme

SAVING
LIVES
CHANGING
LIVES

WFP Work on Climate and Food Systems

Asia Pacific Regional Office

Technical Workshop on Cross Linkages among Food Systems Actors and
Aligning Food Systems in National Adaptation Plans and Nationally Determined
Contributions

Organized by IGES | Crop Trust | UNFCCC RCC Asia-Pacific
25-26 November 2025

Resilience and Food Systems

- Ensure long-term access to affordable, nutritious food, even during shocks.
- Strengthen the full food journey and enabling environment.
- Maintain flexibility and adaptiveness to sustain food, livelihoods, and markets.
- Critical for food security, nutrition, and environmental sustainability.
- Central to WFP's mandate and Strategic Plan

Resilient Food Systems for Climate Action

- Restore Livelihoods & Ecosystems: regenerative practices, water harvesting, small-scale infrastructure.
- Strengthen Smallholder Food Systems: SAMS value chains, reduced losses, market access.
- Enable Climate Preparedness & Anticipation: early warning, safety nets, insurance.
- Promote Low-Carbon, Sustainable Food Production: clean energy, localized production, solar tools, homegrown school meals.

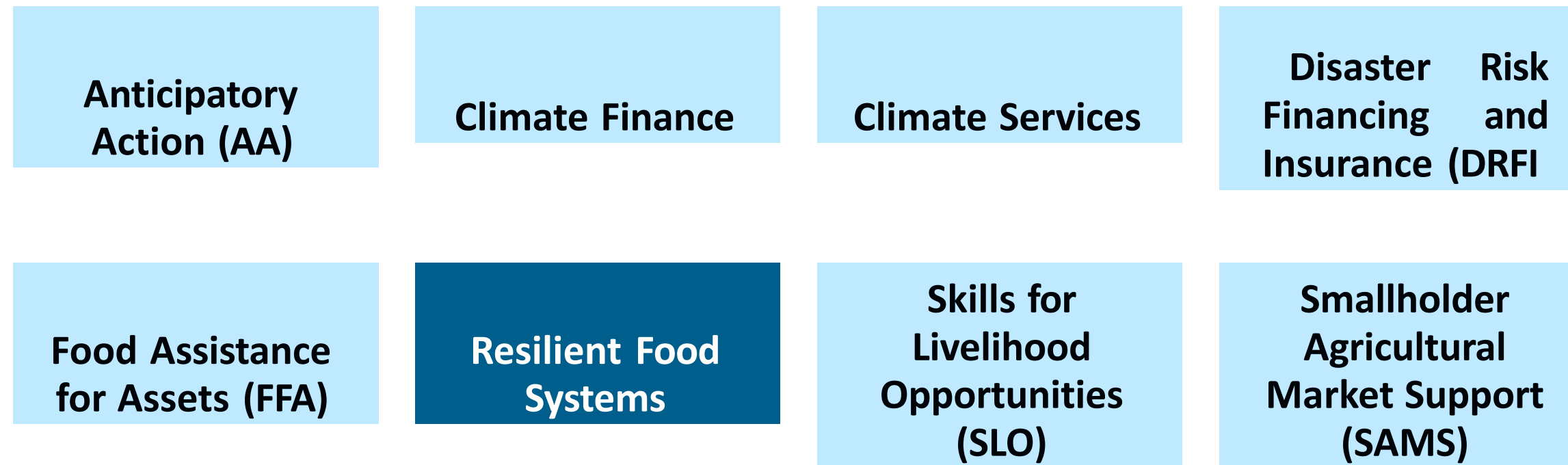
Adopting a resilience building approach

- Resilience building is a mainstream operational approach to manage shocks and reduce long-term needs.
- Requires multisectoral, integrated programmes across sectors and levels.
- When integration isn't possible, apply a
 - resilience focus at activity level.
- Determines when multi-year programming is feasible vs. activity-level resilience.
- Strengthens weak points in food systems and enhances anticipatory, absorptive, adaptive, and transformative capacities.

Applying a food-systems lens

- Assesses the entire food system—actors, activities, institutions.
- Analyzes food journeys and flows of food, information, and finance.
- Encourages systems-thinking on affordability, diversity, impacts, and WFP's market influence.
- Reveals root causes and gender-sensitive entry points.
- Supports systemic change and government coordination.

WFP's Climate Action and Resilience Strengthening



Context for WFP's operations on food systems

Acute food and nutrition crises

Areas with recurring shocks and persistent food and nutrition insecurity

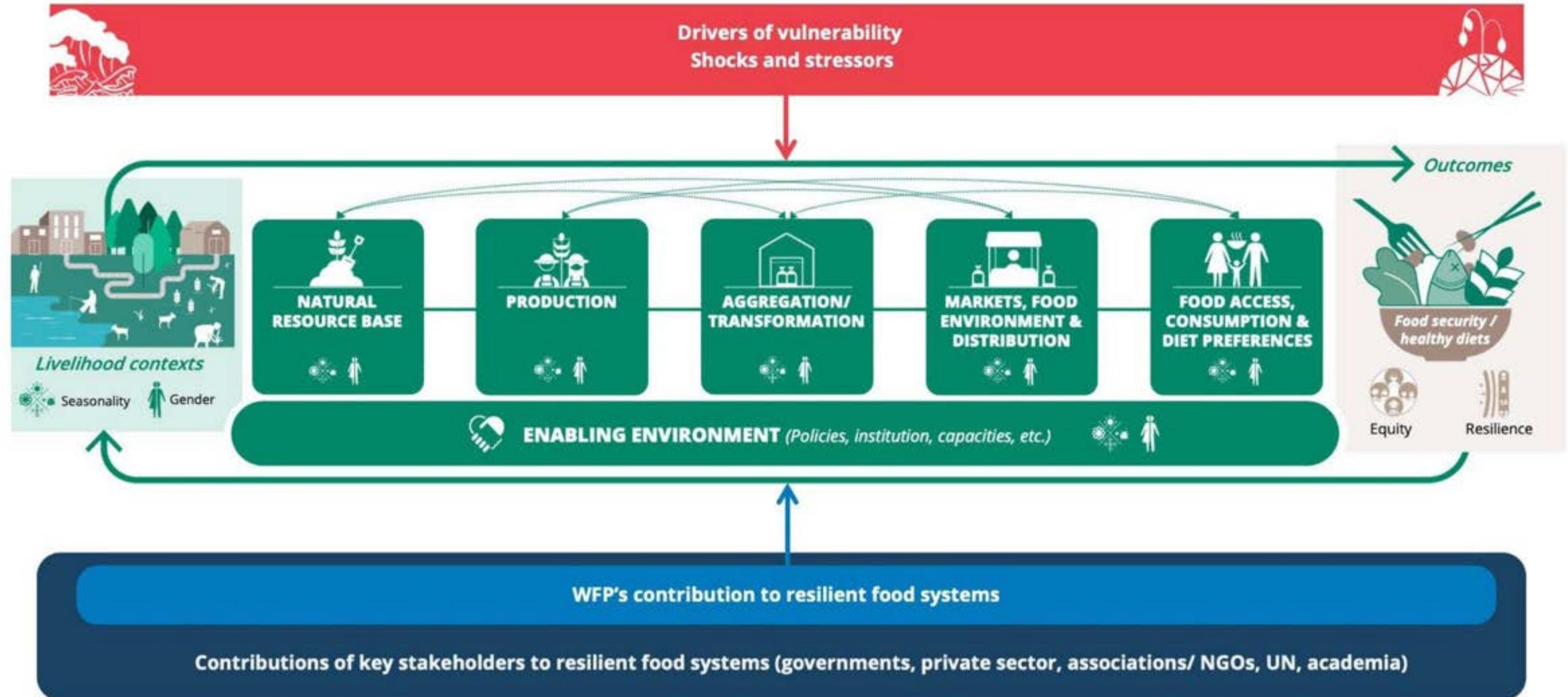
Areas which are stable, but have sub-optimal food systems and lack resilience capacities

Setting and geographic areas

Seasonal and social dynamics

Contextual fragility

Resilient and Food Systems Framework



- Contributes to a more resilient food system at all stages
- Applies a food system lens and resilience-building approach
- Development of integrated packages that contribute to addressing the root causes of food systems failures or weaknesses and prevailing risks
- Strengthen and transform local food systems

Food Systems Programme Pathways

Pathways	Main context	Initial focus areas
1. Protecting food consumption and food system functioning before, during and immediately after crises (WFP and Partners)	Acute and Protracted Food and Nutrition Crises (including post-crisis)	<ul style="list-style-type: none"> • Direct transfers and support national social protection systems • Transfers (including of knowledge and equipment) to revitalize food system functioning • Restore physical elements of the food system • Shield against shocks and stressors with preparedness and anticipatory/early action
2. Restoring the natural resource base and support climate-resilient local food production (WFP and Partners)	Recurrent Shocks and Stressors, and Persistent Food and Nutrition Insecurity (Primarily rural and peri-urban)	<ul style="list-style-type: none"> • Restore the natural resource base to increase productive potential • Support local food production, post-harvest management, value chains and community resilience capacities • Support social protection systems • Manage climate risks and other vulnerabilities • Integrate multiple elements of the food system
	Also in: Stable but lacking resilience capacities and sub-optimal food systems (Rural & Urban)	
3. Linking production and value chain strengthening to food demand and consumption (WFP and Partners)	Stable but lacking resilience capacities and sub-optimal food systems (Rural & Urban)	<ul style="list-style-type: none"> • Leverage the SAMS Value Chain Framework and include climate and information services • Build capacities and skills of women, youth and vulnerable groups engaged in food systems • Leverage institutional demand (Local Procurement & HGSP) • Leverage Transfers and Behaviour Change
	Also in: Recurrent Shocks and Stressors, and Persistent Food and Nutrition Insecurity (Primarily rural and periurban)	

Food Systems Programme Pathways (cont'd)

Pathways	Main context	Initial focus areas
4. Influencing food environments and consumption, including retail (WFP and Partners)	Any context (more likely in urban settings)	<ul style="list-style-type: none"> • Expertise and partnerships to promote fortified foods • Facilitate more affordable nutritious foods by engaging with distributors and retailers • Schools as food environments • Build demand for nutritious foods
5. Supporting Governments and the enabling environment for Resilient Food Systems	All contexts where WFP aims to strengthen national systems	<ul style="list-style-type: none"> • Support existing policies and commitments around food systems • Advocate and contribute to government policies and strategies • Capacity strengthening and skills development • Engage diverse stakeholders, including private sector

Step-by-step approach to analyzing food systems



Internal tools and resources



TOOLS	WHAT IT DESCRIBES ABOUT THE FOOD SYSTEM						
3PA - Integrated Context Analysis & ICA+	X	X	X				
3PA - SLP	X	X	X	X	X	X	X
3PA - CBPP (local)	X	X	X	X	X	X	X
Value Chain Analysis	X		X	X	X		X
Fill the Nutrient Gap	X		X		X	X	X
Market Systems Analysis	X				X	X	
Supply Chain Analysis	X			X	X	X	X
Gender Analysis	X	X	X	X	X	X	X
Market Functionality Index			X	X	X	X	
Retailers Performance Monitoring & Evaluation (RPME)					X	X	
Behavioral analysis / Formative Research					X	X	X
Climate Risk Profiles (for selected COs)	X	X	X				X

WFP food systems work in Pakistan

Resilient food systems is core in WFP Pakistan's Country Strategic Plan for 2023-2027 under Strategic outcome 03: Pakistan's food systems are resilient to shocks and support access to healthy and nutritious food by all of Pakistan's communities by 2027.

- Shift from direct delivery to systems strengthening, aligned with Government priorities.
- Focus on nutrition, climate resilience, social protection, market systems, and supply chains.
- Emphasis on addressing root causes of food and nutrition insecurity, not just symptoms.
- Strong partnerships with BISP, NDMA, MoH, provincial governments, FAO, UNICEF, IFAD, and private sector.
- Integrates: Nutrition systems, Climate adaptation, Social protection, Market and supply chain strengthening, School feeding, Women's economic empowerment.



Pakistan Case 1: Systems Upgrade: Climate-Resilient Wheat Storage in Khyber Pakhtunkhwa

Intervention:

- In 2023, WFP and the Food Department of Khyber Pakhtunkhwa (KPK) inaugurated a **model 3,000-tonne wheat storage facility in Malakand**.
- The complex includes:
 - a modern wheat warehouse designed to handle rising temperatures and moisture linked to climate extremes;
 - a **wheat testing laboratory** to monitor grain quality and safety;
 - a **training facility and office space** to build capacity of provincial staff and partners in wheat storage management
- The facility is explicitly framed by WFP and the Government as a **model for replication** under CSP Outcome 3 to strengthen Pakistan's food systems

Why it matters?

- Post-harvest losses in Pakistan are substantial; in 2022, inadequate and poorly maintained warehouses contributed to up to 20% losses of the wheat crop in flood-affected areas, with extreme heat and moisture compounding the problem.
- By improving design, aeration, and quality control, the facility:
 - protects strategic grain stocks from climate-driven spoilage;
 - stabilizes supplies and prices for both producers and consumers during climate shocks;
 - gives provincial authorities a better tool to respond to emergencies and manage volatility in wheat markets.

Key achievements

- 3,000 mt of climate-resilient storage capacity added in a high-risk division of KP
- Integrated training centre now used to build skills of Food Department staff in climate-aware storage management.
- Facility is being promoted by KPK authorities as a replicable model for other districts, embedding resilience principles into provincial food-system planning.

WFP opens wheat storage facility in Pakistan to strengthen food security (Source: <https://millingmea.com/wfp-opens-wheat-storage-facility-in-pakistan-to-strengthen-food-security/>)



Pakistan Case 2: Linking Shock Response to Food-System Recovery After the 2022 Floods

Intervention:

- During the first phase of its multi-sectoral response to the 2022 super-floods, WFP provided **food and livelihood support to more than 700,000 people in Balochistan, Khyber Pakhtunkhwa and Sindh**, and **specialized nutritious foods to around 11,200 children under 2 and 12,000 pregnant and breastfeeding women** in Balochistan.
- These interventions were grounded in earlier climate-risk and food-security analyses that highlighted flood- and drought-exposed districts and recommended integrating disaster risk management and social protection with food-system strengthening.

Why it matters?

- Timely assistance **protected consumption and nutrition**, helping households avoid negative coping strategies that erode future productive capacity (distress sale of assets, reduced farm inputs, etc.).
- Working through **cash-based transfers and local markets** where feasible helped keep local food supply chains functioning despite infrastructure damage.
- Lessons from the floods are feeding back into CSP design, including: better integration of **provincial food-storage upgrades** with early-warning systems; stronger **linkages between social protection, emergency response and local markets**.

Key achievements

- Large-scale flood response that not only saved lives but helped **preserve the integrity of local food systems** in highly exposed provinces.
- Climate-risk analytics (CRFSA, ICA) institutionalized as a reference for targeting resilience investments and shock-responsive programming in food-insecure, hazard-prone areas.



WFP calls for \$500,000 to boost flood response in Pakistan (source: <https://www.wfp.org/stories/wfp-calls-500000-boost-flood-response-Pakistan>)

WFP food systems work in Lao PDR

Core to WFP's efforts in the country towards resilience building. Particularly within Lao PDR's Country Strategic Plan 2022-2026, and highlighted under:

Strategic outcome 1: sustainable national school meals programme

Strategic outcome 3: Vulnerable people in disaster-affected or at-risk areas have enhanced food and nutrition security all year round and increased capacity to mitigate and manage risks associated with climate and other shocks by 2026.



© WFP Laos/Vilakhone Sipaseuth
Sisters Champa and King used to enjoy lunch at school. Their single mother was forced to take them out of school because of financial difficulties.

WFP is building a nutrition-oriented, climate-resilient, locally anchored food system by:

- Using school meals as a national food systems platform.
- Improving local production, value chains, and farmer income.
- Increasing diet quality through home gardens & nutrition education.
- Scaling staple fortification for national nutrition outcomes.
- Building resilient livelihoods and community assets.
- Supporting shock-responsive systems and national policy reforms.

Lao PDR Case 1: Home-Grown School Feeding as a Food-System Anchor

Intervention:

Under the CSP, WFP supports a **home-grown school feeding model** where school meals are increasingly sourced from local farmers and communities:

- In 2024, as part of the National School Lunch Programme, WFP reached **more than 98,600 schoolchildren with nearly 8 million school meals**.
- WFP is helping the Government move **from ad-hoc community contributions and small-scale procurement to more systematized local food procurement**, creating a more predictable market outlet for smallholders and cooperatives.
- A recent Convergence Initiative report describes the “*Homegrown School Feeding Project*” as creating a “*virtuous cycle*” that *links local agriculture, nutrition and education by sourcing school meals from local farmers*.

Why it matters?

- Stable institutional demand (school meals) encourages farmers to **diversify into more nutritious and often more climate-resilient crops**, while reducing dependency on volatile long-distance supply chains
- Predictable income from school feeding contracts can support investment in **small-scale irrigation, improved seed and climate-smart practices**, especially when linked with technical support.

Key achievements

- **Scale:** Almost 100,000 children receiving regular school meals, with millions of meals provided annually, increasingly anchored in local food systems.
- **Systems shift:** Governmental shift toward **institutionalized local procurement** for school feeding, supported by WFP technical assistance.

Lao PDR Case 2: Building Climate-Resilient Local Production for School Meals

Intervention:

WFP is investing in climate-smart local production and infrastructure that underpins school feeding

- **Renovated 42 water systems and 81 school kitchens** in northern provinces, safeguarding previous investments and ensuring safe, continuous provision of hot lunches.
- In Oudomxay province, WFP is **constructing greenhouses in 62 schools** to grow vegetables and other produce for school meals; **31 greenhouses had been completed by December 2023**
- WFP and the International Institute of Rural Reconstruction piloted a **“climate-smart village” approach** in project sites in Phongsaly, integrating school feeding, home gardens, agriculture-for-nutrition and local/regional procurement with climate-change adaptation measures

Why it matters?

- Greenhouses and improved water systems **reduce dependence on increasingly erratic rainfall**, enabling year-round production of vegetables for school meals.
- Linking farmer training, inputs and institutional procurement **shortens supply chains**, reduces losses, and keeps more value in climate-vulnerable rural communities.

Key achievements

- Concrete climate-resilient assets (water systems, kitchens, greenhouses) now underpin the Government’s school meals programme in multiple provinces.
- Smallholder farmers are being organized, trained and equipped to supply schools, with early evidence of stronger local production capacity and diversified diets.



Climate-resilient Initiative For School Meals in Laos
(source: <https://kpl.gov.la/EN/detail.aspx?id=88195>)

Thank you!



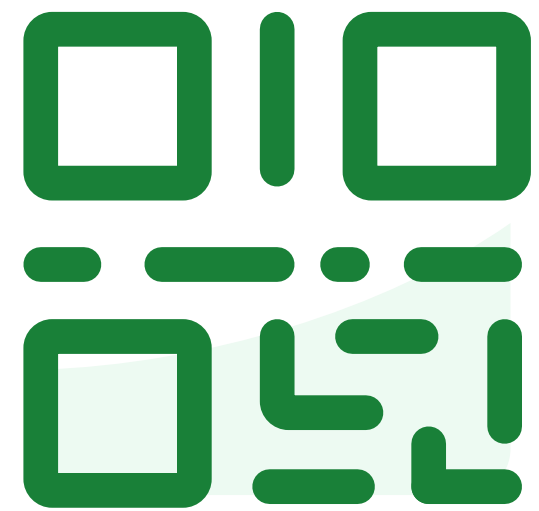
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Interactive session

- **Juhi Bansal, UNFCCC RCC Asia-Pacific**

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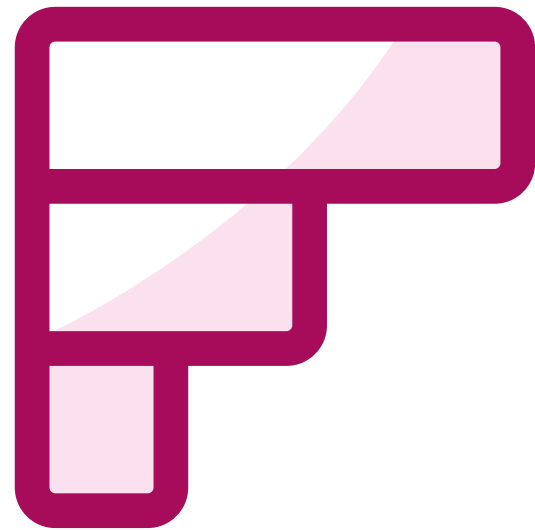
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How would you rate the priority level of food systems in your national development and climate strategies? (1 being the lowest priority and 5 being the highest)



Based on your awareness and understanding, in which of the following national policies or frameworks is the integration of food systems most evident in your country?



What are the main challenges or gaps you have encountered or foresee in implementing food systems activities in alignment with climate and development priorities?



