



Operationalizing Food System Thinking through Agroecology

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26/09/2023

The Alliance Strategic Objectives



People consume diverse, nutritious and safe **foods**.



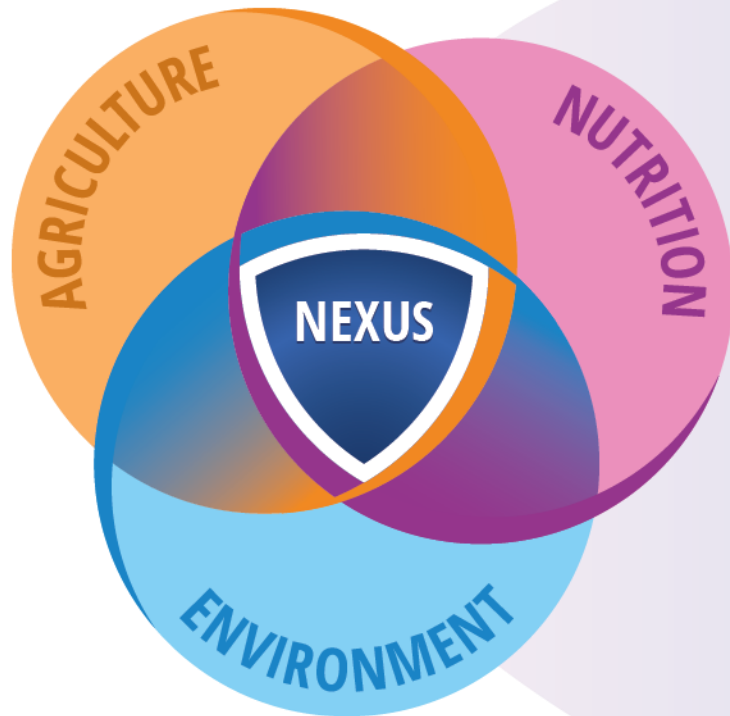
People participate in and benefit from inclusive, innovative and diversified agri-food **markets**.



People sustainably manage farms, forests and **landscapes** that are productive and resilient to climate change.



Communities and institutions sustainably use and safeguard agricultural **biodiversity**.



Level 1

Food environment and consumer behavior



Level 2

Multifunctional landscapes



Level 3

Climate action



Level 4

Biodiversity for food and agriculture



Level 5

Digital inclusion



Level 6

Crops for nutrition and health

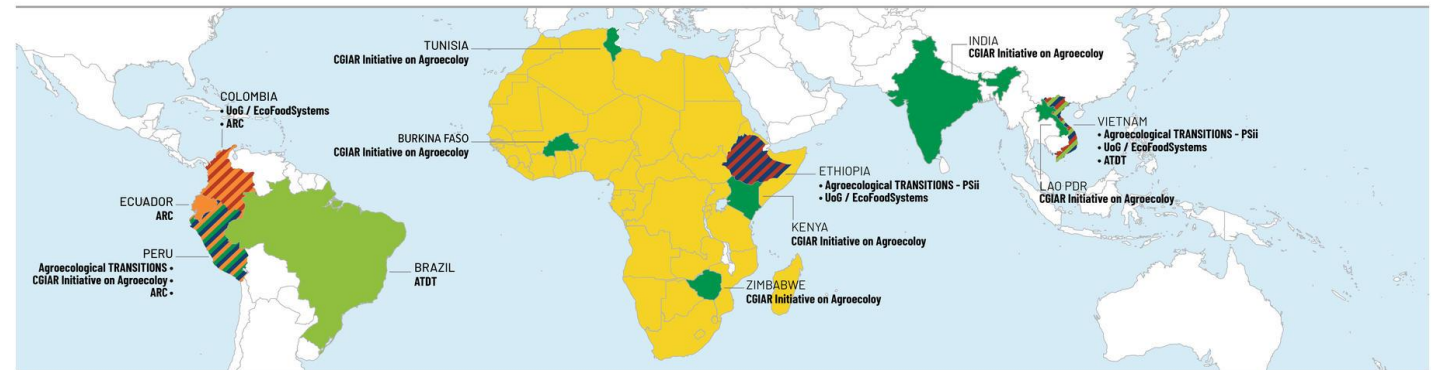
The Alliance and Agroecology

- The Alliance has decades of experience working on specific aspects of agroecology related topics (agrobiodiversity, soil health, water management, landscape approaches, eco-nutrition, climate mitigation, incentive mechanisms, participatory and inclusive approaches, human wellbeing outcomes and more recently in food safety issues).
- Agroecology CGIAR Initiative



INITIATIVE ON
Agroecology

Agroecology projects of the Alliance