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Lunch Break



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Collaboration for Climate Action

Technical Workshop on Cross Linkages among Food Systems Actors and Aligning Food Systems in National Adaptation Plans (NAPs) and Nationally Determined Contributions (NDCs)

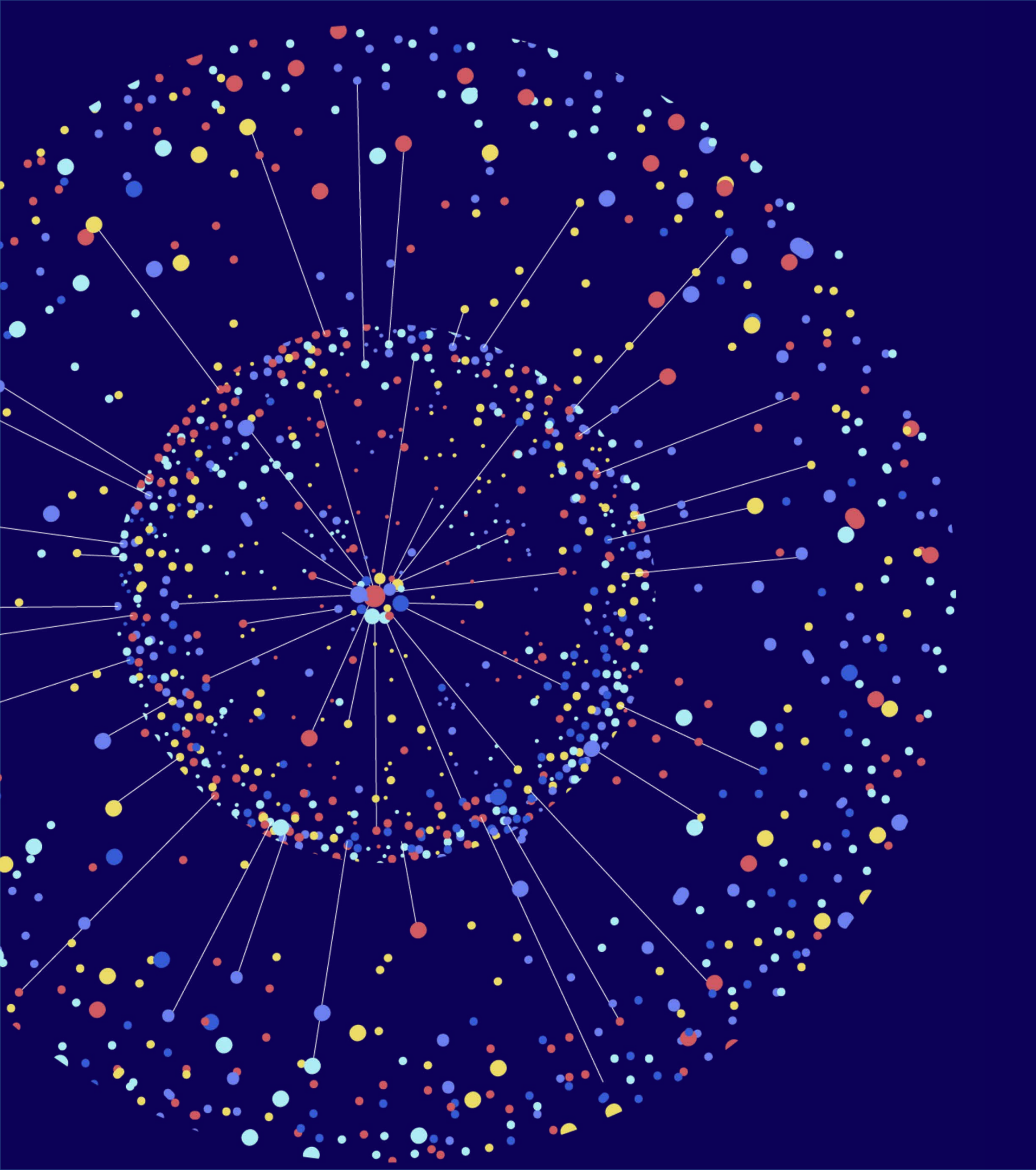
25-26 November 2025
JW Marriott, Bangkok, Thailand





Session 3: Country Presentations on Agriculture and Agrifood system-related targets and priorities in NAPs and NDCs

- **Phonevilay Sinavong, Lao PDR**
- **Raza Ul Haq Madni, Pakistan**
- **Pham Thi Hanh Tho, Vietnam**



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Food Systems in Lao PDR's NAP & NDC

Phonvevilay Sinavong (Ph.D), NAFRI

25 November 2025

Food Systems in Laos PDR's NAP & NDC

NAP: National Action Plan

NDC: National Determined Contribution

Contents:

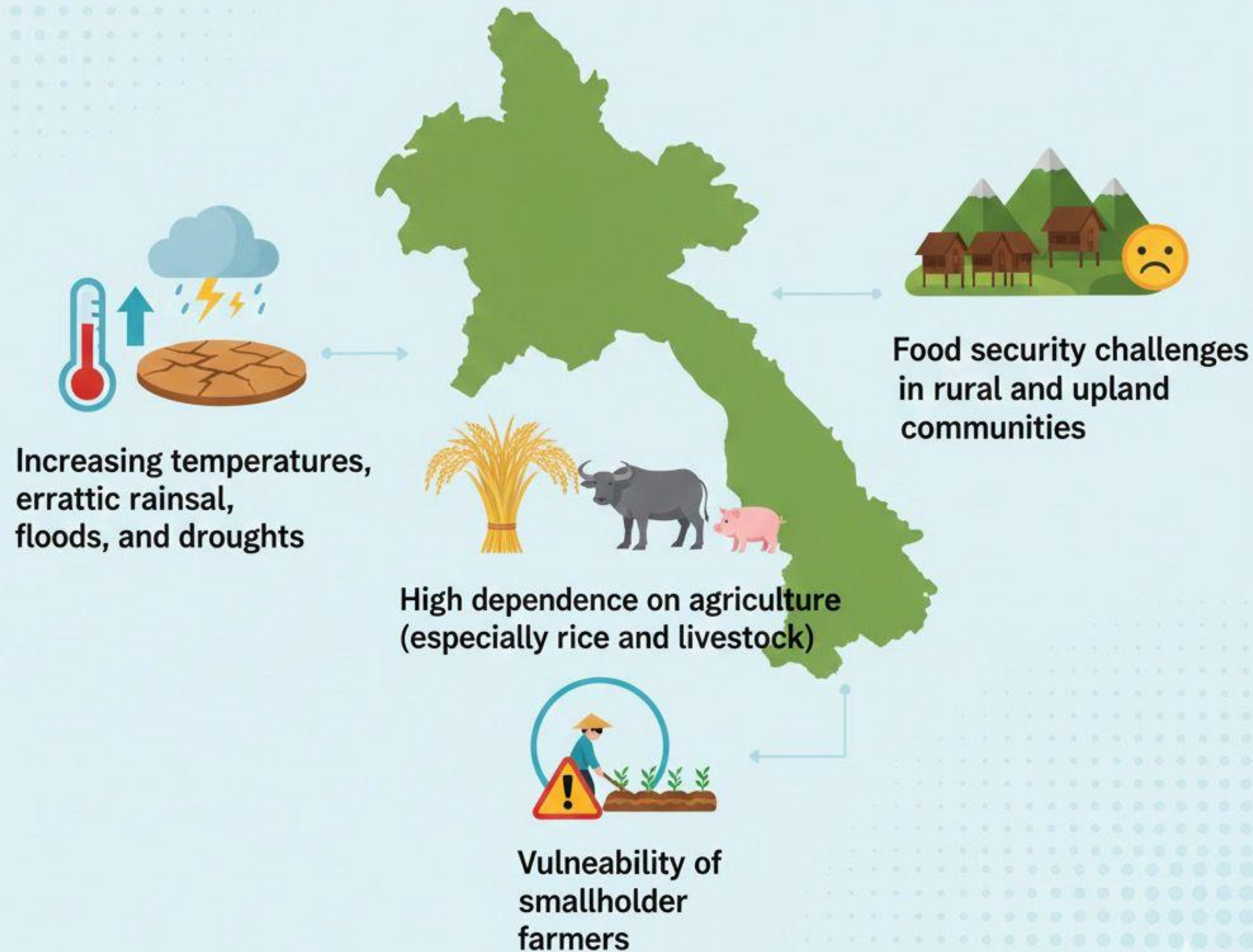
- I. Agriculture in Lao PDR
- II. Climate risks & food systems in Lao PDR
- III. Food systems priority and actions in the NDC 3.0
- IV. Food systems priorities in the NAP
- V. Gaps & opportunities
- VI. Recommendations
- VII. Conclusion

I. Agriculture in Lao PDR

Role in Economy	<ul style="list-style-type: none">• Agriculture contributes ~16–20% of GDP and is a major livelihood source.• Employs over 60% of the population, especially in rural areas.
Key feature	<ul style="list-style-type: none">• Dominated by smallholder, subsistence farming.• Limited mechanization; farming heavily depends on rainfall and river systems.
Major crops	<ul style="list-style-type: none">• Rice (main crop) – especially glutinous rice, a national staple.• Maize, cassava, coffee, sugarcane, bananas, and emerging high-value crops.• Coffee is an important export product.
Livestock & Fisheries	<ul style="list-style-type: none">• Cattle, buffalo, pigs, and poultry widely raised.• Inland fisheries along the Mekong are crucial for nutrition and income.
Exports	<ul style="list-style-type: none">• Coffee, rubber, maize, bananas, cassava, and timber/wood products.• Growing Chinese and Thai investment in contract farming.
Challenges	<ul style="list-style-type: none">• Limited infrastructure and irrigation.• Vulnerability to floods, droughts, and climate change.• Land tenure issues and pressure from commercial plantations.
Opportunities	<ul style="list-style-type: none">• Organic and specialty crops (e.g., organic coffee).• Expanding regional trade links with China, Thailand, and Vietnam.• Potential for improved irrigation, value-added processing, and sustainable farming.

1. Increasing temperatures, erratic rainfall, floods, and droughts
2. High dependence on agriculture (especially rice and livestock)
3. Food security challenges in rural and upland communities
4. Vulnerability of smallholder farmers

Climate Risks to Food Systems in Lao PDR



III. Food systems priorities in the NDC 3.0

- Climate-smart rice management
 - Agroforestry and community forest management
 - Restoration of degraded lands / reforestation
 - Sustainable livestock management
 - Soil conservation & sustainable land management (SLM)
- Small-scale irrigation and water management
 - Market and value-chain improvements
 - NbS/EbA at farm and landscape scale
 - Capacity building, extension services and gender-sensitive interventions

NbS = *Nature-based Solutions*; **EbA** = *Ecosystem-based Adaptation*

III. Food systems mitigation/adaptation actions in the NDC 3.0



IV. Food systems priorities in the NAP

How Food Systems Are Addressed in the NAP



Priority sectors in the Lao PDR's NAP in the food system

-  Agriculture
-  Forestry / Land
-  Water Resources
-  Infrastructure & Urban
-  Public Health
-  Energy




V. Gaps and Opportunities



- Limited explicit reference to “food systems” (focus more on agriculture)
 - Need for stronger value-chain and market resilience
 - Financing and capacity constraints
 - Data gaps for monitoring adaptation and mitigation (MRV)
- Linking food systems to nutrition & health agendas
 - Enhanced private-sector participation in value chains
 - Use of digital tools for climate information services
 - Leveraging global climate funds for food-system resilience



VI. Recommendations

- Strengthen food-system framing across NAP and NDC updates (ensure that food system are discussed and highlighted as key areas)
 - Integrate climate-resilient value chains, storage, and logistics
 - Enhance cross-sector coordination (agriculture–water–forestry–health)
 - Build stronger evidence base for food-system emissions & climate impacts
- 



VI. Recommendations for NDC 3.0

Technical capacity and extension reach


Farming households have limited access to climate-smart inputs, extension services, improved seeds/varieties, and mechanization—slowing scale-up.

Social and equity barriers Women

ethnic minorities and poorer households face higher barriers to finance, training, and decision-making — risking unequal benefit sharing.


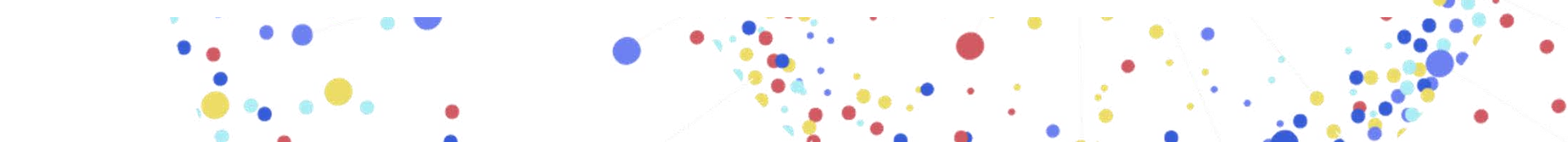
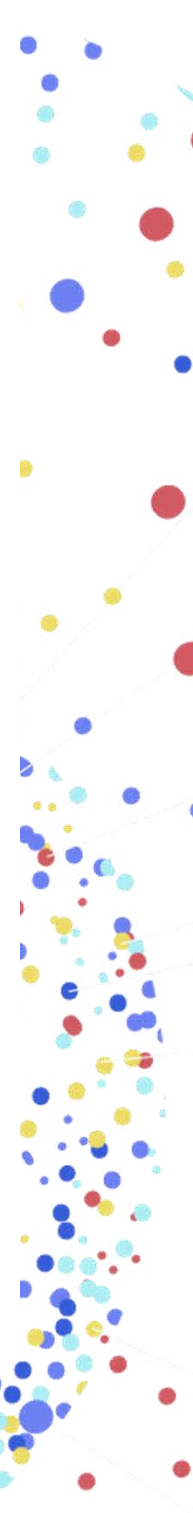
Systemic climate impacts & compound risks

Increasing frequency/intensity of droughts/floods can reverse gains (crop/livestock losses, erosion), especially if adaptation measures are too slow or insufficiently scaled.





VII. Conclusion

- ✓ Lao PDR's NAP and NDC provide strong foundations for climate-resilient food systems
 - ✓ Significant progress on agriculture, water, and forestry
 - ✓ Future updates can make food systems more explicit, integrated, and actionable
 - ✓ Opportunity to scale resilience through financing, data, and partnerships
- 
- 
- 

Pakistan's Agriculture & Agrifood Targets in NAPs & NDCs

Raza Ul Haq Madni
Provincial President,
Farmers Alliance Gilgit-Baltistan

Introduction

- Pakistan ranks **fifth** globally in climate vulnerability.
- Agriculture employs **41%** of the workforce.
 - Integrating climate resilience into agriculture is a national priority.

Pakistan's Key Agri-food Targets (NDCs)

- Shift from conventional to **Climate-smart agriculture**
- Reduce emissions from agriculture through a shift to **Organic Fertilizers and reduced chemicals**
- Introduction of **precision agriculture** among rural smallholder family farmers

National Adaptation Plan (NAP) Priorities

- Strengthening smallholder resilience
- Food systems diversification
- Value chain improvement
- Focus on mountain agriculture (GB)

Resource Mobilization Needs

- Financial resources
- Technical Resource
- Institutional Strengthening and Coordination

Country Examples

- GLOF-II Project
- National Agroforestry Policy
- Digital agri extension services
- Community-led water management (GB)

Key Challenges

- Lack of awareness
- Water scarcity & glacier melt
- Weak value chains
- Financial constraints

Conclusion

- Pakistan is:
 - Member of Green Climate Fund
 - Ten Billion Tree Tsunami Programme for reforestation,
 - A push for renewable energy with a goal of 60% clean energy and
 - A halt on new coal plants, and
 - Adaptation strategies like climate-resilient infrastructure and water management

Need stronger partnerships, innovation, and climate finance.



RCC Asia and the Pacific

Collaboration for Climate Action

**Technical Workshop on Cross
Linkages among Food Systems
Actors and Aligning Food
Systems in
National Adaptation Plans and
Nationally Determined
Contributions**

**Agriculture and Agrifood
System-related Targets and Priorities
in National Adaptation Plans and
Nationally Determined Contributions**

Prepared by:

Tho Pham, Tuyen Huynh, Mai Truong

Bangkok, 25-26/11/2025

Agriculture and Food Security in Viet Nam's Nationally Determined Contribution

Viet Nam's NDC 3.0 Development Plan, which has been in progress of approval

- **Objective:** Develop Vietnam's NDC3.0 with the highest efforts in responding to climate change.
- **Lead Agency:** Department of Climate Change (MAE).
- **Timelines:**
 - **01/2025:** Establishment of Task Force Group for NDC 3.0
 - **02 – 15/5/2025:** Development of Sectoral Technical Reports.
 - **06/2025:** 1st Consultation Workshop for the draft version of NDC 3.0.
 - **06 – 07/2025:** Comments by related agencies and individuals on the draft version.
 - **09/2025:** 3rd meeting of Task Force Group to have agreement on the revised version of NDC 3.0 before submitting it to the authority for consideration.
 - **10/2025:** Submit it to PM for consideration and finalise the NDC 3.0 to submit to UNFCCC.
- **Ensure transparency and participation:** The Procedure of development of the NDC3.0 emphasises the involvement of related partners, ensuring transparency on methodology data and assumptions



General Objectives and Measures to Reduce Emissions in Agriculture



Source: Luong Quang Huy, Agriculture and Food Security in Viet Nam's Nationally Determined Contribution (NDC 3.0)

- **General objectives:** To develop agriculture in the direction of low-carbon, sustainable, smart, climate change adaptation, and food security.
Main measures:
Cultivate:
Replicating advanced rice farming techniques to help reduce methane emissions (CH_4) such as "1 must 5 reduce", "agricultural-drying" (AWD) irrigation.
Integrated crop health management (IPM), using organic fertilizers, slow-release fertilizers to reduce N_2O emissions.
Transforming crop structures on inefficient lands.
Husbandry:
Improve livestock waste treatment technology (biogas bunkers, compost) to recover methane and generate energy/fertilizer.
Improve cattle rations to reduce emissions from intestinal fermentation.

How do we integrate food systems transformation into the National Adaptation Plans and National Determined Contributions?

National Determined Contributions (NDC) version 3.0

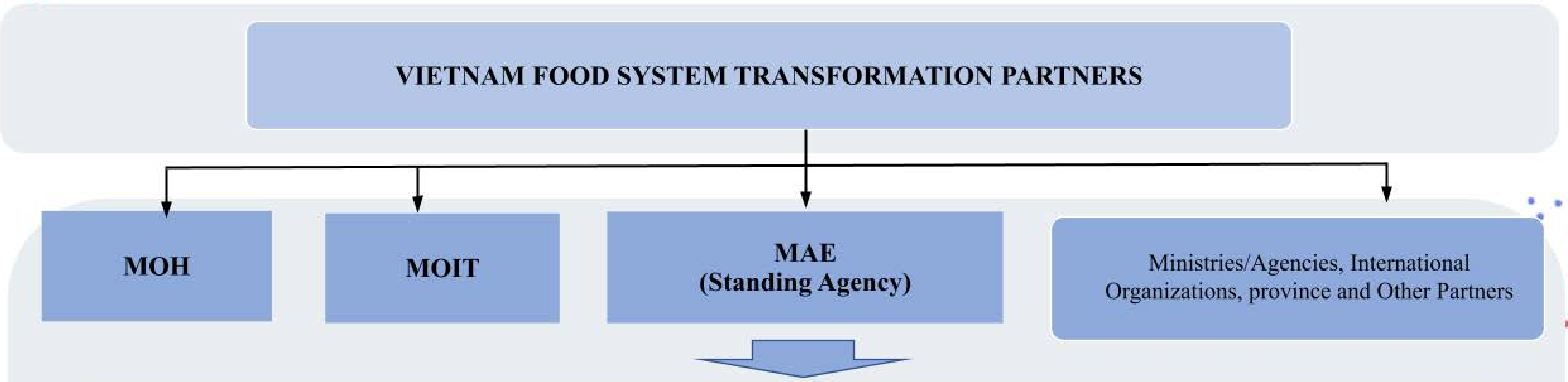
Opportunities for a sustainable, low-carbon agricultural transition

National Action Plan on Food Systems Transformation (NAP-FST)

Sustainable production + Sustainable Consumption are Central

- Agroecology underpins all five tasks by **integrating ecological principles into farming, processing, and consumption.**
- It ensures **food safety, resilience to climate shocks, improved farmer livelihoods, and environmental sustainability.**
- Vietnam's NAP aligns with the **SDGs and COP26 commitments**, positioning agroecology as a driver of both national food security and global competitiveness

- Organizing the implementation of FST-NAP



The missions of National Action Plan on transparent, accountable and sustainable food system transformation

- Group 1:** Review, evaluate and improve relevant mechanisms, policies, processes, standards and regulations
- Group 2:** Develop input supply systems for agricultural production towards transparency, responsibility and sustainability
- Group 3:** Develop agricultural production towards transparency, responsibility and sustainability
- Group 4:** Developing a food processing and distribution system towards transparency, responsibility and sustainability
- Group 5:** Promote transparent, responsible, and sustainable food consumption practices

Food Systems Transformation Partnership in Vietnam



Subnational food systems supporting process in Dong Thap and Son La to deliver for nutrition and climate (2024-2025)

Establishment of Provincial Intersectoral Working Group (PWGs)

Inception

Food system trainings were done in Dong Thap (8/2024) & Son La (9/2024)



Food system training

Son La's Provincial Implementation Plan approved *through QĐ 161/UBND Son La dated July 29th 2025*

Publications		Guidelines			
Son La FS profile	Dong Thap FS profile	Sub-national FS dialogues	FS profile Development	FS issues prioritization, actor & action mapping	FS ToT training materials

Lesson learnt meeting

Provincial food system profile development

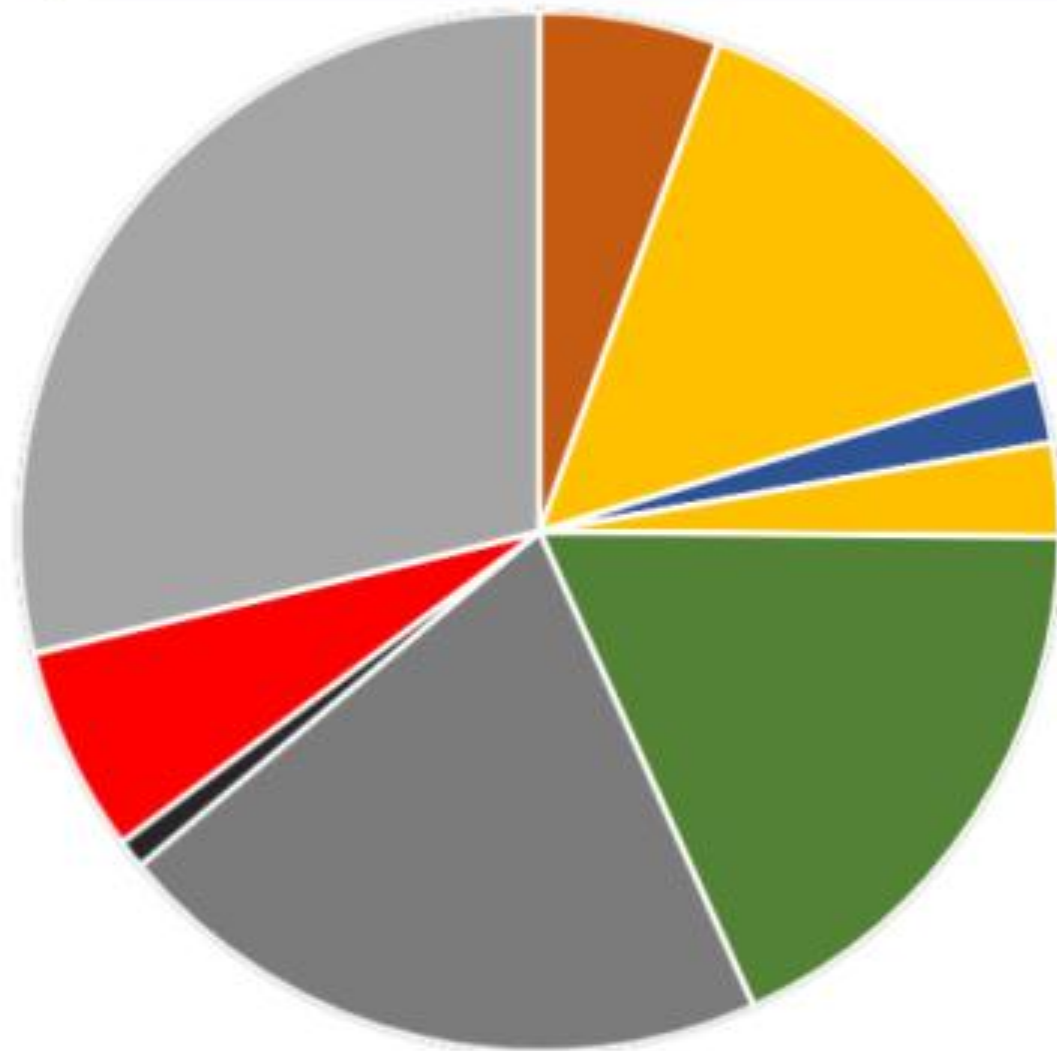
- Next Steps:**
- MEL led by ISPAE and investment plans (2025–2026) led by VAAS to support the sustained implementation of FST-NAP at subnational levels.
 - Document and explore opportunities to scale the participatory process nationwide
 - Facilitate cross-provincial and South-South learning

Source: Tuyen Huynh et al., BDN AoW1.4 Vietnam, 2025

How can healthy diets contribute to climate mitigation and adaptation

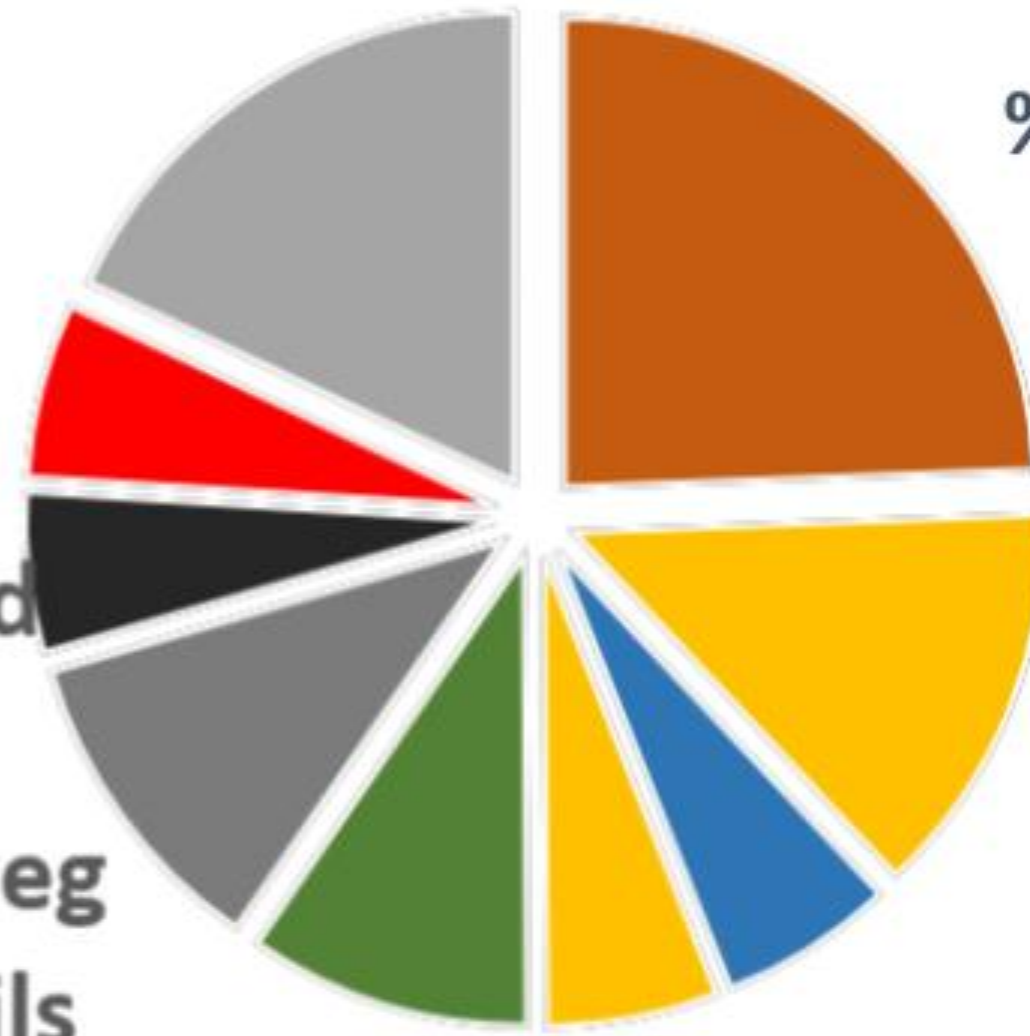


□ "Meat reducers"
■ Not meat reducers



% of food consumption

- Red meat
- Dairy
- Fish
- Poultry
- Cereals and potatoes
- Fruit and veg
- Fats and oils



% of CO2 emission

Recommendation

- **Strengthen Institutional Coordination and Leadership**

- Establish high-level coordination mechanisms endorsed by government leadership.
- Adopt climate change laws to institutionalise coordination and accountability.
- Enhance vertical and horizontal integration among national, provincial, and local institutions

- **Institutional and Policy Integration**

- Mainstream NDCs into medium-term national development plans and budget cycles.
- Strengthen inter-ministerial coordination and align climate actions with broader development policies.
- Institutionalise investment councils/advisory boards to ensure transparent and inclusive prioritisation

- **Institutional leadership and capacity needs:** Responsible institutions were designated for each action.

- **Teams also identified capacity gaps, enabling reforms, and the tools** or methodologies needed to facilitate implementation



THANK YOU FOR YOUR ATTENTION!



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Session 4: Visioning Implementation Pathways for Food Systems Transformations through NAPs and NDCs

- **Juhi Bansal**, UNFCCC RCC Asia-Pacific
- **Promit Mookherjee**, UNFCCC RCC MENA-SA

Session 4



With support from:



Objective: Building on previous presentations and the country case studies, this session will provide an opportunity for the participants from each country to map out a pathway for food systems transformation aligned with NAPs and NDCs.

A. Visioning exercise for food system transformation

Purpose: To build a shared long-term vision for sustainable, resilient, and low-emission food systems, aligned with national priorities and NDC/NAP targets.

Each group crafts a vision statement answering:

- What does a sustainable, climate-resilient food system look like for us in 2035 and 2050?
- What are the key indicators of success?
- What does success mean for different stakeholders (government, farmers, consumers, and communities)?

Output: 3–4 vision statements for 2035 and 2050 milestones shared and clustered into a unified national vision.



With support from:



Coffee/Tea Break

Session 4



With support from:



B. Defining pathways for food system transformation aligned with NAP and NDCs

Purpose: Each group undertakes a back-casting exercise to translate the 2035/2050 visions for sustainable food systems into concrete near-term goals, milestones, and enabling actions aligned with their NAP and NDCs

If the 2050/ 2035 vision is realized –

- How did the NAP and NDCs help in achieving the transformation? What were the key policy and regulations that enabled the shift?
- What sources of finance and technology were utilized to make this possible?
- What capacity building initiatives were carried out to enable the transformation?

Output: A consolidated national transformation pathway matrix:

- Key Milestones
- Timeframe
- Enabling Conditions (Policies/ MOI)



Session 5: Towards Implementation – Finance and Technology Needs for Agrifood Systems

- **Beau Damen, FAO**
- **Yuqing “Ariel” Yu, IGES**
- **Julianne Biddle, Crop Trust**
- **Julie Teng, UNDP**
- **Khoukham Vilayheuang, Lao PDR National Genebank**
- **Kunyaporn Pipithsangchan, Thailand**
- **Vu Dang Toan, Plant Resources Center, Vietnam**



Anniversary

Landscape of finance and technology needs

Beau Damen - FAO
25 November 2025



Finance – The basics

- Finance is not investment
- Finance sources are channeled through different instruments to investments that correspond to a specific risk and return calculation
- Return depends on the ability of the investments to generate revenue
- Investments with return attract more, and more diverse, finance sources
- Financing any investment is about the quality of the investment and the partnerships

KEY PROGRAM

Capacity Building Initiative for Transparency & SCALA



Activities

- Strengthening institutional arrangements for ETF reporting
- Capacity to prepare GHGI, NDC monitoring
- Support for NDC review and implementation

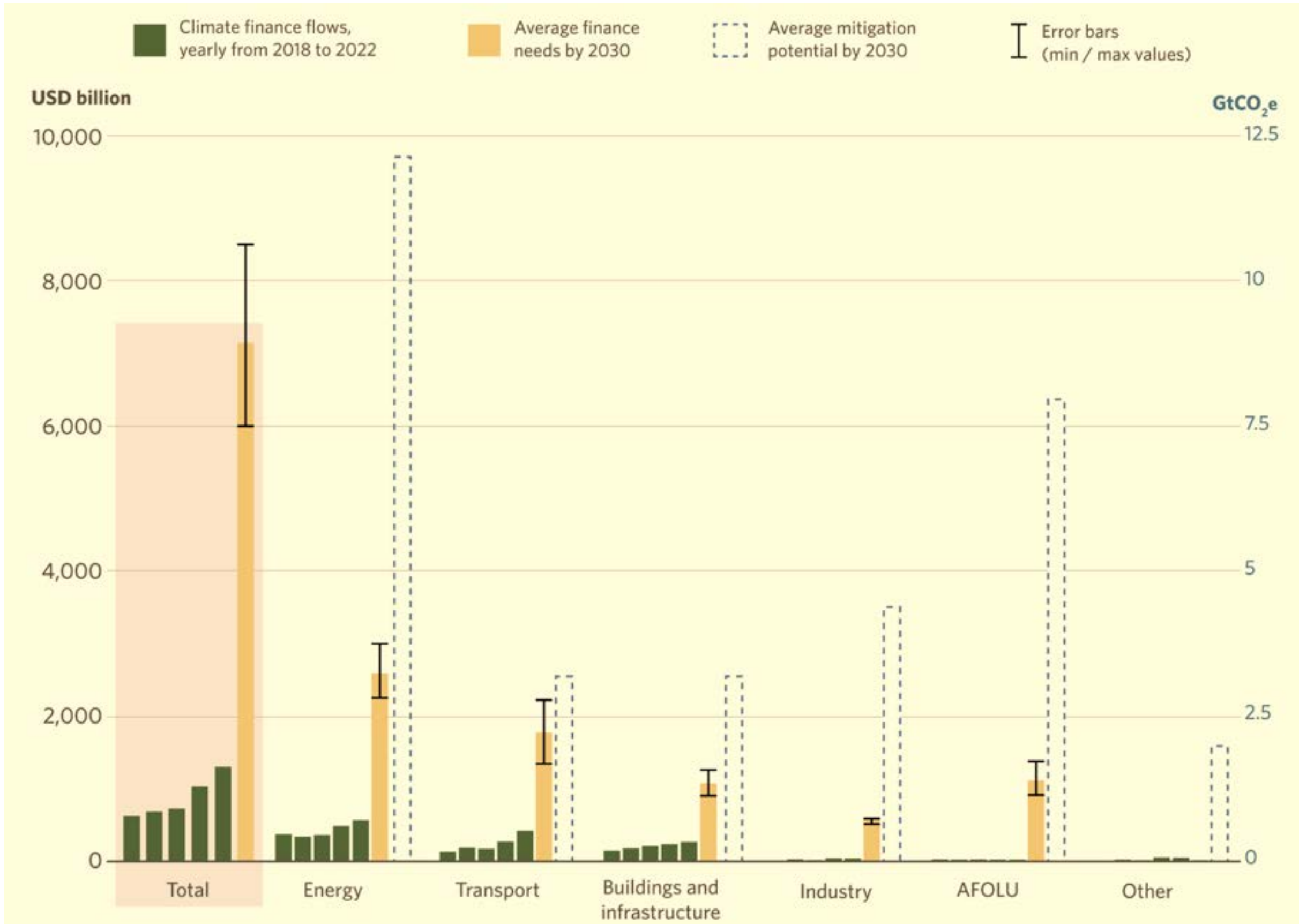


Figure: Climate finance flows in key mitigation sectors, finance needs and mitigation potential (USD billion)

Source: Climate Policy Initiative, 2024

Note: Note: Historical finance flows (2018-2022) are expressed in nominal USD. Climate finance needs for 2023-2030 are expressed in constant 2022 USD. Average mitigation potential is sourced from UNEP (2024). Emissions Gap Report.

Private sector must be a key partner

Agribusinesses and financial institutions are typically more innovative and faster at implementation (vs public sector initiatives), and will accelerate the shift envisioned under the facility by:

Advising

- Input into design and structure of finance and investments to maximize impact achieved together.
- Leverage the private sector's innovation and use of advanced technology.

Investing

- Identify specific agribusiness investment opportunities.
- Deploy and mobilize private capital for blended finance.
- Build the pipeline of investments

Implementing

- Align and integrate their own projects initiatives with public investment.
- Drive the implementation of farm-level practices using their leverage as off-takers and financiers.
- Implement support programs and innovative incentive mechanisms.

Investment case for selected practices (non-comprehensive)

		Practice	Climate Risk Addressed	Adaptation Benefit	Mitigation Benefit	Co-Benefits	Public Investment Need	Private Investment Opportunity
Pre-production & production	Alternate wetting and drying (AWD)	Rising temperature, drought, CH ₄ emissions	<ul style="list-style-type: none"> ➤ Increased water efficiency (30-40%) ➤ Helps control pests and diseases (golden apple snail, rice blast fungus) 	~40% reduction in CH ₄ emissions	<ul style="list-style-type: none"> ➤ Increased rice yield and quality ➤ Improved soil health (soil aeration, reduced compaction) 	<ul style="list-style-type: none"> ➤ Primary and secondary irrigation infrastructure ➤ Tertiary irrigation services ➤ Electricity access ➤ Simple monitoring equipment (i.e. tubes) 	<ul style="list-style-type: none"> ➤ Carbon market development ➤ Monitoring sensors & services 	
	Dry direct-seeded rice (DSR)	Drought, CH ₄ emissions	<ul style="list-style-type: none"> ➤ Water consumption reduction 	Reduced CH ₄ emissions	<ul style="list-style-type: none"> ➤ Reduced energy, time and labour requirements 	<ul style="list-style-type: none"> ➤ Improved extension 	<ul style="list-style-type: none"> ➤ Mechnization ➤ Drone services 	
	Crop diversification, rotation	Drought, rainfall variability	<ul style="list-style-type: none"> ➤ Risk reduction of crop failure ➤ Water consumption reduction 	Lower CH ₄ and N ₂ O emissions	<ul style="list-style-type: none"> ➤ Income diversification and high-value crops ➤ Soil health 	<ul style="list-style-type: none"> ➤ Improved extension ➤ Business development support 	<ul style="list-style-type: none"> ➤ Enhanced extension ➤ Greenfields investment in alternative products 	
	Agro-met advisory services	Drought, pest and disease, rainfall variability	<ul style="list-style-type: none"> ➤ Enables farmers to react to, and prepare for, weather conditions 		<ul style="list-style-type: none"> ➤ Improved / more efficient use of fertilizers, pesticides, herbicides, etc. ➤ Supports adoption of alternative rice varieties and alternative crops 	<ul style="list-style-type: none"> ➤ Observation network and instrumentation ➤ Advisory dissemination system 	<ul style="list-style-type: none"> ➤ Tailored advisories to different crops and products ➤ AI integration 	
Post harvest	Improved handling	Rising temperature, embedded CH ₄ and N ₂ O emissions	<ul style="list-style-type: none"> ➤ Increases harvesting efficiency ➤ Reduced food loss 	Lower CH ₄ and N ₂ O emissions	<ul style="list-style-type: none"> ➤ Higher quality, marketable products 	<ul style="list-style-type: none"> ➤ Improved transport infrastructure ➤ Hermetic storage bags 	<ul style="list-style-type: none"> ➤ Mechanization ➤ Dryers, drying yards, moisture meters ➤ Storage facilities ➤ Moisture proof bins 	
Post-production	Improved post-production	Rising temperature, rainfall variability	<ul style="list-style-type: none"> ➤ Reduced food loss 	Lower CH ₄ and N ₂ O emissions	<ul style="list-style-type: none"> ➤ Higher quality, marketable products 	<ul style="list-style-type: none"> ➤ Improved transport infrastructure 	<ul style="list-style-type: none"> ➤ De-stoners, cleaners, huskers, whiteners, graders, polishers ➤ Packaging 	
	MRV	CH ₄ and N ₂ O emissions	<ul style="list-style-type: none"> ➤ Improved data on issues such as input use and water scarcity 	Improved monitoring of CH ₄ and N ₂ O emissions	<ul style="list-style-type: none"> ➤ Investment to address externalities 	<ul style="list-style-type: none"> ➤ GHG inventory ➤ Public research 	<ul style="list-style-type: none"> ➤ Traceability ➤ Carbon market development 	

Climate finance is not targeting agriculture

- Climate finance is not sufficiently reaching smallholder farmers, small-scale food systems or agri-SMEs
- Smallholder farmers supplying local markets are unlikely to benefit from corporate sustainable sourcing initiatives or carbon markets
- Despite much anticipation, opportunities for private climate finance in agriculture are limited at present
- Blended finance is largely untapped or not working

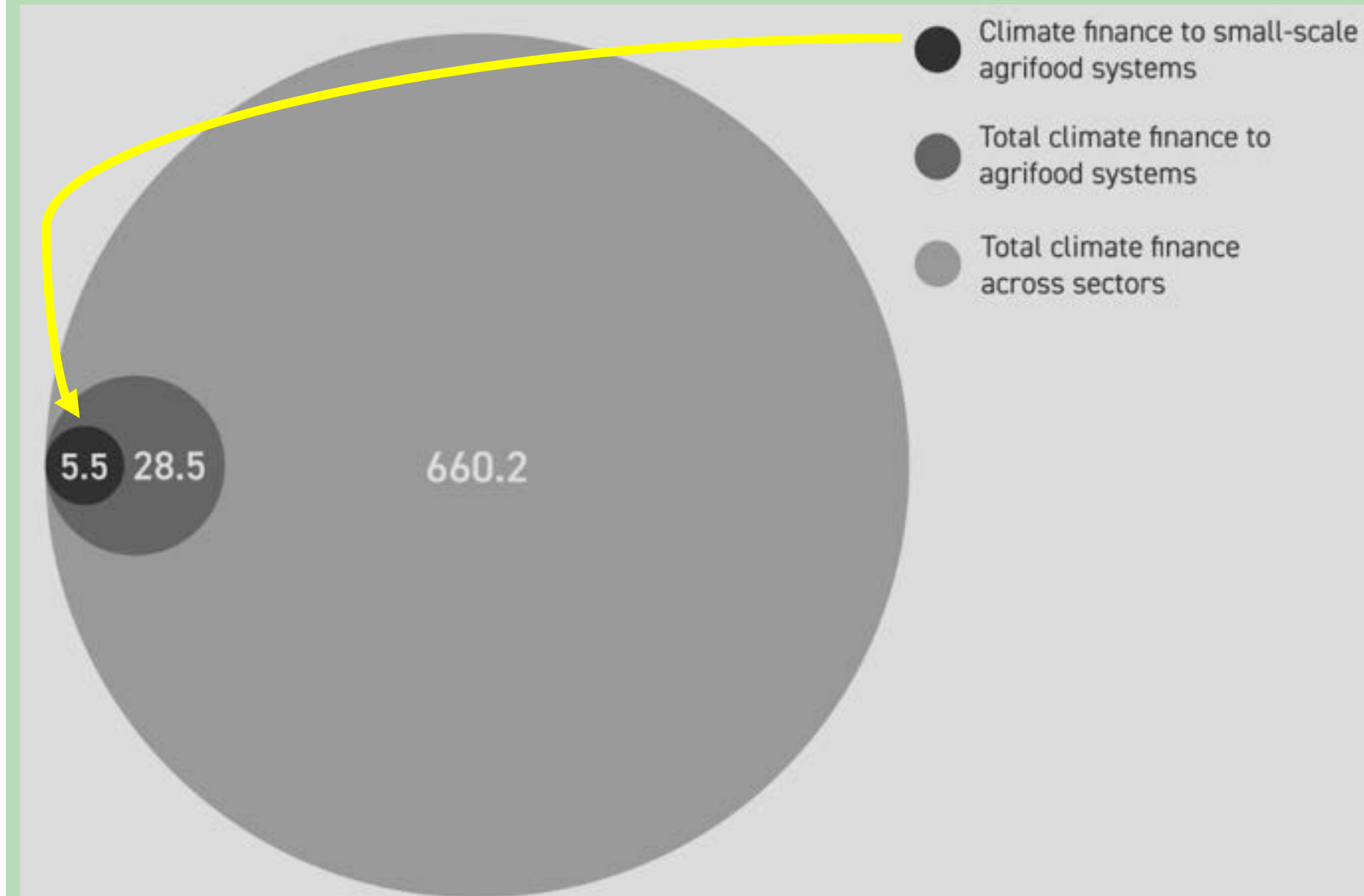


Figure: Climate finance to small-scale agrifood systems, agrifood systems and all sectors in 2019-20 (USD billions).
Source: Climate Policy Initiative, 2023

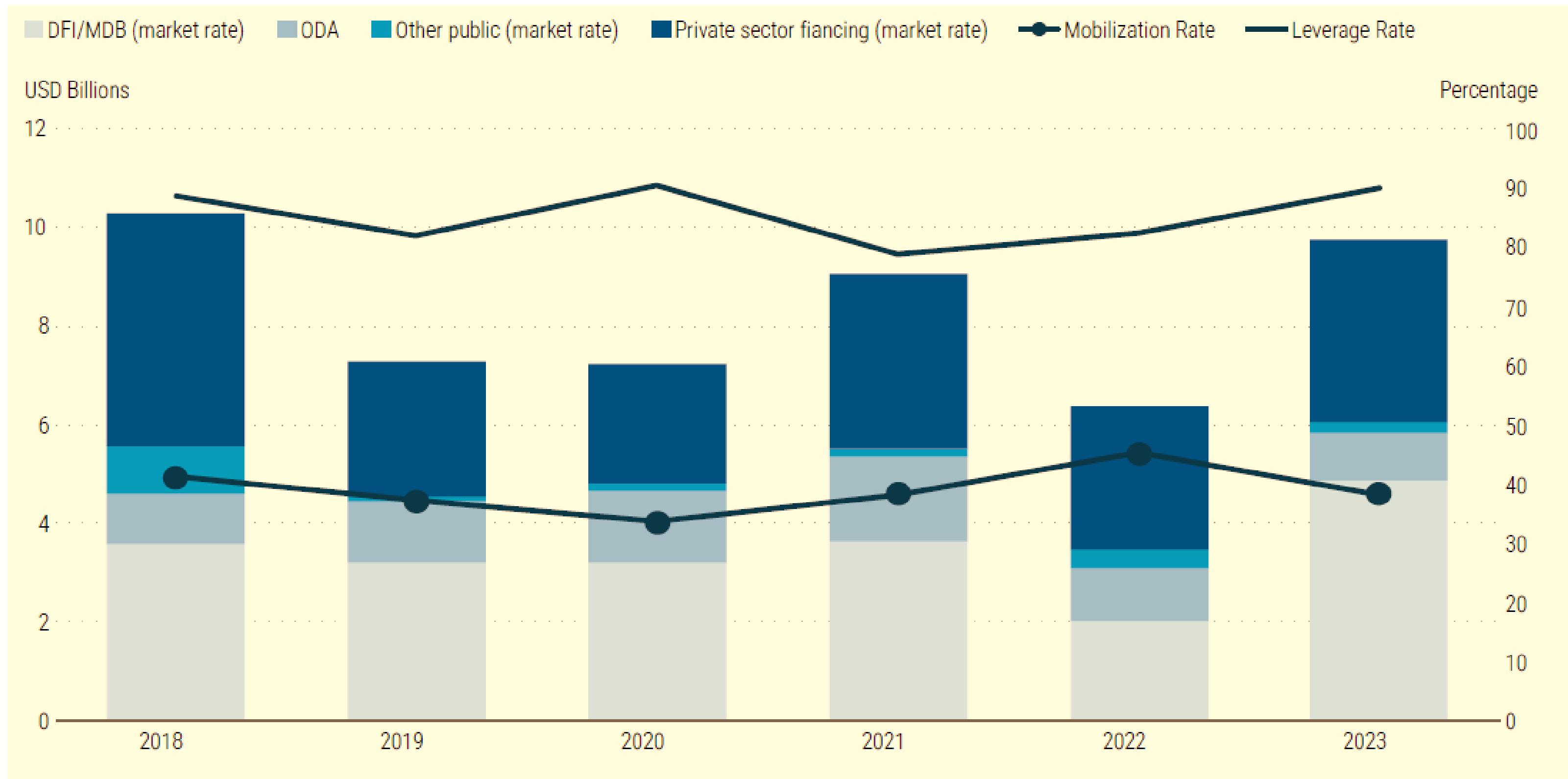


Figure: Sources of Blended Finance (excluding guarantees and insurance instruments) 2018–2023

Source: Mazzucato, 2025 based on data from Convergence

Why blended finance is not delivering sustainable, resilient agrifood (rice) systems

- **Immense and Underfunded Need** - agrifood systems receive less than 5% of total global climate finance
- **Extreme Producer Fragmentation** - The "clients" are millions of smallholders, which creates massive transaction costs for investors
- **Difficulty Monetizing Benefits** – Lack of reliable, short-term cash flows to drive return
- **High Perceived Risk** - Agriculture is dominated by risks that investors struggle to price or predict
- **Lack of "Bankable" Projects** - No common pipeline of well-structured, investment-ready projects that meet financiers' standards
- **Misaligned Public Finance** - Budgets that could de-risk or crowd-in investment are often directed toward harmful support programs



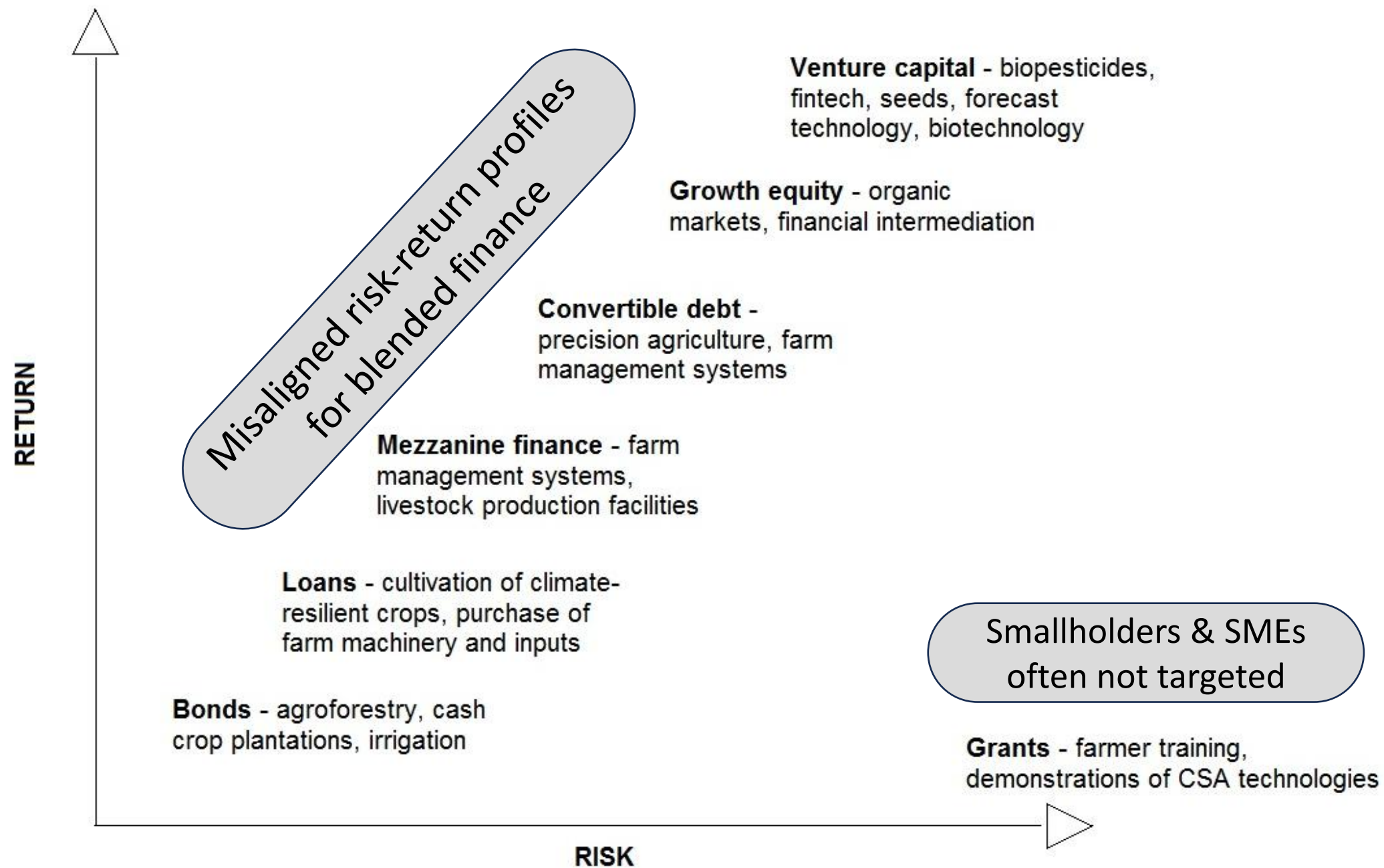
Public finance is crucial

- Public climate finance (DFIs, GEF, GCF, Bilateral, etc.) crucial for addressing the gap in climate finance for agriculture
 - Particularly for finance for investments that may have lower risk return profiles but have broader social and environmental benefits
- Public climate finance will likely be the only source that can specifically address the needs of smallholders
- Likely to be transformational because of its potential to reach more vulnerable communities and longer-term outlook



Figure: Estimated changes in GHG emissions in 2030 due to removal of agricultural producer support

What is needed?



- **Innovative public-led instruments** (e.g. green debt, tailored guarantees) to unlock private capital for smallholders & SMEs
- **Improved agricultural risk insurance** to address systemic risks and strengthen resilience
- **Investment-ready pipelines** of projects for agrifood systems transformation
- **Wider network of finance providers** to increase available capital and potential risk/return profiles to match investment
- **Country capacity on finance and investment** to better align finance sources, instruments and investments

Figure: Spectrum of conventional financial intervention in climate-smart agriculture.

Source: FAO & CIAT Forthcoming

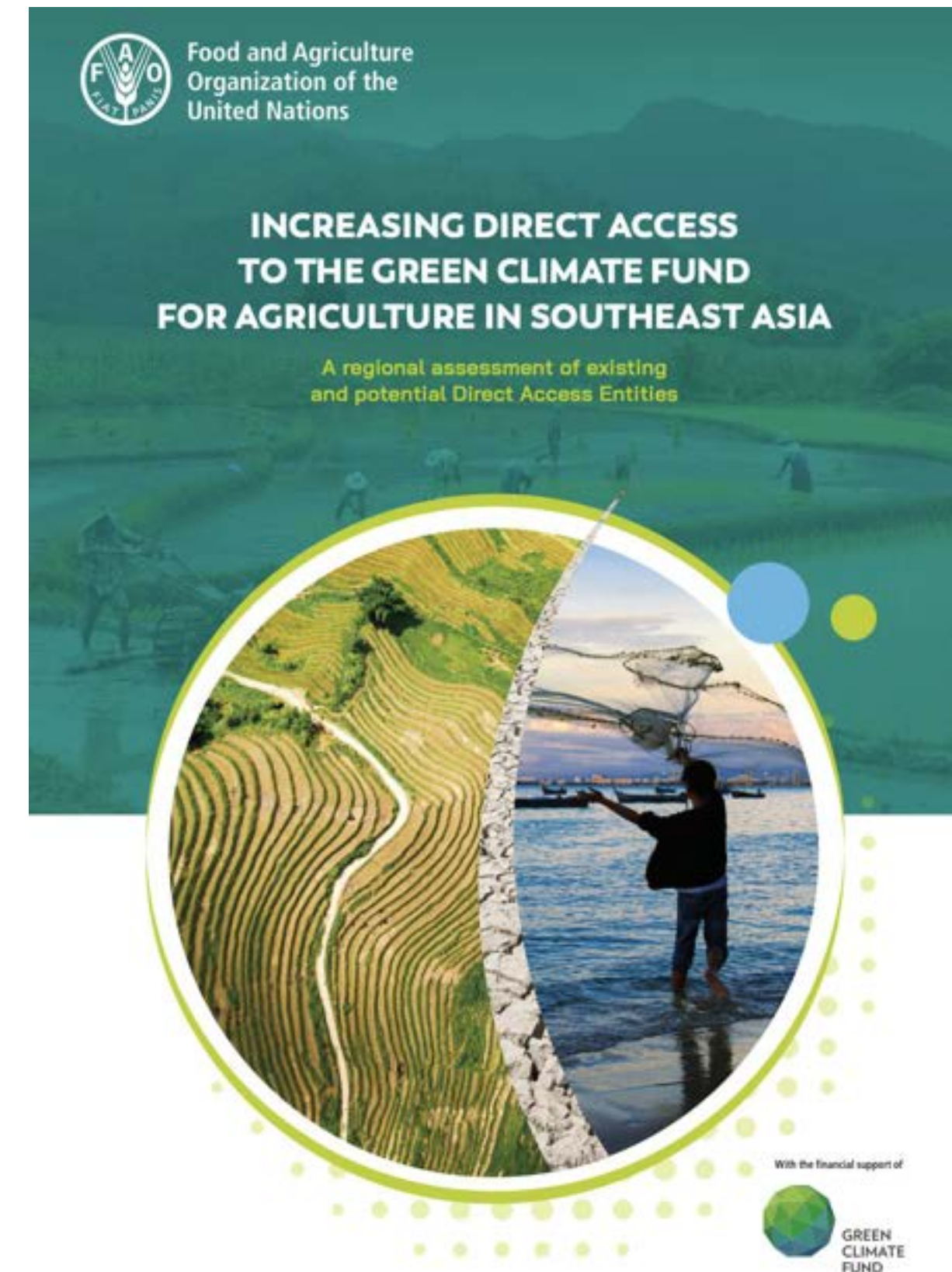
Example from FAO

Rice Blended Finance Facility

- **Low Emissions & Resilient Rice Landscapes Program (TBD)** to potentially mobilize over US\$1 Billion over 10 years
- Aims to accelerate the transformation toward low emission and resilient rice and agricultural production at scale through public and private investment and collaboration
- Program will attract substantial private capital via:
 - **A multi-country Low Emissions Rice (LER) blended finance facility**
 - Complementary, country-driven public investments
- The approach will crowd in substantial private capital, while leveraging public technical assistance and investment to de-risk value chains
- **Draws together partnerships with GEF, IFC, GIZ, WBCSD, SRP, IRRI and Others**

Example from FAO: Strengthening national finance institutions to lead and drive blended solutions

- Identifying **national finance institutions positioned to lead blended solutions** for agrifood systems
- Strengthening country capacities to design instruments, build investment-ready pipelines, implement paradigm-shifting initiatives
- Piloted in ASEAN, **approach can be replicated** in other regions and scaled globally to support national FIs in driving GEF-9 blended finance/NGIs



Example from FAO

Public-led instruments to unlock capital for implementing national priorities and commitments

- FAO-led initiative engaging Ministries of Finance, Environment and Agriculture, agricultural and central banks, MDBs, regional finance associations, global partners
- National-level **Food Security Green Bonds** to mobilize private finance for implementation of national priorities and commitments
- Regional-level **ASEAN Green Bond for Sustainable Agriculture** endorsed by Ministers of Agriculture and Forestry



Food and Agriculture
Organization of the
United Nations

Food Security Green Bonds:

From public leadership to private investment – scaling finance for sustainable and resilient agrifood systems

FAO report and guidance document, forthcoming in
December 2025

with Climate Bonds Initiative, World Bank, Asian Development Bank, Development Guarantee Group as advisors/contributors

Example from FAO

Regional agricultural risk insurance

- FAO-led **regional agricultural risk finance facilities** strengthen financial protection and resilience
- ASEAN pilot to improve country agricultural insurance programs, coverage and cost-effectiveness through economies of scale
- Regional reinsurance pool strengthens country bargaining power, reduces costs and premiums
- Climate finance **catalyzes private investment**, including from industry PPP participants

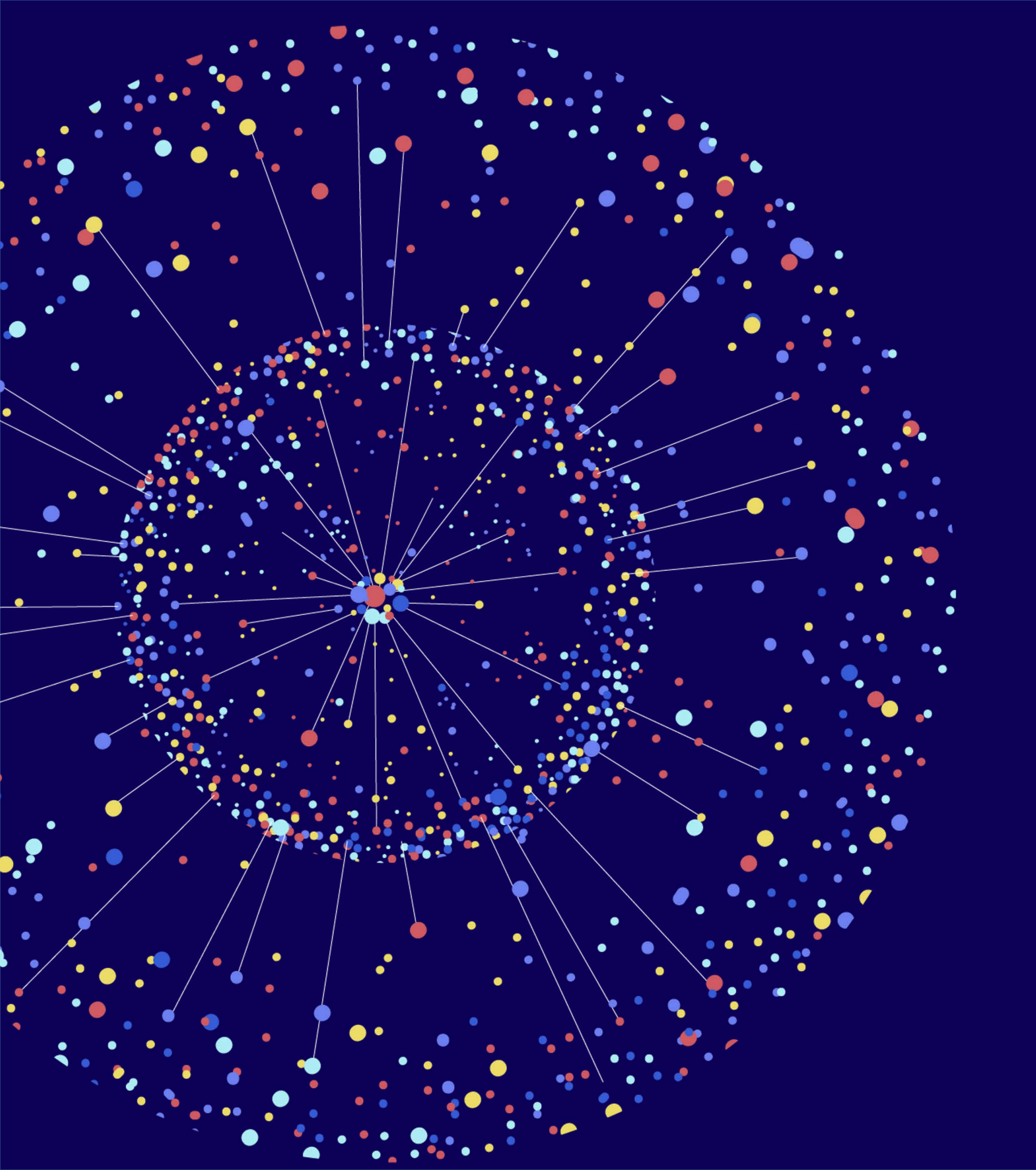




Anniversary

Thank you!

Beau.Damen@fao.org



RCC Asia and the Pacific

Collaboration for Climate Action

Session 5 Food Systems and Article 6

TCP project: Strengthening capacity of policy makers to mobilize investment for resilient and low-emission agrifood systems under Article 6 of the Paris Agreement

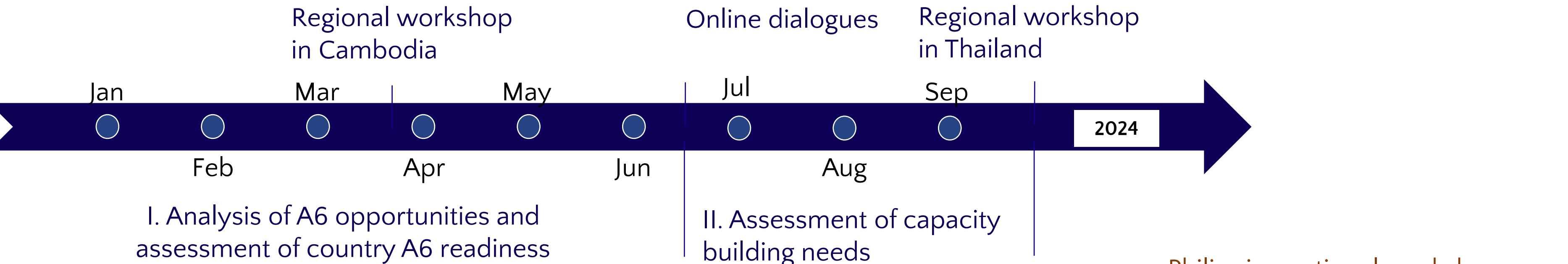
Ariel Yu, IGES

25 November 2025

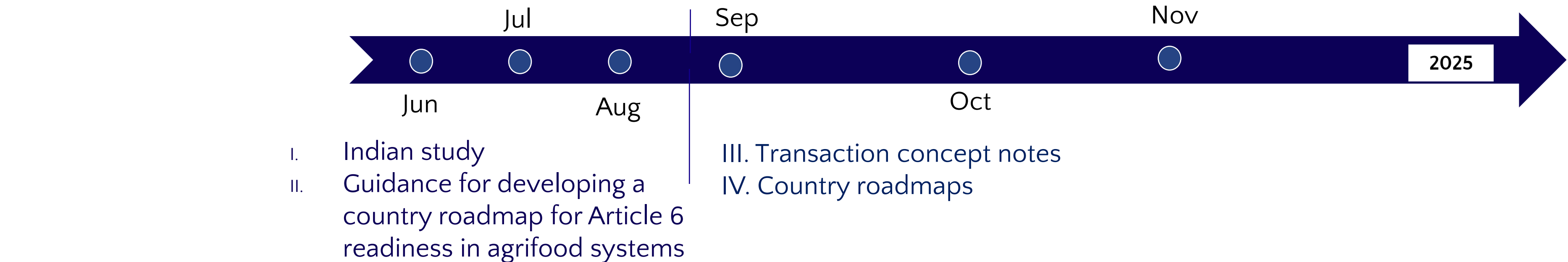
Project timeline

Target countries: Cambodia, India, the Philippines, Thailand, and Vietnam

Phase I



Phase II



Longlisted mitigation opportunities

NGHGI Sector	Activity	GHG Emitted			FAO	I. Rice and crop cultivation	II. Livestock	III. Agroforestry	IV. Agrivoltaics	V. Bioenergy	VII. Biochar	VIII. Post-farm gate			
		CH ₄	N ₂ O	CO ₂											
AFOLU	LULUCF	Forest Conversion to Other Land Uses and Burning Biomass	x	x	x	LAND USE CHANGE	AWD	Manure: biogas cover-flare	Agrosilvicultural	Open space (interface and overhead) for arable farming	Waste-to-Energy Conversion	Agricultural Applications	RE/EE/biogas capture in milling and refining of oil seeds, corn, sugar), drying, and food safety practices (i.e., sterilization and pasteurization)		
		Peat Fires	x		x										
		Drained Organic Soils	x		x										
	AGRICULTURE	FARM GATE	AGRICULTURAL LAND	Burning - Crop residues	x	x	FARM GATE	Site Specific Nutrient Management	Manure: biogas ADS with energy generation	Silvopastoral	Overhead and greenhouse for horticulture	Energy Efficiency Improvements	Non-agricultural Applications	Water treatment for wastewater or drinking water	
				Burning - Savanna	x	x									
				Crop Residues		x									
				Drained Organic Soils		x									
				Enteric Fermentation	x										
				Manure Management	x	x									
				Manure Applied to Soils		x									
				Manure Left on Pasture		x									
				Rice Cultivation	x										
				Synthetic Fertilizers		x									
ENERGY AND IPPU	PRE AND POST PRODUCTION	FOOD SYSTEM	On-farm Energy Use	x	x	x	Straw & Stubble Management	Manure: stockpile aeration and composting	Agrosilvopastoral	Closed space (greenhouse and opaque buildings) for fish, algae	Biogas Utilization	Biofuel	Solar drying		
			Food Transport	x	x	x									
			Processing	x	x	x									
			Packaging	x	x	x									
			Refrigeration	x	x	x									
			Retail	x	x	x									
			Cooking	x	x	x									
Fertilizer manufacturing and other pre-production	x	x	x												
WASTE	PRE AND POST PRODUCTION	FOOD SYSTEM	Solid Food Waste	x			Direct seeding of rice	Manure: Urease/nitrification inhibitors	Opaque buildings for mushrooms	Mineral carbonation	Ocean storage	Preventing Soil Erosion	Food refrigeration		
			Incineration			x									
			Industrial Wastewater	x	x										
			Domestic Wastewater	x	x										

Translate

Note: Not consistent with IPCC categorization or NDC sectors

Article 6 transaction concept notes

Investment-ready

Concept stage

Alternate Wetting and Drying (AWD)

Biochar

Manure management

Agroforestry/ Silvopasture

Regenerative agriculture



Article 6 project type

Reduction

Novel removal

Reduction

Adaptation with mitigation co-benefits

Traditional removal

Methodology.

- CDM AMS-III.AU
- Verra VM0051
- Gold Standard
- Social Carbon SCM0002
- T-VER-P-Tool-0-13
- JCM PH_AM004

- Verra
- Climate Action Reserve
- Puro.earth
- Global C-Sink Registry
- Isometric
- T-VER-P-METH-14-03

Technology leapfrog: Household application → grid electricity generation

Permanence risk

Potential buyer

Japan

Private companies in Singapore and Japan

Cambodia country Article 6 readiness roadmap



Front-end is ready

Article 6 strategy

- Strategic role of Article 6
- Improvements on agrifood-specific positive list
- Improvements on fee structure

Article 6 authorization arrangements

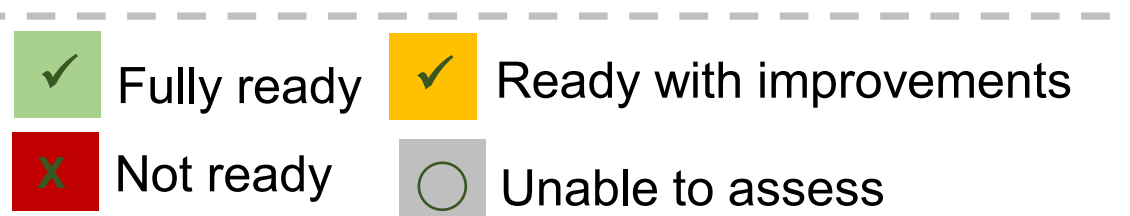
- Regulatory and legislative framework
- Clarification of legal rights of carbon credits
- Standardized templates, forms

ITMO generation and transferring

- Bilateral agreements
- Methods for corresponding adjustments

Article 6 registry and MRV systems

- N-CCR launched
- DALRM Digitalization
- CASDP Digitalization



Institutional and technical readiness

Institutional readiness

- A dedicated agrifood technical team, responsible for rule setting, gatekeeping, inter- & intra- ministerial coordination, and capacity building
- An independent grievance redress mechanism office
- A project development unit

Technical readiness

- Carbon market literacy
- d-MRV and data management
- Benefit-sharing mechanism
- Private sector engagement

A6 pilot transactions

- AWD
- Biochar

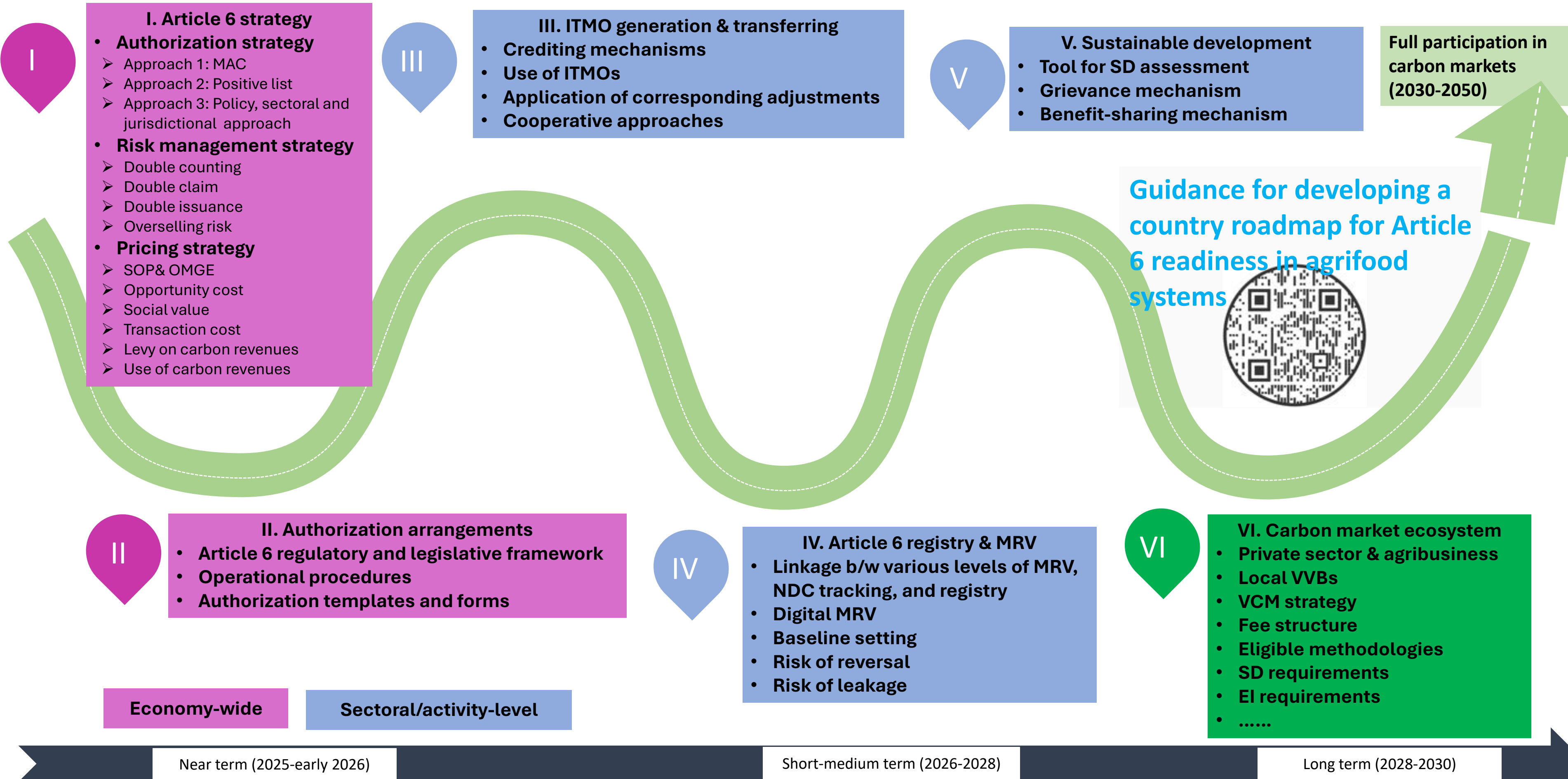
Other opportunities

- Manure management
- Agroforestry
- Regenerative agriculture

Policy approach

- Large-scale government-led projects

Roadmap for Article 6 Readiness in Agrifood Systems



I. Article 6 strategy

- **Authorization strategy**
 - Approach 1: MAC
 - Approach 2: Positive list
 - Approach 3: Policy, sectoral and jurisdictional approach
- **Risk management strategy**
 - Double counting
 - Double claim
 - Double issuance
 - Overselling risk
- **Pricing strategy**
 - SOP& OMGE
 - Opportunity cost
 - Social value
 - Transaction cost
 - Levy on carbon revenues
 - Use of carbon revenues

III. ITMO generation & transferring

- **Crediting mechanisms**
- **Use of ITMOs**
- **Application of corresponding adjustments**
- **Cooperative approaches**

V. Sustainable development

- **Tool for SD assessment**
- **Grievance mechanism**
- **Benefit-sharing mechanism**

Full participation in carbon markets (2030-2050)

Guidance for developing a country roadmap for Article 6 readiness in agrifood systems



II. Authorization arrangements

- **Article 6 regulatory and legislative framework**
- **Operational procedures**
- **Authorization templates and forms**

IV. Article 6 registry & MRV

- **Linkage b/w various levels of MRV, NDC tracking, and registry**
- **Digital MRV**
- **Baseline setting**
- **Risk of reversal**
- **Risk of leakage**

VI. Carbon market ecosystem

- **Private sector & agribusiness**
- **Local VVBs**
- **VCM strategy**
- **Fee structure**
- **Eligible methodologies**
- **SD requirements**
- **EI requirements**
-

Economy-wide

Sectoral/activity-level

Near term (2025-early 2026)

Short-medium term (2026-2028)

Long term (2028-2030)

Business match-making



Country roadmap development



Thank you

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RCC Asia and the Pacific

Collaboration for Climate Action



Securing our Food, Forever

Technical Workshop on Cross Linkages Among Food System Actors and Aligning Food Systems in National Adaptation Plans (NAPs) and Nationally Determined Contributions (NDCs)

November 2025

Crop Trust works with over 120 organizations in 48+ countries to conserve crop diversity

The Crop Trust's work in support of genebanks globally

Established

2004 under international law

Our main contributors

Governments and Foundations

Policy

International agreement, backed by 150 countries + EU





2004

June - The International Treaty on Plant Genetic Resources for Food and Agriculture came into force.

October - The Crop Trust was established by Bioversity International on behalf of the CGIAR & the UN FAO to help support the global system of crop diversity conservation.



Our Mission

The Crop Trust is an international organization dedicated to conserving and making crop diversity available for use globally, forever and for the benefit of everyone.



Our Vision

Our vision is a world where plant genetic resources for food and agriculture are conserved and available in perpetuity to achieve sustainable agriculture and global food and nutrition security.

What is a genebank?

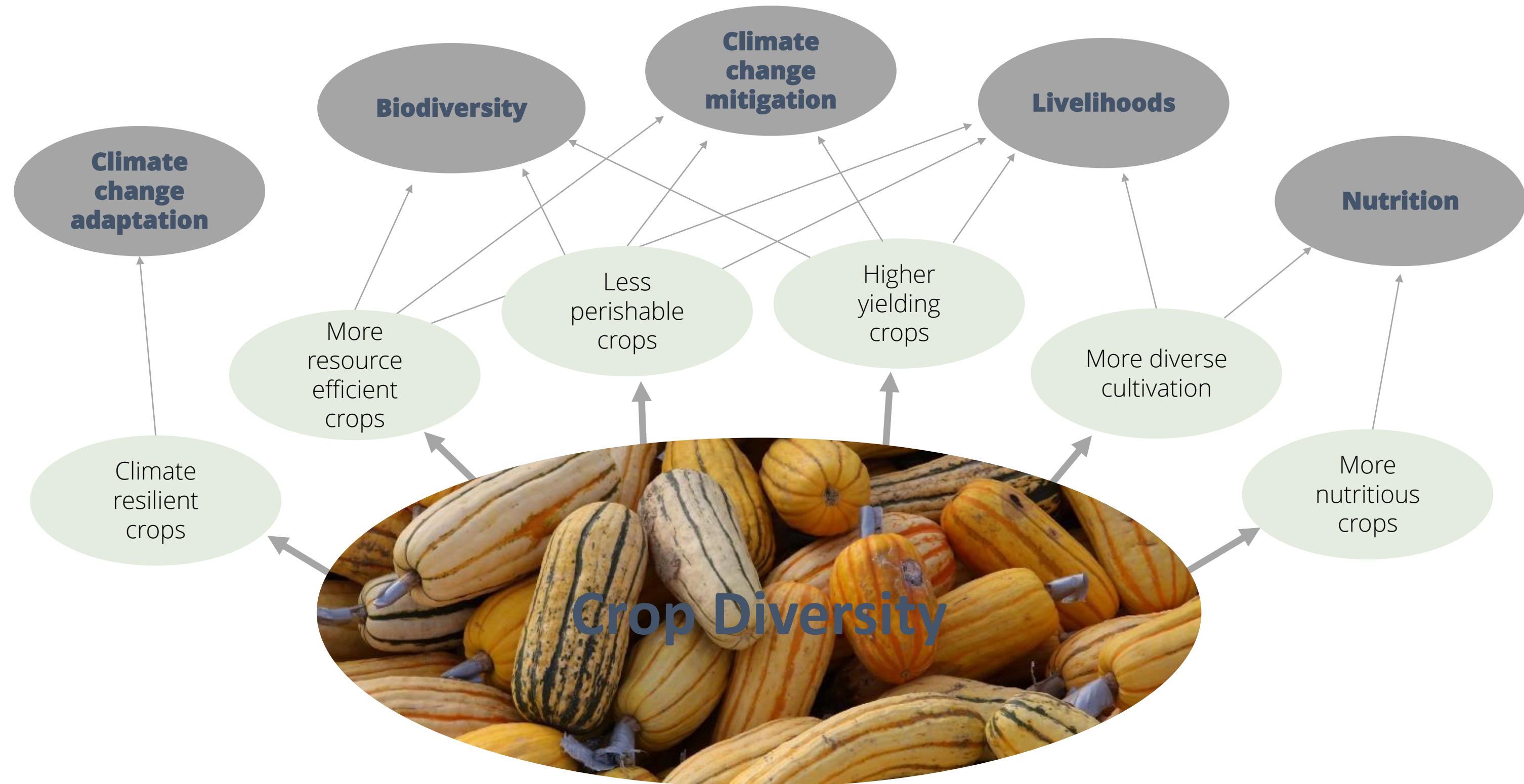
Specific genes are what make a crop variety resistant to heat and drought or tolerant of pests and diseases, and are, therefore, the basis of agricultural adaptation.

Genebanks ensure that these genetic materials are safely conserved and available for people to use



Plant breeders and farmers can draw on genebanks in their search for particular traits that they need.

Why crop diversity is crucial for a resilient food supply



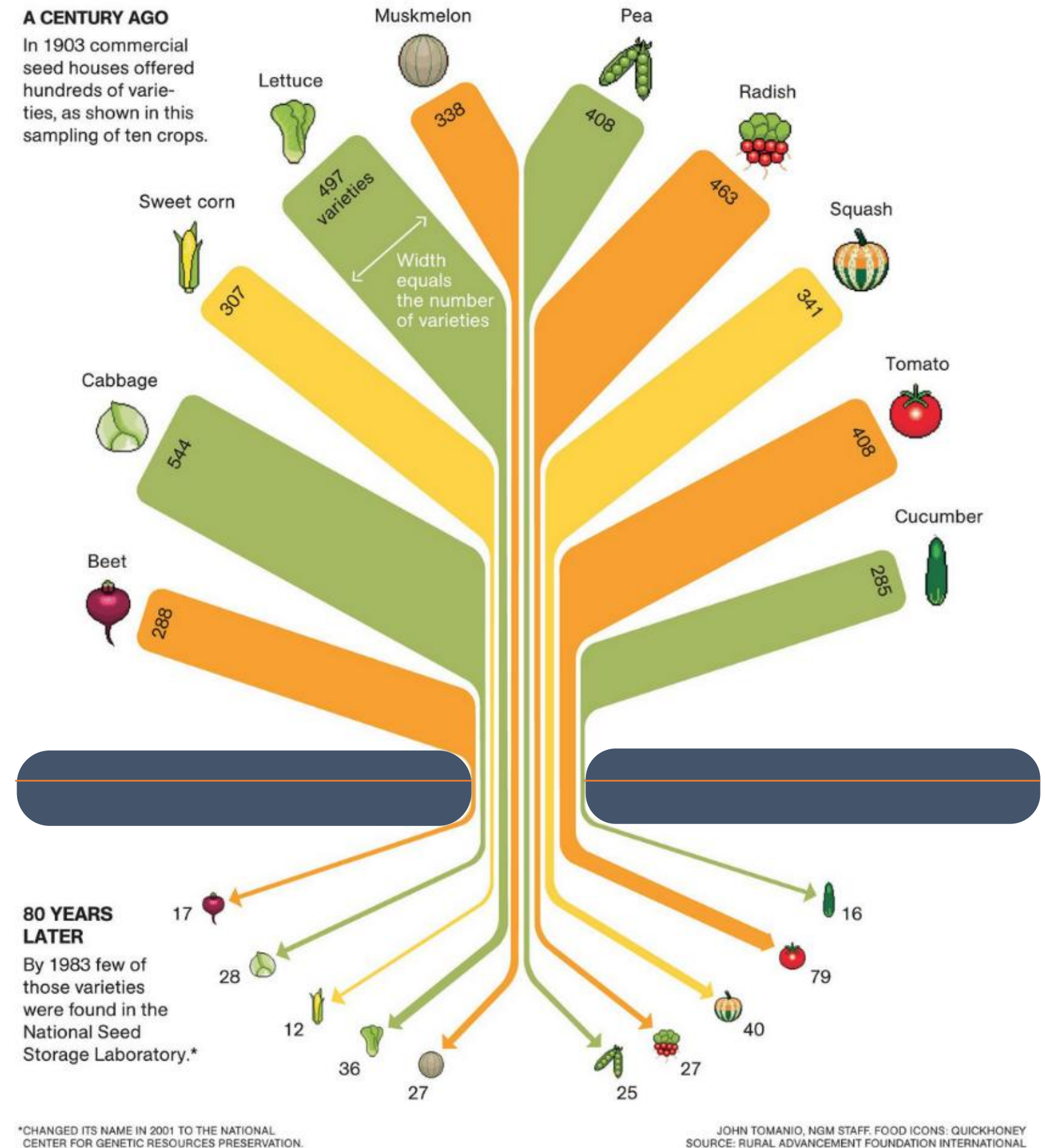
Loss of biodiversity is real

In review of hundreds of scientific papers on genetic erosion almost 80% of studies found evidence of loss.

At least 90% of vegetable varieties in the US have gone extinct since 1903.

Of the more than 1,000 apple varieties that used to be grown in Europe, only six varieties are the source of apples grown commercially today.
Of the 125 species of coffee, only two are economically cultivated today: Arabica and Robusta.

Countless other examples of such 'genetic erosion' are also reported from other crops.



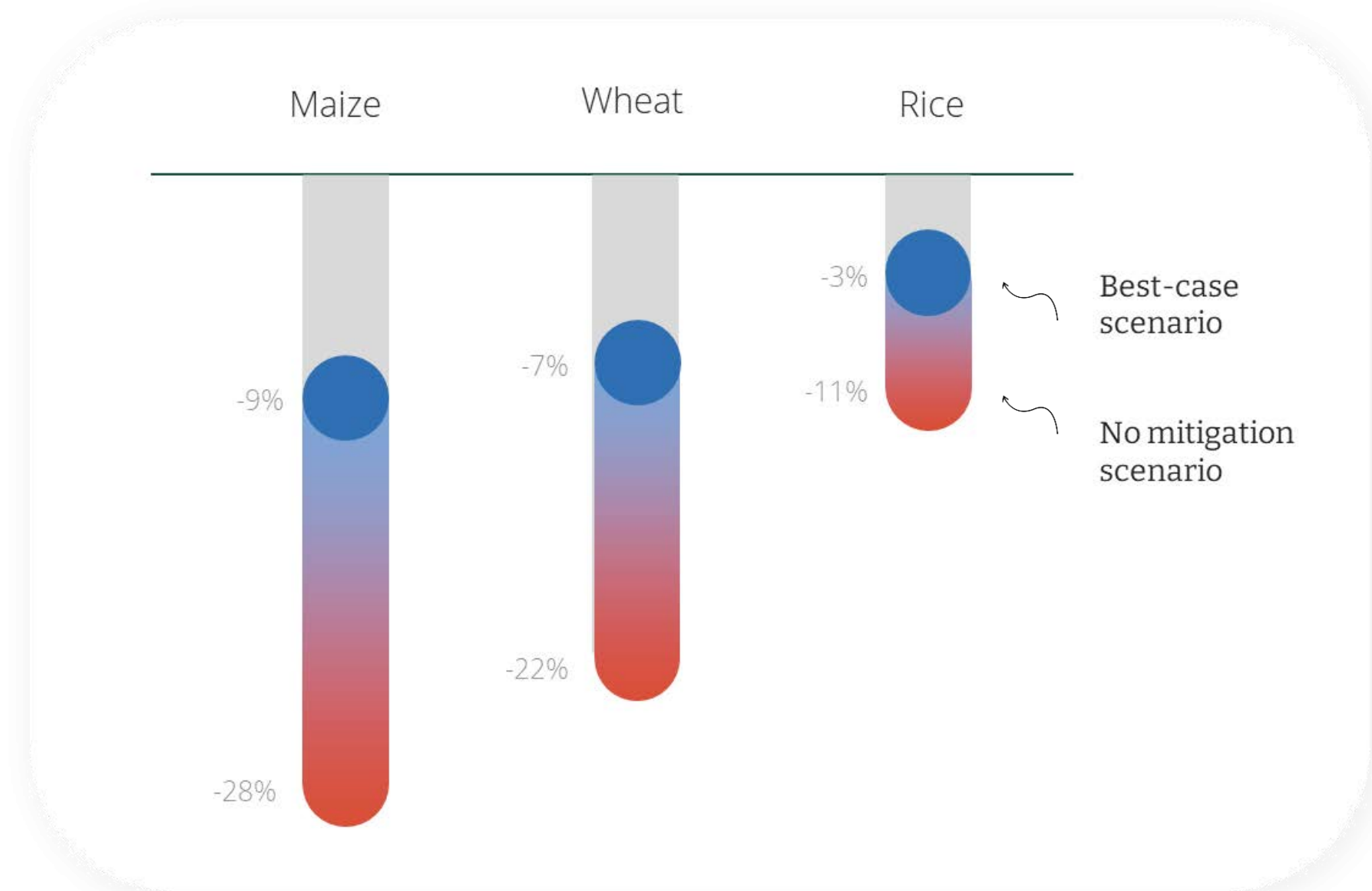
Our food system is under threat

50%

of our calories come from:

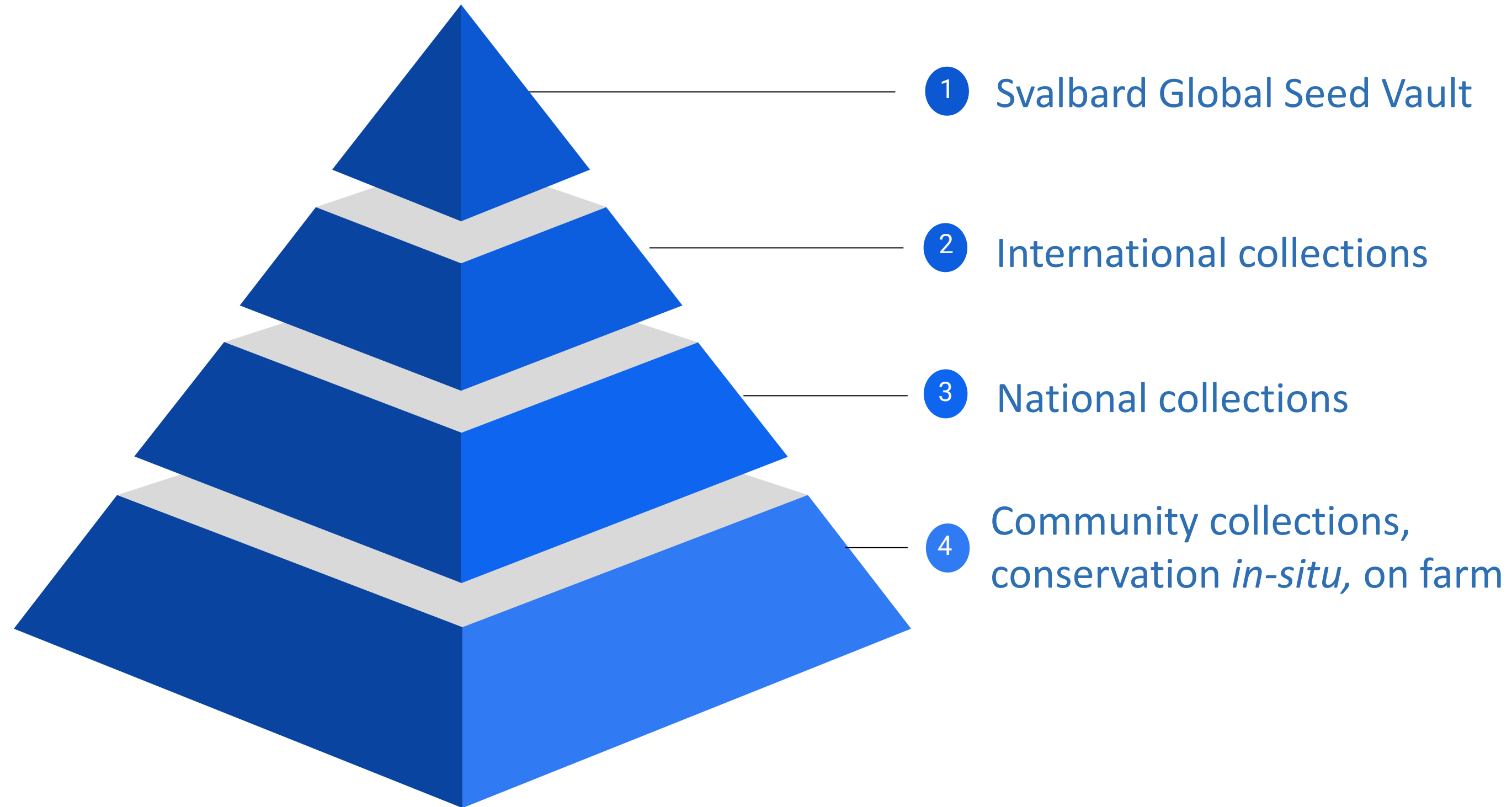
- rice
- wheat
- maize

Global Crop Yield Loss By End Of Century Is Devastating Even In The Best-Case Scenario



Source: The Guardian. Temperature increase reduces global yields of major crops in four independent estimates by Zhao et al

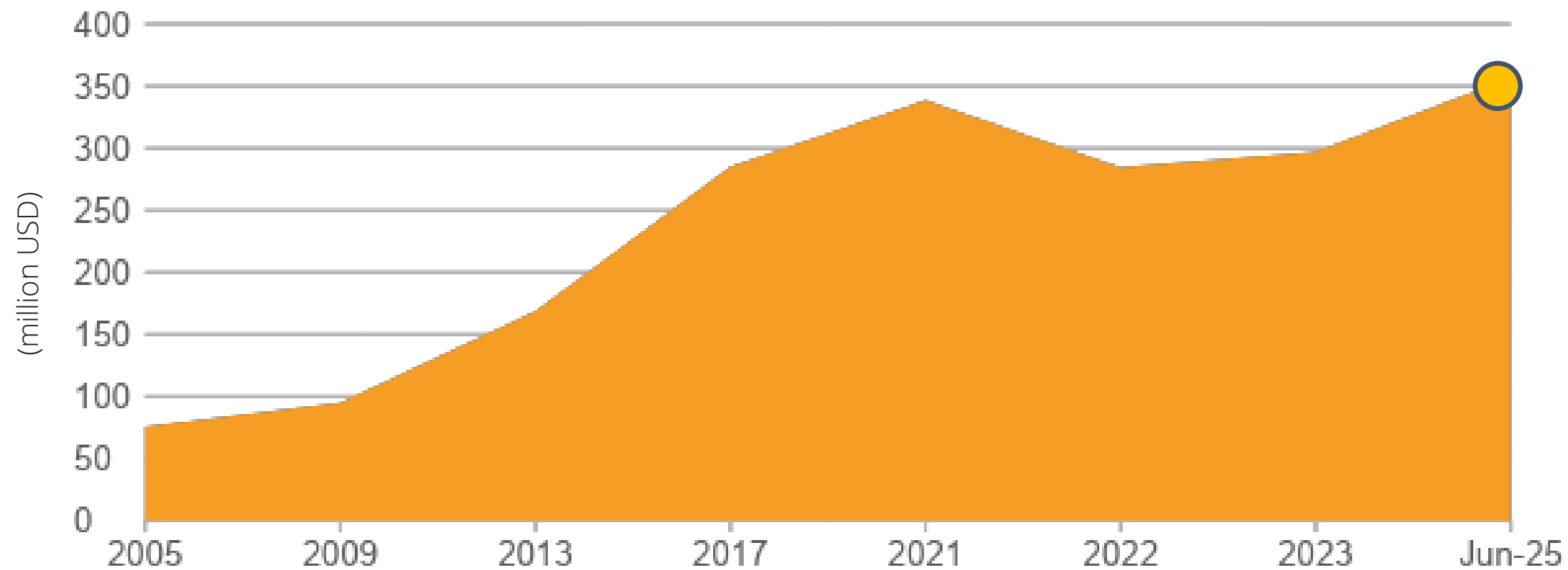
Global system of ex situ conservation



The Crop Diversity Endowment Fund

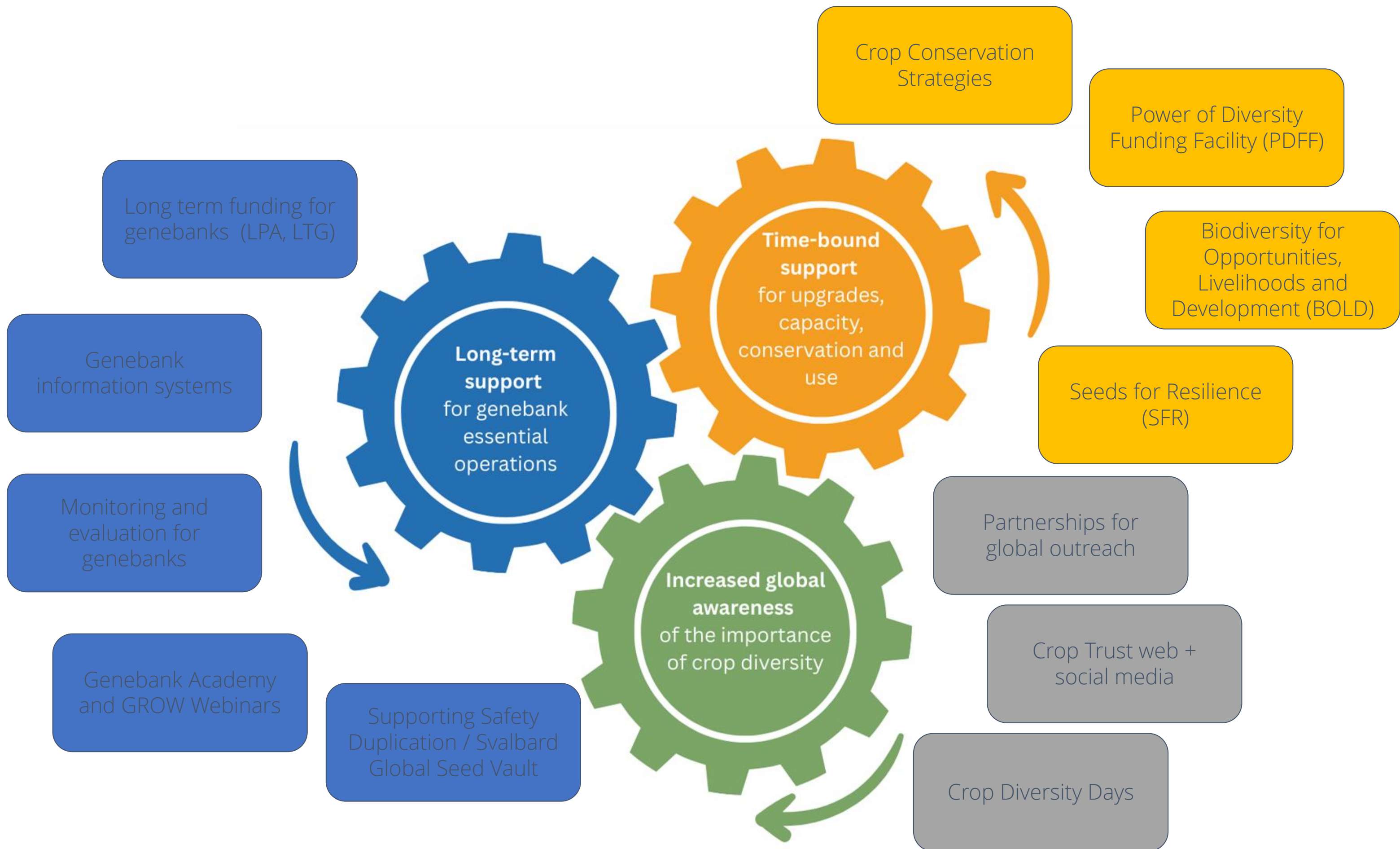


Our endowment



Our endowment model allows us to withdraw up to 4% annually to cover costs of genebanks.

Despite the withdrawal of USD \$95 million from the endowment, the market value of the endowment is greater than cumulative contributions.



Funding Genebanks

Long-term Grant (LTG):

A portion of the costs of essential operations (+ short-term upgrading funds to enable genebanks to attain performance targets)

Long-term Partnership Agreement (LPA):

Full costs of essential operations once genebanks have achieved performance targets



LPA Eligibility

Performance Targets (eligibility criteria for LPA):

- 90% accessions available
- 90% seed accessions safety duplicated
 - 50% clonal accessions in cryo-preservation
 - Intermediate target 90% accessions duplicated ***in vitro***
- 90% accessions documented
- Average Passport Data Completeness Index >6
- Agreed elements of a Quality Management System in place



Technical and System Support for Genebanks

Strategic system-wide support is needed to complement the assistance provided to individual genebanks.



Technical training and building community among genebanks:

- GOAL (Genebank Operations and Advanced Learning) workshops
- Quality Management Systems intensive trainings
- Quality Management Systems Community of Practice (QMS-CoP) meetings
- QMS audit program
- Genebank Resources on the Web (GROW) webinars



GOAL (Genebank Operations and Advanced Learning) workshop as part of the Seeds for Resilience (SfR) Project.

Information Systems

Genebank data and information systems are central to the effective conservation and use of plant genetic resources, and are a key focus of the Crop Trust's work.



Genesys

Genesys is the global portal for material held in the world's genebanks.

Genesys publishes data from over 500 genebanks in a standardised format for searching, downloading and analysis.



GRIN Global Community Edition

GRIN-Global Community Edition (GGCE) is a system that allows genebank staff to capture and use data in all genebank operations: from the acquisition, management, monitoring and evaluation of material in the collection, to its eventual distribution to clients

Topic:
 Organisation:
 Fee:
 Language:
 Keywords:

Displaying results 1 to 9 out of 36

1 2 3 4 >



Applied Plant Conservation

The Applied Plant Conservation Course is a free professional training designed for conservation professionals, land managers, and researchers...

Center for Plant Conservation | Self-Paced | Free



CGIAR Genebank Courses

A core part of CGIAR's work is strengthening the global genebanks community so that more people can access the crop diversity they need. The...

CGIAR Genebanks | Instructor-Led | Free



Conserving and Using Crop Diversity

The Crop Trust online experience – Conserving & Using Crop Diversity – is an interactive website where you can explore how the crops we eat are...

Crop Trust | Self-Paced | Free



Defining a Botanic Garden

This module is the first in the BGCI Botanic Garden Basics series and looks at how to define a botanic garden. This course is aimed to participants who...



Farmers' Rights in the International Treaty on PGRFA

The International Treaty on Plant Genetic Resources for Food and Agriculture addresses the



Genebank management relevant to pre-breeding

This course gives an overview of what it takes to establish and manage a genebank, providing an



Newly Launched!

The Genebank Academy is the Crop Trust's online learning platform dedicated to strengthening global capacity in genebank operations, management, and plant genetic resource conservation. We provide accessible, high-quality training to professionals, students, and researchers around the world who are working to safeguard crop diversity for future generations.

Svalbard Global Seed Vault

Constructed by the Norwegian government and opened in 2008

Managed by the Government of Norway, NordGen and the Crop Trust

- **Global back-up** facility for genebanks

Seeds stored at -18°C

Over 1.3 million samples from over **100 genebanks** and over **6,000 plant species** (capacity to store 4.5 million varieties of crops)



Crop Conservation Strategies (CCS)

Between 2004 and 2019, the Crop Trust has facilitated the development of 26 global crop- and geographically-based conservation strategies by experts round the world.

To stay relevant, these strategies need to be continuously updated with new information on the status of crop diversity collections and the genetic structure within crop genepools.

Information and recommendations from the strategies are used by institutions and policymakers to help ensure that these important crops and their genetic relatives are secured in a cost-effective and sustainable manner for the future of all.

CITRUS FOR EVERYONE, FOREVER



With support from



**Global Crop
Conservation
Strategies**

Biodiversity for Opportunities, Livelihoods and Development (BOLD)

The BOLD Project is a 10 year project that aims to tackle the impact of climate change on food and nutrition security by promoting the conservation and use of crop diversity.

The project, led by the Crop Trust and funded by the Government of Norway, extends the efforts of the Crop Wild Relatives (CWR) Project (2011–2021).

BOLD is working with national genebanks in Africa, Asia and Latin America to strengthen their capacity to manage, document, conserve and back up the crop diversity that they hold.



Seeds For Resilience (SFR)

The Seeds for Resilience project supports five national genebanks in Africa, in Ethiopia, Ghana, Kenya, Nigeria and Zambia.

The project will upgrade genebank equipment and improve internal processes and increase staff technical capacity.

In addition, it will ensure that collections are safely backed up, data on seed samples are well documented and samples from seed collections are shared according to agreed international rules.



Power of Diversity Funding Facility (PDFF)

The Power of Diversity Funding Facility (PDFF) is a multi-donor initiative managed by the Crop Trust, dedicated to conserving, cultivating and promoting the consumption of relatively neglected opportunity crops across Africa, Asia, the Pacific, and Latin America and the Caribbean.

These crops have immense, but largely underrealized, potential to diversify global food systems, enhance food and nutritional security, and strengthen climate resilience.

Currently, the funding facility is funding work on 13 priority opportunity crops across seven countries: Colombia, Kenya, India, Nigeria, Tanzania, Uganda and Zambia.





Thank you.

Dr Julianne Biddle
Partnerships Lead
julianne.biddle@croptrust.org

CONFIDENTIAL



Food and Agriculture
Organization of the
United Nations



SCALA's Approach to move from planning to implementation

Workshop on cross-linkages among food systems actors and aligning food Systems
in NDCs and NAPs

Bangkok, 25 November 2025





Challenges

Despite high political ambition and country action, **progress is slow in the implementation of climate pledges, NDCs and NAPs in agrifood systems.**

This is due to **barriers to implementation** like

- information asymmetry
- institutional capacity gaps
- weak mobilization of finance and de-risking of investments

Scientific evidence highlights the urgent need to address the significant impacts of climate change on agrifood systems and to reduce GHG emissions from agrifood systems.

Transformative change in agriculture and food systems appears to be economically and technically feasible. However, change will only come about if supported by appropriate policies, institutional frameworks and investment finance mechanisms.
(IPCC Special Report on Global Warming of 1.5°C, 2018)



Moving from planning to implementation

STRENGTHEN ALIGNMENTS



- Integrate planning and policy cycles, consultations, and coordinating mechanisms across sectors and levels

BUILD THE CASE FOR INVESTMENT



- Strengthen the evidence base (CRVA, appraisal of options, economic and financial analyses)

DEVELOP CAPACITIES



- Build institutional, organizational and individual capacity across the adaptation cycle

MORE INCLUSIVENESS



- Ensure participation of women, youth, indigenous people and a whole-of-society approach

MONITOR AND LEARN



- Define metrics, set up MEL systems aligned with development M&E systems, monitor and learn from best practices

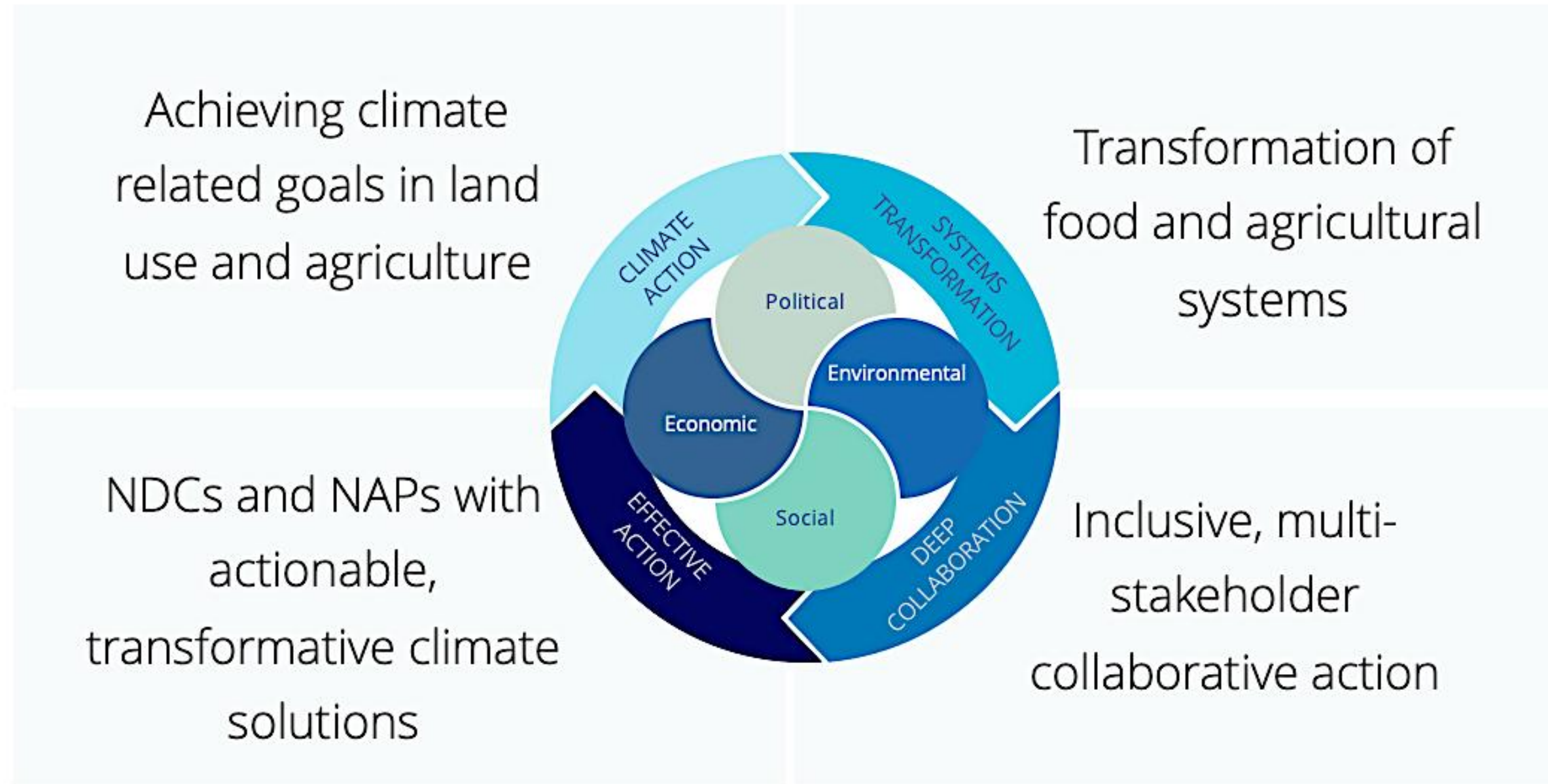
SCALE UP FINANCE



- Formulate adaptation financing frameworks and investment strategies
- Integrate adaptation into budgeting
- Increase private sector engagement



Why was SCALA designed?



A 'systems view' of the SCALA Programme



Building the evidence base



Identify actionable and investment-ready climate actions to enhance the adaptive capacity and resilience of smallholder farmers in five farming systems of Uganda's cattle corridor

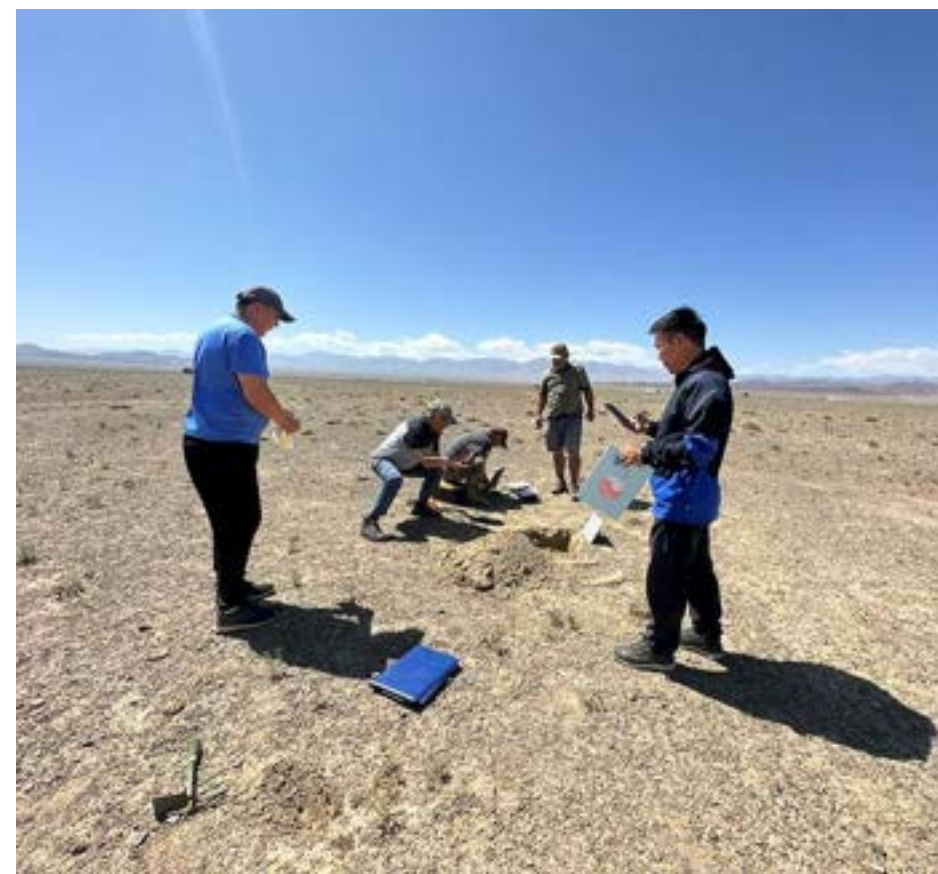


Analyze value chains of key forest-risk commodities in the climate-vulnerable province of Stung Treng in Cambodia

- Based on priorities derived from NDCs and NAPs, participatory systems-level assessment are carried out to build an evidence base for risk-informed policy making.
- The findings support the implementation of NDC and NAP goals by:
 - Informing national and local adaptation and development planning.
 - Helping attract private sector investment by shaping project concept notes and de-risking strategies.

Strengthening the governance

- Governments are supported to:
 - integrate into their plans, budgets and monitoring systems
 - Strengthen and operationalize MRV and MEL systems
- The results of the systems-level assessments and SCALA activities further help inform the enhancement of climate ambition for the agriculture sector in NDCs (including NDC3.0) and NAPs.



Build stakeholders' capacity on gender-responsive climate budgeting for the agriculture sector in Mongolia



Facilitate the development of local-level NDC and NAP implementation plans in Ethiopia, and support their integration into local planning processes



Scaling up finance



Identify barriers to private sector engagement and de-risking solutions for Egypt's livestock and dairy sector through participatory methods

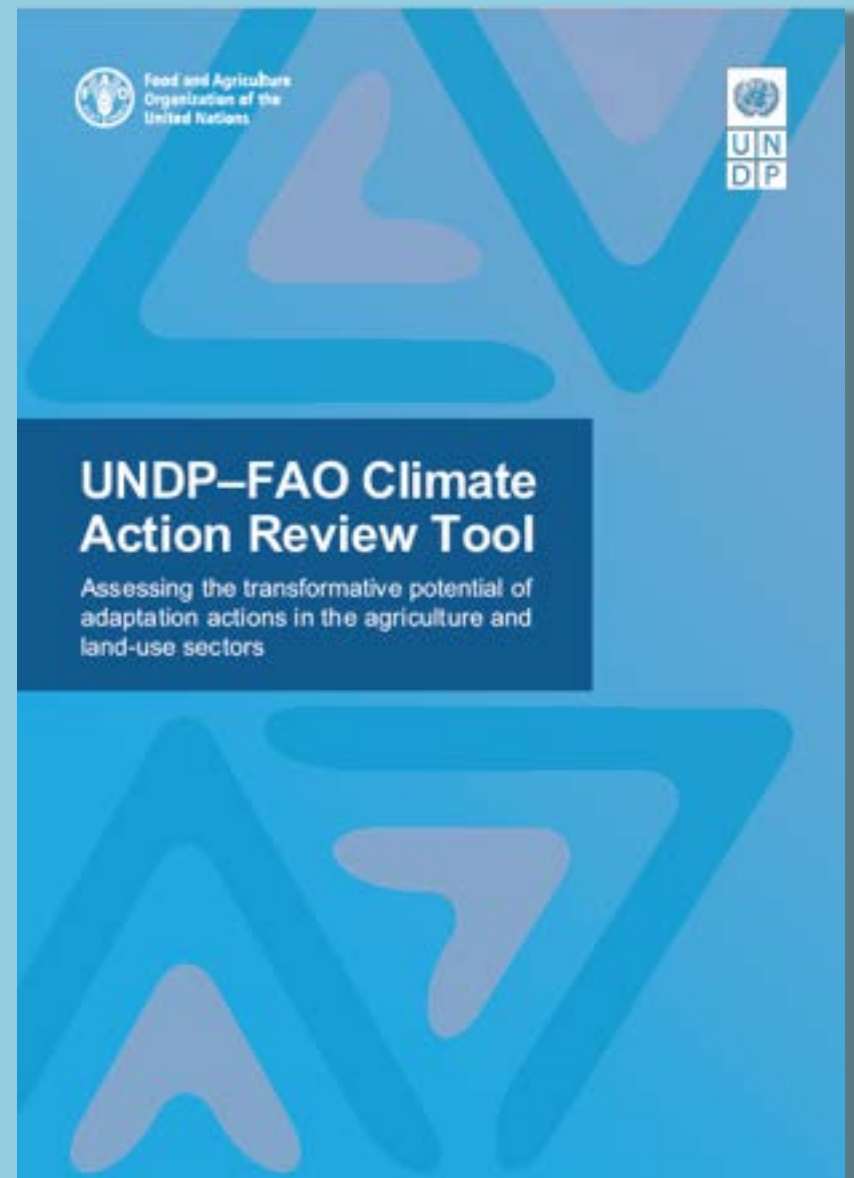


Pilot a certification for deforestation-free beef meat in Costa Rica, in collaboration with livestock farmers and corporations

- Designing participatory de-risking strategies to remove barriers to private engagement in NAP and NDC objectives.
- Developing project concept notes and helps build NAP/NDC project pipelines.



UNDP & FAO: The Climate Action Review Tool



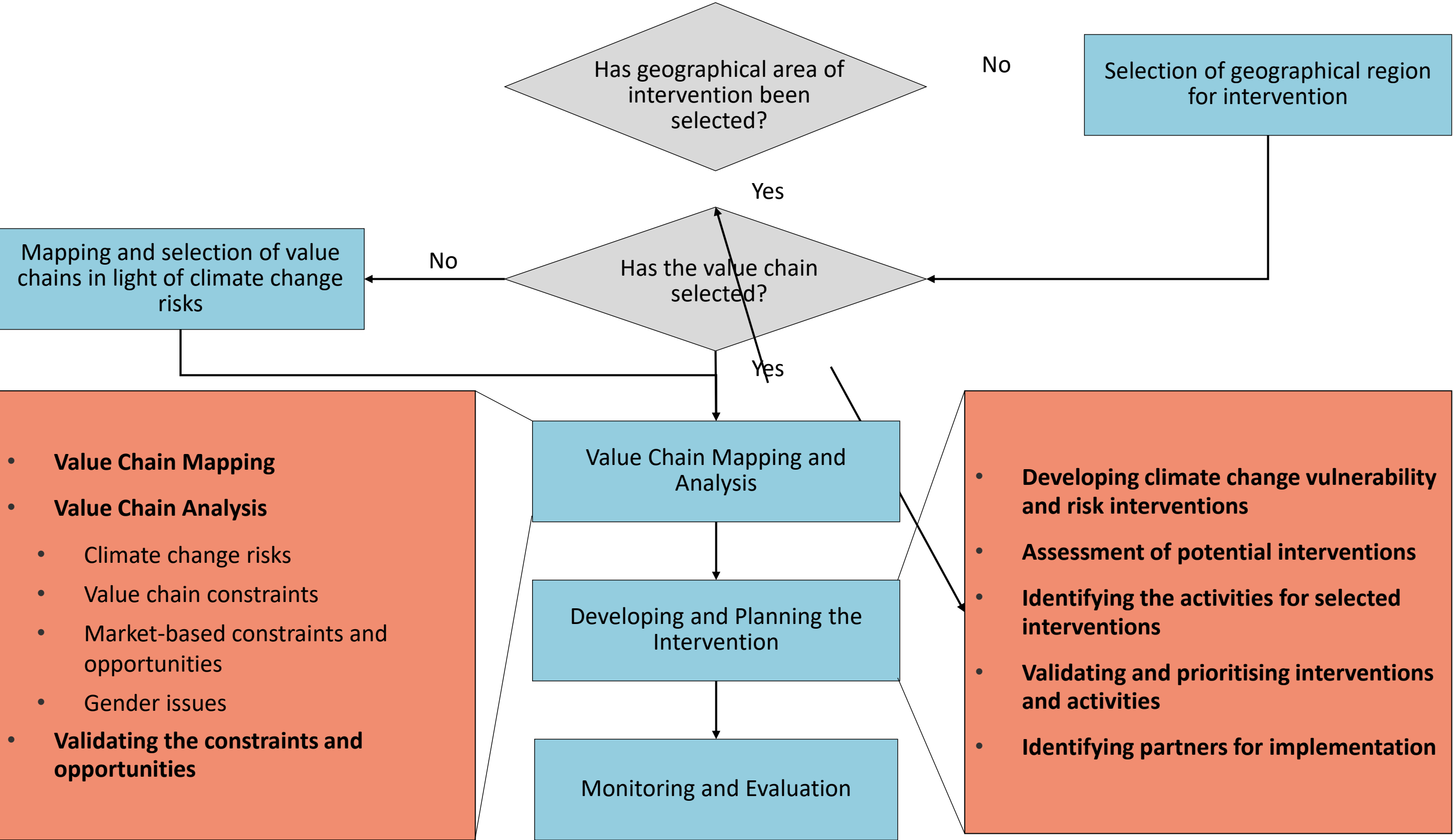
- The **UNDP–FAO Climate Action Review (CAR) Tool** aims to support adaptation planners and practitioners to accelerate transformative climate action in the agriculture and land-use sectors through **Multistakeholder Engagement**.
- The tool presents a practical, **step-by-step** approach that users can follow to identify actionable entry points for transformative change.

SCAN ME





Value Chain Toolkit Methodology





A step-by-step guide to strengthening PSE

Clarify Climate Action Context

Identify Opportunities, Key Entry Points
and Potential PS Partners

Analyze Barriers & Risks to PSE and
Identify De-risking Solutions

Engage PS into Public-Private Partnerships
and Investments

Design and Develop Project Documents



Adaptation Finance Strategy Guideline



Phase 1: Engagement and Data Collection

- Identifying adaptation targets by sector
- Collecting data on investment needs and financing flows



Phase 2: Investment Prioritization

- Prioritizing and costing sectoral adaptation investments (technical assessment)
- Developing business models and assessing financing demand (demand side)



Phase 3: Mapping and Matching Financing Needs and Sources

- Identifying potential sources of adaptation finance
- Designing financing instruments and enabling frameworks (supply side)



Phase 4: Operational Planning and Coordination for the AFS

- Consolidating and prioritizing investments into a multi-sector implementation plan
- Aligning financing supply and demand to develop the strategy



THANK YOU

<https://www.adaptation-undp.org/scala>

<https://www.fao.org/in-action/scala/en>

Contact me: julie.teng@undp.org

To file an independant complaint, please visit [this site](#).

Supported by:



based on a decision of
the German Bundestag



Genebank: Plant Genetic Resources Conservation and Use in the Lao PDR (LAOS)

Koukham Vilayheuang (PhD)

Laos National Genebank

NAFRI

koukhamv@gmail.com

<https://laosgenebank.la>; www.nafri.org.la

What about ?

- ❑ Introduction of genebank
- ❑ Germplasm evaluation and characterization

Where the LAOS is ?

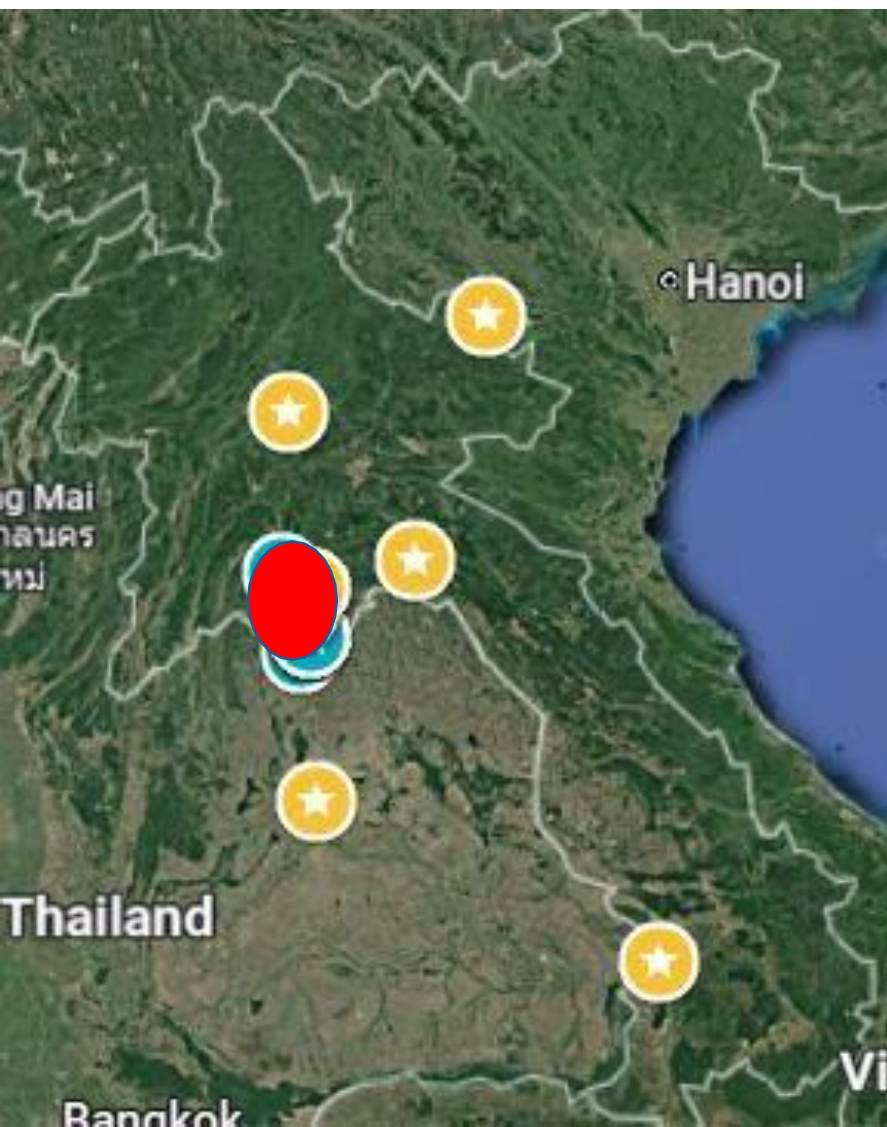
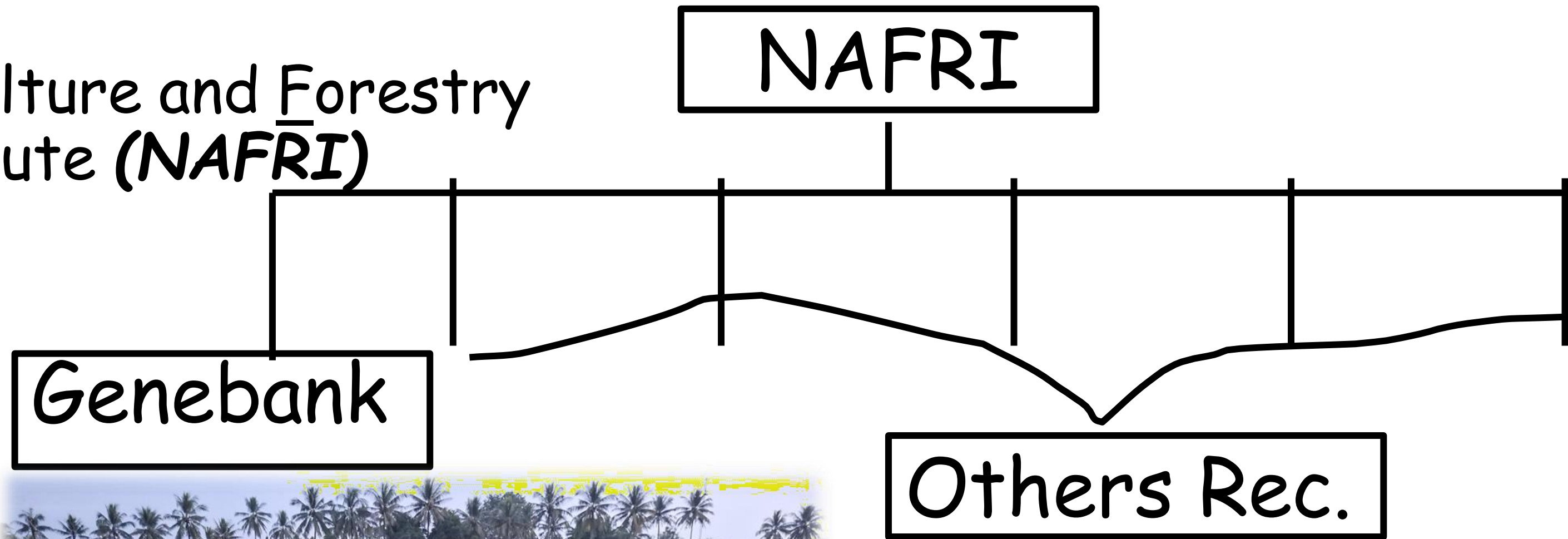
- ❑ Landlock in SEA, 1/10 ASEAN members.
- ❑ Pop: 8 million.
- ❑ Area: 236,800 km²



National Genebank

Organization:

- National Agriculture and Forestry Research Institute (*NAFRI*)
- 16 Res. Cents.



Mandate

- Survey, collect, conserve and use of PGR
- Serve 1/6 programs of NAFRI: Survel, Collect conserve and use



Laos National Genebank

- ❑ Loc: Vientiane, LAOS
- ❑ Establish: 1993(BD1),
2014 (BD2)



Medium term storage (5 °C)

Genebank and Collection

Crops	Number of Accs
Rice	14,682
Maize	106
Sorghum and Millet	635
Vegetables (eggplant, brassica, tomato...)	3,900
Tuber crops (Yam, Taro..)	42
Total	19,323





Characterization and Evaluation plots

Rice evaluation and characterization plot



Vegetable Germplasm Research



Vege. evalu. Plot in Horticultural Res. Center

Thank you for your attention



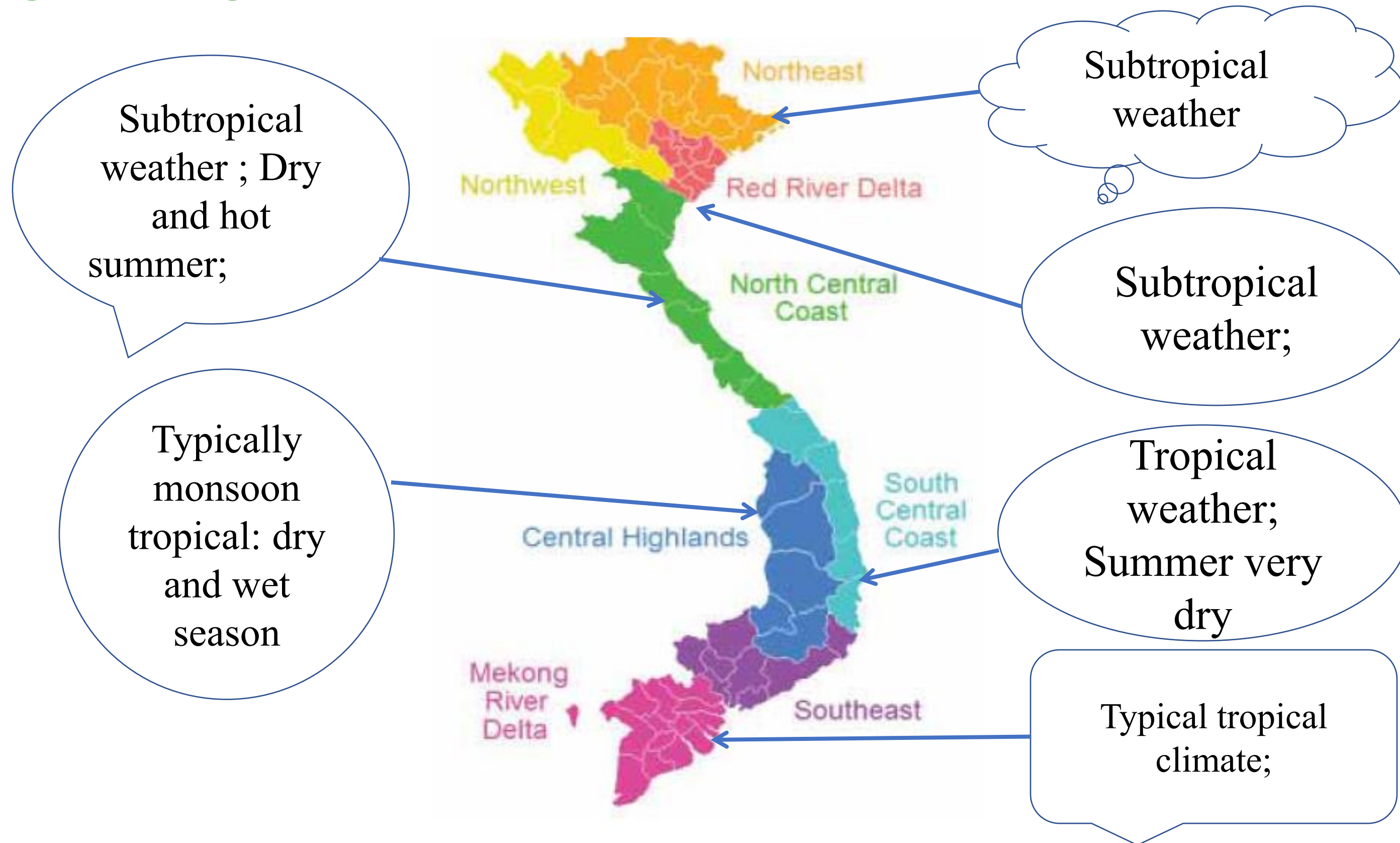
PLANT RESOURCES CONSERVATION IN VIETNAM

Presented by Vu Dang Toan
Plant Resources Center, VAAS, MARD

Vietnam

- Total population: 102 million
- Areas: 331.213 Sp. Km
- Land boder: China, Campodia, Laos
- Maritime boder: Thailand, Campodia, Philippines, Indonisia,

Ecological regions of Vietnam



Results: Germplasm collection

- 19 network members
- 38.000 accessions of more than 430 species of both local and exotic germplasm



Surveying and Collecting of plant genetics resources in Vietnam



National Genebank - Ex-situ Conservation



Seed Genebank: Over 28.000 accessions of 85 orthodox seed species



Field Genebank: Over 3.000 accessions of 32 vegetatively propagated crops



In-vitro Genebank
Over 600 accessions of stevia, taro, flowers gemplasms

On-farm Conservation



Characterisation and Evaluation



Morphological
characterization

Evaluation

Pest resistance

Drought tolerance

Flooding tolerance



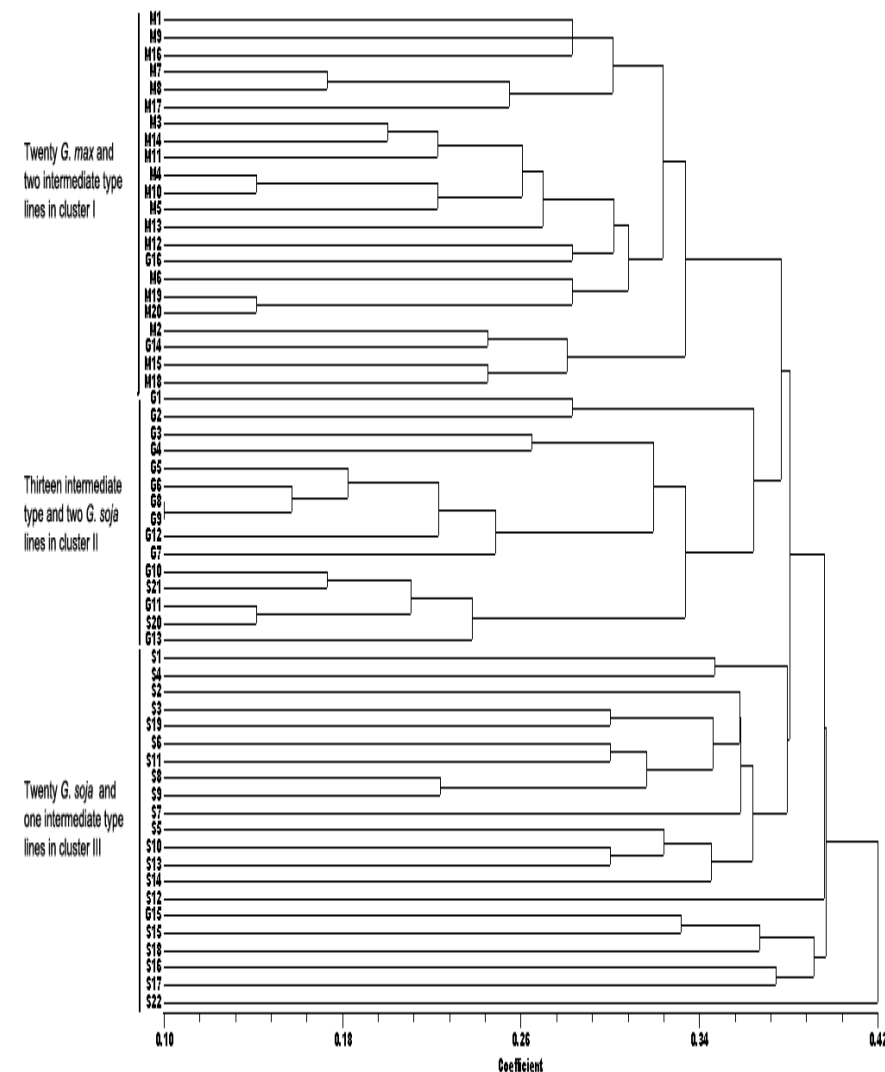
Adaptation analysis

Genetic diversity

Genomic

functioning

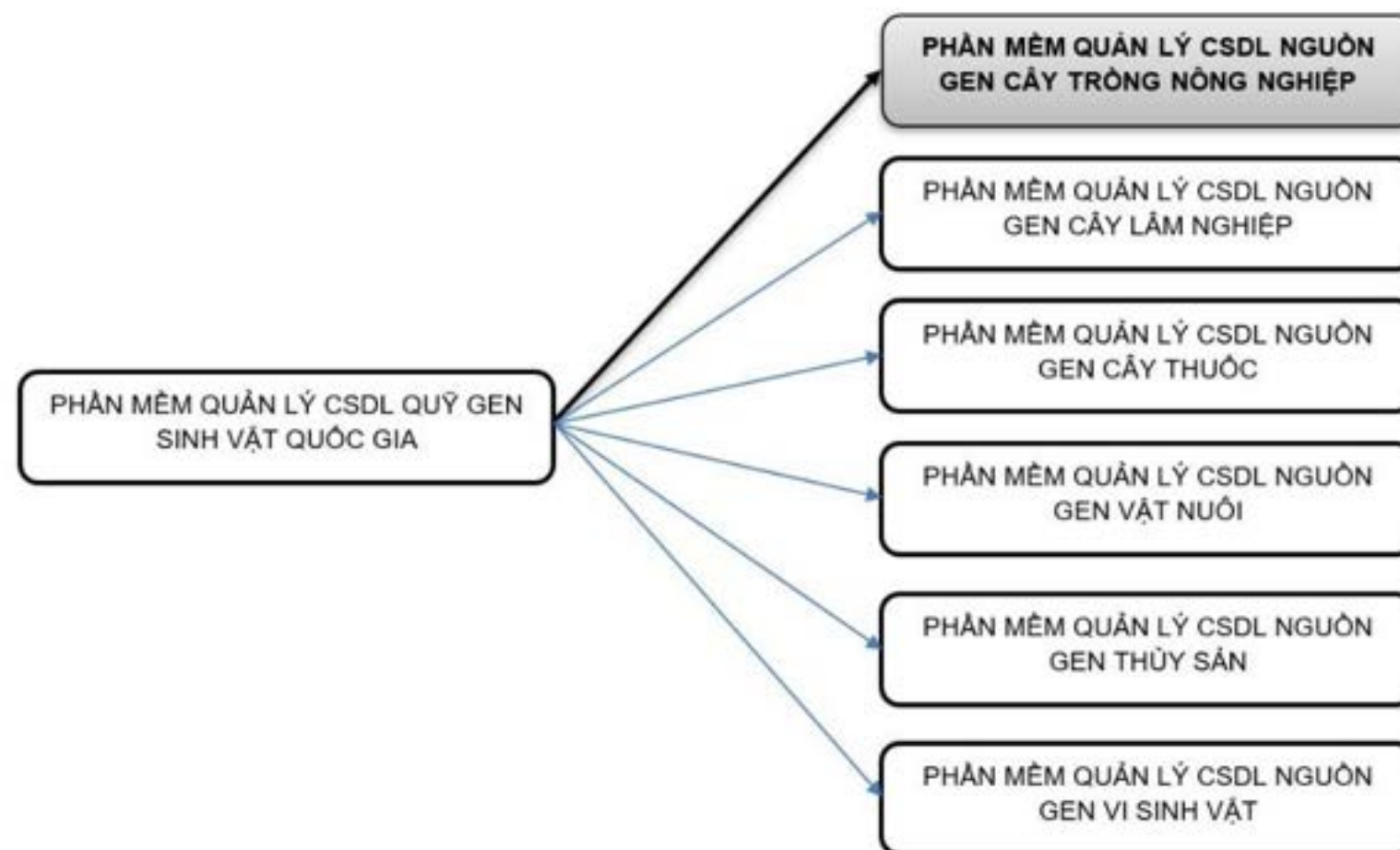
Gene mapping



Vu et al. 2013

Database of Vietnam Genetic Resources

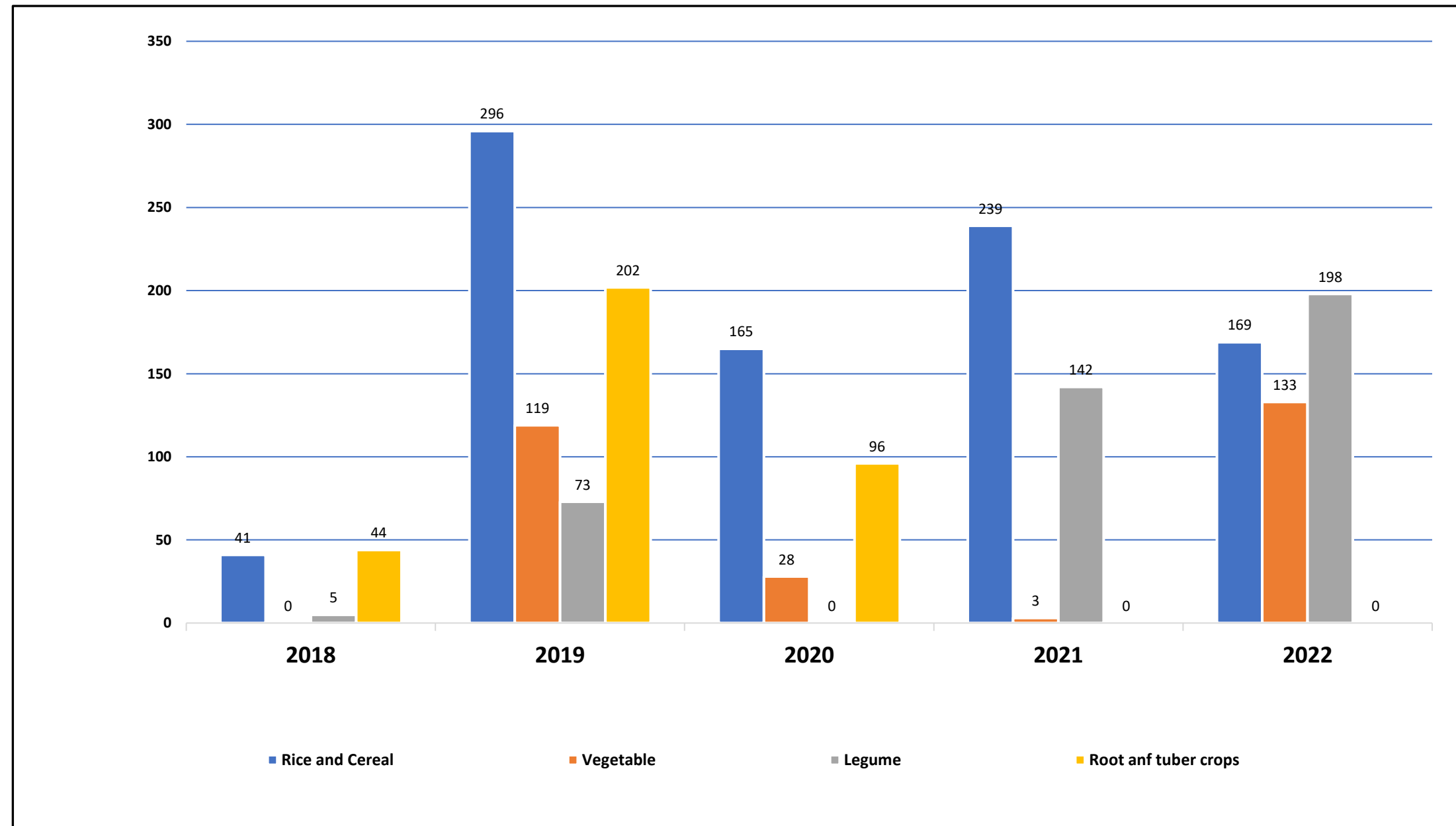
- Passport data: 39.640
- General information: 39.640
- Characterization: 55.551 record /26.755 sample
- Evaluation detail: quality (9.295), genetic diversity (2.023) resistant to pests and diseases (2.056) and drought and salt (1.190)



The screenshot shows a web-based form titled 'KHAI THÁC NGUỒN GEN'. The form is organized into several sections with input fields and checkboxes. Key fields include:

- Mã quốc gia** (Country code)
- Mã loài/giống** (Species/Breed code)
- Họ thông thường** (Common name)
- Tên địa phương** (Local name)
- Vùng sản xuất** (Production region)
- Tên** (Name)
- Tên khoa học** (Scientific name)
- Tên** (Name)
- Chức** (Position)
- Mức độ đe dọa** (Threat level)
- Phạm vi phân bố** (Distribution range)
- Lưu giữ đồng ruộng** (Field conservation) with 'Có' (Yes) and 'Không' (No) options.
- Lưu giữ nhà** (Home conservation) with 'Có' (Yes) and 'Không' (No) options.
- Lưu giữ vườn** (Garden conservation) with 'Có' (Yes) and 'Không' (No) options.
- Danh giá ban đầu** (Initial rating)
- Danh giá hiện tại** (Current rating)
- Danh giá CCDB** (CCDB rating) with 'Có' (Yes) and 'Không' (No) options.
- Danh giá CCDB** (CCDB rating) with 'Có' (Yes) and 'Không' (No) options.
- Đặc điểm nổi bật** (Notable features) with 'Có' (Yes) and 'Không' (No) options.
- Đặc điểm nổi bật** (Notable features) with 'Có' (Yes) and 'Không' (No) options.
- Ảnh mẫu gốc** (Original sample image) with 'Có' (Yes) and 'Không' (No) options.
- Mô tả nguồn gen** (Genetic resource description)
- Giá trị nguồn gen** (Genetic resource value)

Plant Distribution



- From 2011 to 2015, distributed 7038 accessions to users
- From 2018 to 2022 distributed more than 1950 accessions to users

Strengths and Weaknesses

- Strengths
 - High diversity of germplasm
 - Young Scientists, network member though the country
- Weaknesses
 - Characteration and Evaluation is still lack thus it makes the less available for users
 - Equipments is so old and broken.



THANK
YOU



The current status

The Plant Conservation/Genebank for Safeguarding Essential Crop Diversity in Thailand, 2025

Technical Workshop on Cross Linkages among Food Systems Actors and Aligning Food Systems in National Adaptation Plans and Nationally Determined Contributions

25-26 November 2025

JW Marriott Hotel Bangkok (Sukhumvit I, 3rd floor)

Kunyaporn Pipithsangchan
Plant Conservation Expert



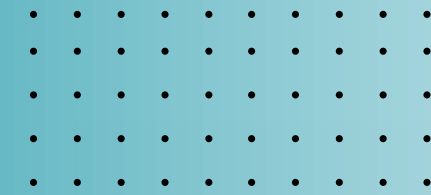


DOA
Genebank
Thailand



- ▶ DOA Genebank was established on 9 September 2002 by Her Royal Highness Princess Maha Chakri Sirindhorn
- ▶ Namely Sirindhorn Plant Genetic Resources Building
- ▶ Operated by Genebank Research and Development Group, Biotechnology Research and Development Office, Department of Agriculture
- ▶ Location: Rangsit-Nakorn Nayok Rd. (Klong 6) Rangsit, Thanyaburi, Pathumthani, Thailand

DOA Genebank's Facilities



ANTE ROOM (15°C)

- To adjust the seed condition before sending in or after picking out the storing rooms



DOA Genebank's Facilities

SEED DRYING ROOM (25°C, 15% RH)

- Room area : 32 sq.m.
- To reduce the seed moisture content without heat application



DOA Genebank's Facilities

MEDIUM-TERM STORAGE ROOM (5°C, 60% RH)

- Re-vitalization period : 5-10 years/every year
- Room area : 86 sq.m. & 24 m. height
- Storage capacity : 150,000 accessions
- Automated Bullet Crane System



DOA Genebank's Facilities

Long-TERM STORAGE ROOM (-10°C)

- Re-vitalization period : 50 years
- Room area : 76 sq.m.
- Storage capacity : 40,000 accessions
- Vacuumed aluminum foil packages



DOA Genebank's Facilities

In vitro CONSERVATION ROOM

- Three sections : tissue culture room, tissue transfer room, and media preparation room



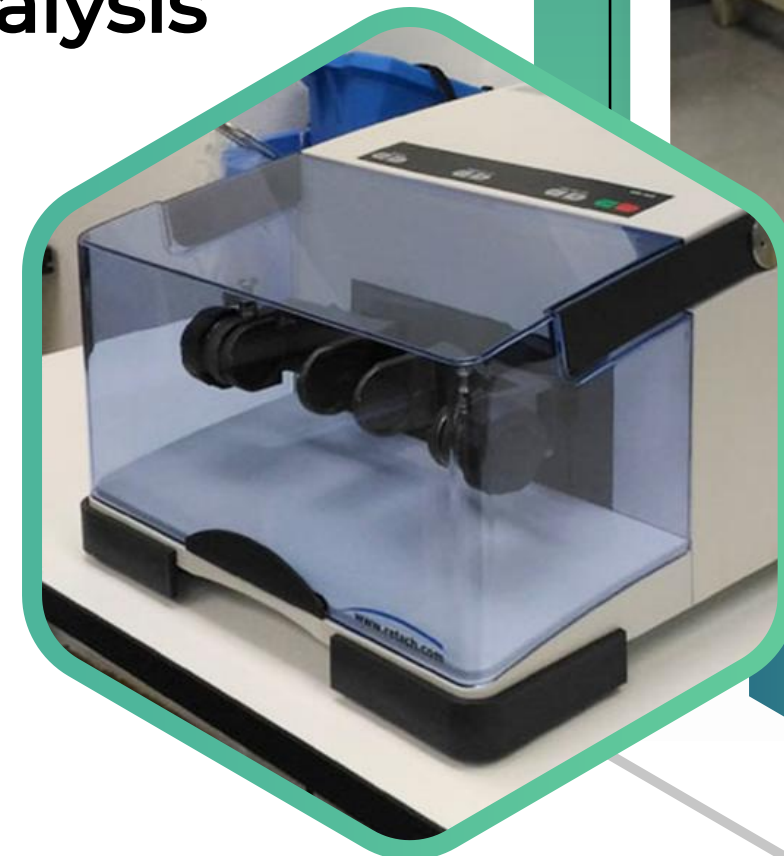
- To conserve rare plant species and plants that could not be stored in seed forms



DOA Genebank's Facilities

MOLECULAR LABORATORY ROOM

- Room area : 22 sq.m.
- To study plant genetics and plant phylogeny
- To support phytochemical analysis and microbiological work



DOA Genebank's Facilities : PGR Conservation



Seeds conserved in medium- and long-term storage rooms

- Seeds is allowed by the depositor to distribute their seeds (**DOA Code**)
- Seeds is in the processes for distribution services (**Pending**)
- Seeds is not allowed by the depositor to distribute their seeds(**Black-box**)



In vitro conservation

- Mostly research tasks.



Nursery and field collection



Seeds conserved in DOA Genebank

DOA Genebank is **allowed** by the depositor to distribute their seeds for services, breeding, research, etc. (DOA code)

Field crop (acc.)	
Cereals	25,097
Legumes	6,505
Oil crops	476
Fiber crops	601
Total	32,679

Horticultural plant (acc.)	
Vegetables	330
Flowers	30
Herbs	24
Trees	60
Total	444

Total 33,123 accessions

Data update: 24.11.2025



Seeds conserved in medium-term storage room: **Field crops**

Rice (accession)	
Native cultivar	17,169
Wild cultivar	1,081
RD/IR	210
Others	6,466
SCU	24,926



Seeds conserved in medium-term storage room: **Field crops**



Sesame

271 accessions



Safflower

71 accessions



Castor Bean

68 accessions



Rapeseed

22 accessions



Camelina

44 accessions

Oil Crops 476 accessions



Cotton

462 accessions



Jute

49 accessions



Roselle

36 accessions



Kenaf

54 accessions

Fiber crops 601 accessions



Seeds conserved in medium-term storage room :

Horticultural plants



Perilla Seed	Gourd	Pumpkin
Holy Basil	Basil	Shallot
Dill	Parsley	Cumin
Long Bean	Winged bean	Pea
Bolo Maka	Turkey Berry	Others

Seeds conserved in medium-term storage room :

Horticultural plants



Butterfly Pea
10 accessions



Sunflower
6 accessions



Garden Balsam
2 accessions



Others
12 accessions



Kapok
10 accessions



Broken Bones Tree
6 accessions



Others
44 accessions

Flowers 30 accessions

Trees 60 accessions



Hemp
4 accessions



Tobacco
3 accessions



Ringworm Bush
2 accessions



Kariyat
2 accessions

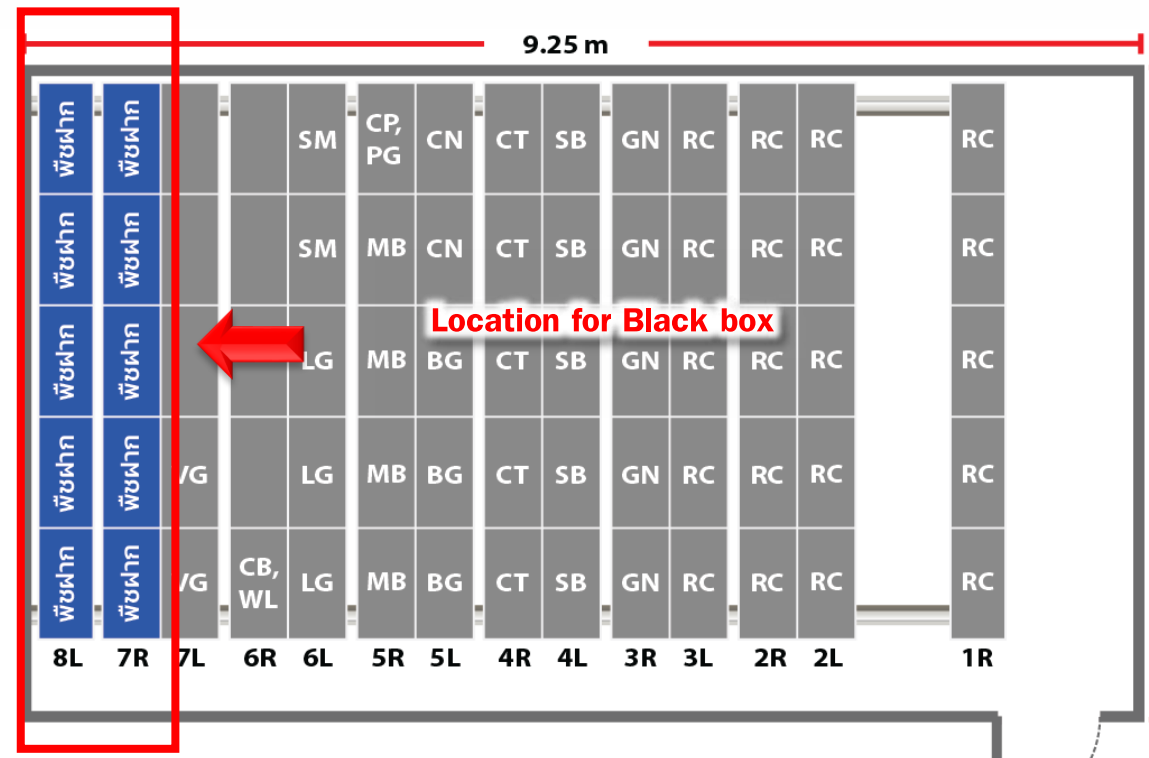


Others
13 accessions

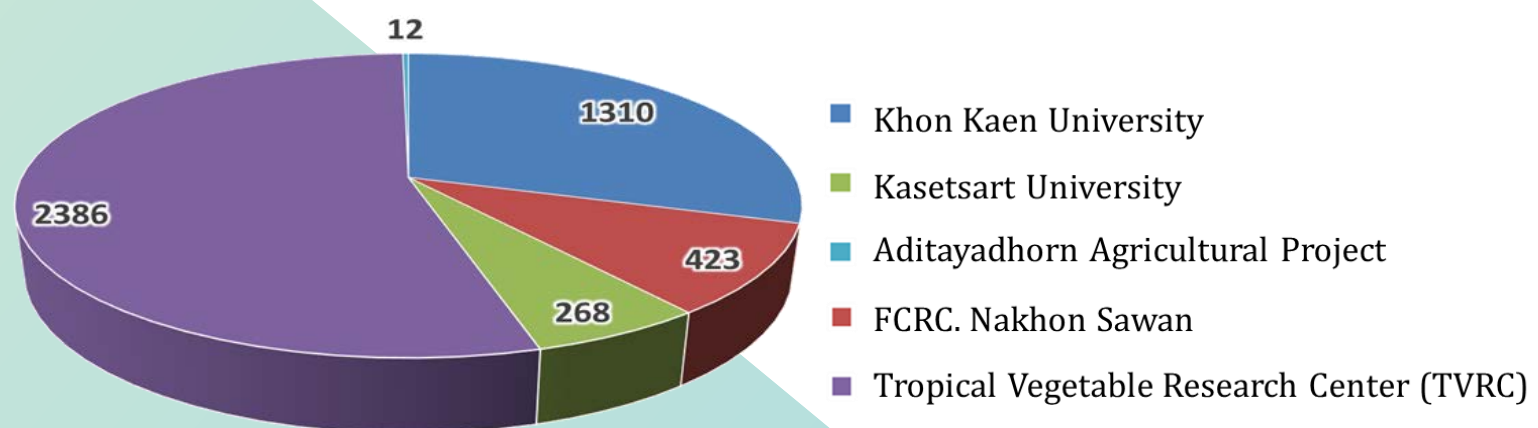
Medicinal plants 24 accessions

Seeds conserved in long-term storage room : **Black-box**

DOA Genebank is **not allowed** by the depositor to distribute their seeds for services, breeding, research, etc. (Black-box)



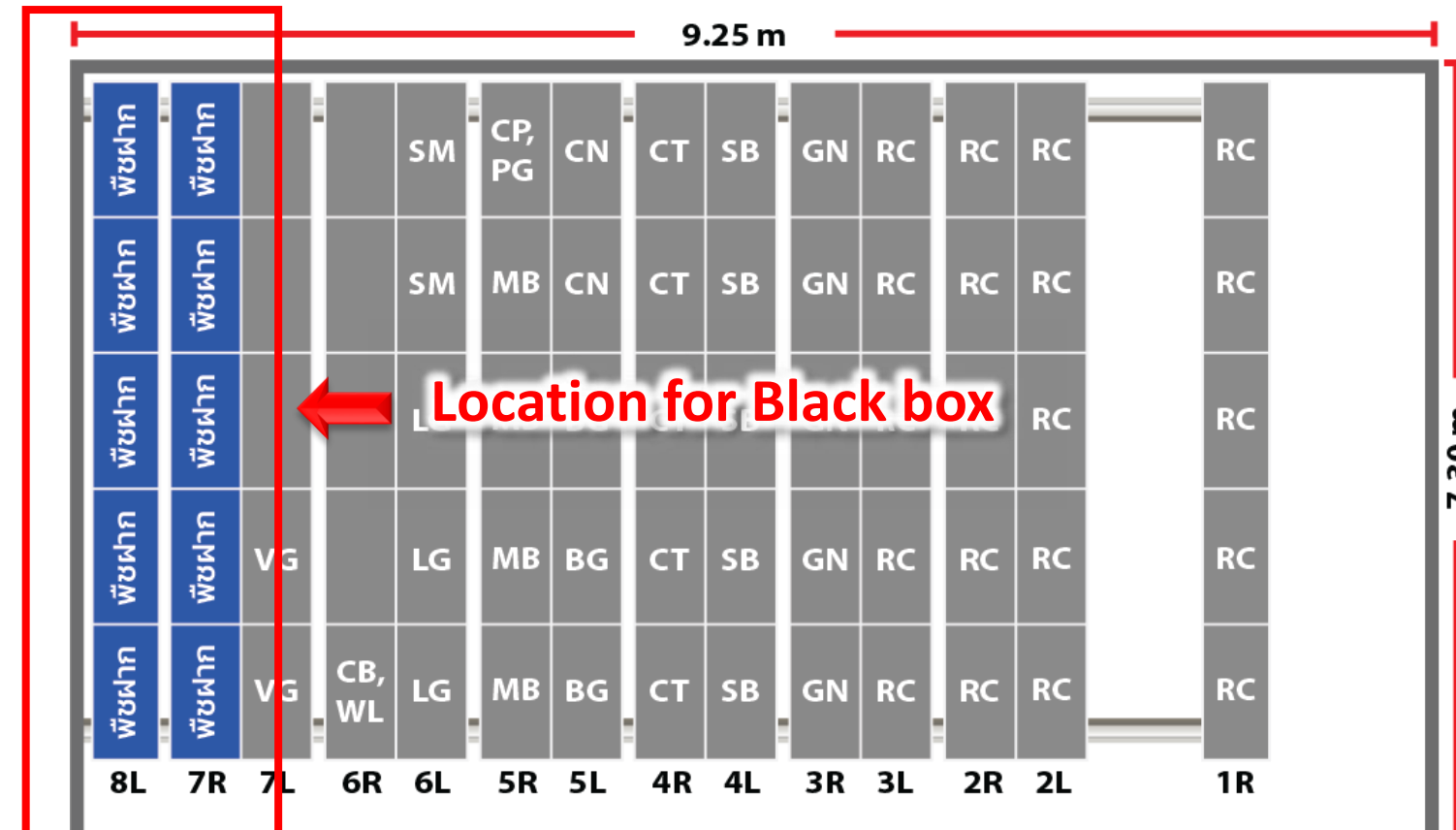
Kind of Plant	Accessions
Eggplant	334
Tomato	1,088
Bottle gourd	110
Angled gourd	118
Chilli	1,090
Cucumber	106
Okra	125
Hairy basil	50
Holy basil	97
Sweet basil	53
Tree basil	12
Ceylon spinach	48
Amaranth	257
Sponge gourd	200
Winged bean	77
Pumpkin	204
Cotton	145
Maize	278
Others	7
Total	4,399



4,399 accessions from 5 organizations



Regulation of Seed Depository



Seed germplasms were conserved in the long-term storage room (-10°C)

บรรจุซองพอยล์อลูมิเนียมเคลือบ 3 ชั้น

ต้องไม่เป็นชนิดต้องห้ามตามกฎหมาย หรือได้มาโดยนิตินทางกฎหมาย ต้องเป็นเมล็ดที่สามารถลดความชื้นและเก็บรักษาในสภาวะอุณหภูมิต่ำได้ (orthodox seed)

BIRDO

28 cm. 47 cm. 16 cm.

หมายเหตุ กล่องบรรจุภัณฑ์ต้องมีความคงทนต่อการเก็บรักษาในห้องเย็นที่มีอุณหภูมิต่ำได้ (-10 °C)

International collaboration : **Sweden and Norway**



NordGen
The Nordic Genetic Resources Center



Svalbard
Global Seed Vault



International collaboration : **Svalbard Global Seed Vault (SGSV)**

Seed deposit at SGSV from 3 organizations

No.	Code	Organization	Number of accessions
1	THA 513 1 st 20160427	Chaipattana Foundation	20 accessions
	THA 513 2 nd 20201027		14 accessions
2	THA 214 1 st 20130503	Department of Agriculture	150 accessions
	THA 032 1 st 20180723		32 accessions
	THA 032 2 nd 20200225		23 accessions/ 3 tested species
3	THA 012 1 st 20131007	Rice Department	81 accessions
	THA 012 2 nd 20180518		86 accessions
	THA 012 3 rd 20200225		68 accessions



International collaboration : Svalbard Global Seed Vault (SGSV)



International collaboration : Svalbard Global Seed Vault (SGSV)



Improvement

1. Digitalization & "Smart Genebank"

Infrastructure

- Genomic Digital
- Integrated Database System
- AI-Driven Phenotyping

2. Advanced Conservation Technologies

(Cryopreservation)

- Cryobanking Expansion
- In-vitro Conservation

3. Climate Resilience & Risk Management

- Disaster-Proofing: Infrastructure improvements (flood barriers, backup power for cooling systems) are non-negotiable.
- Safety Duplication (Black Box Storage) more and more

4. Utilization-Oriented Access (Bridging the Gap)

- Pre-breeding Programs
- Simplified Access & Benefit Sharing (ABS)

Move Forward

- Conserve the viability of plant genetic resources in DOA Genebank and develop techniques for long-term conservation
- Maintain plant genetic resources *ex situ* for conservation and sustainable use
- Improvement the SOP of Genebank management/Preparation of entrance of ISO20387/Data management
- Develop human resources to become smart farmers, researchers and officers
- Back-up seeds from DOA Genebank to deposit at Svalbard Global Seed Vault
- Carry on the missions corresponding to CBD's Targets
- Promote the conservation and sustainable use of biodiversity and biological resources corresponding to 17 Sustainable Development Goals (SDGs)



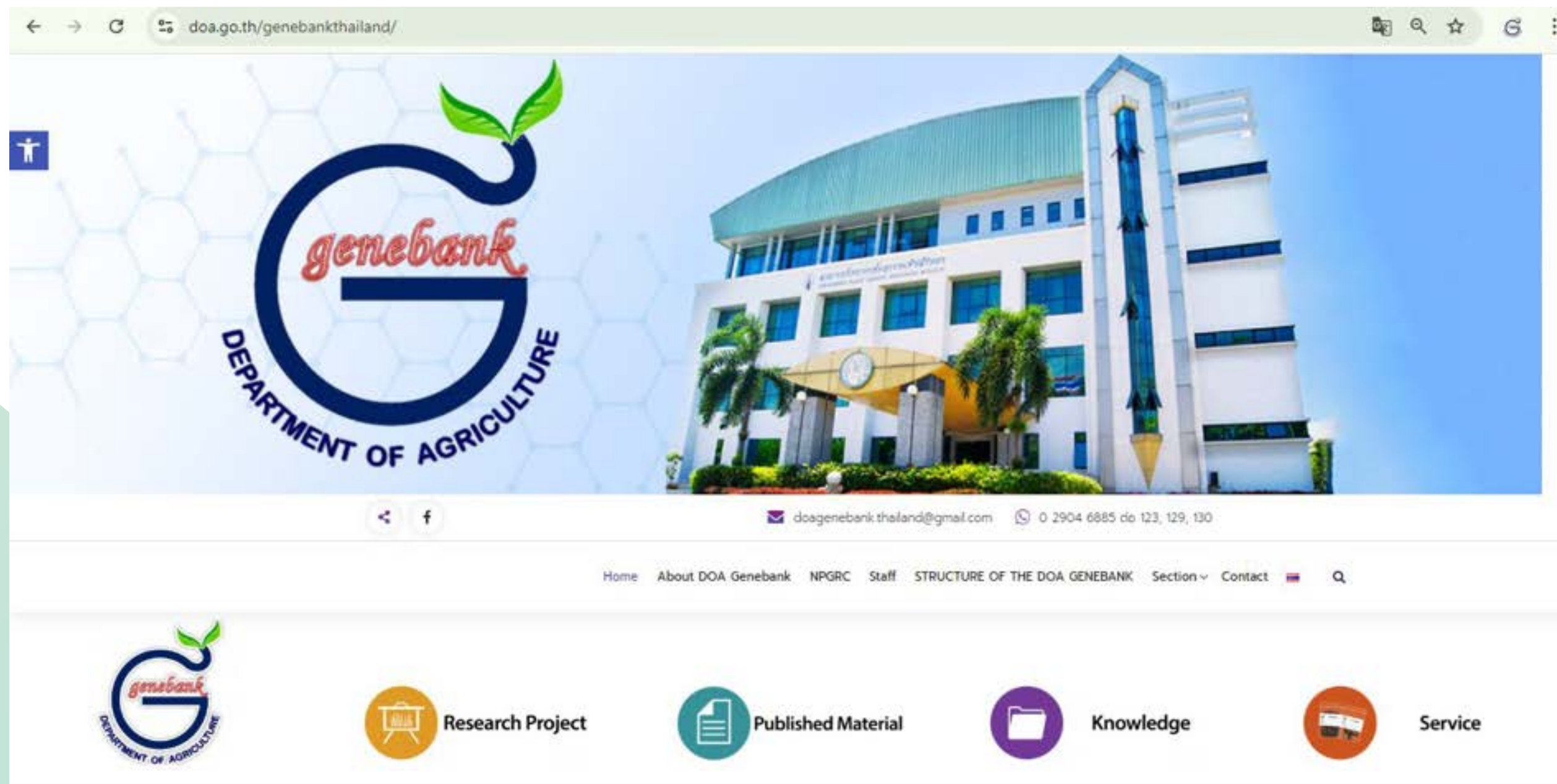
Number 2: Zero Hunger
Indicator 2.5.1 - Number of plant and animal genetic resources for food and agriculture secured in medium or long term conservation facilities



Convention on Biological Diversity



Contact Us



Genebank Research and Development Group

Location : Sirindhorn Plant Genetic Resources Building, 85 Gr.1, Rangsit-Nakorn Nayok Rd. (Klong 6), Rangsit, Thanyaburi, Pathumthani, 12110 Thailand

Tel. : 0-2904-6885-95 ext.129,130 **E-mail :** doagenebank.thailand@gmail.com



www.facebook.com/genebankthailand



www.doa.go.th/genebankthailand/



Thank
You





With support from:



Wrap up and reminders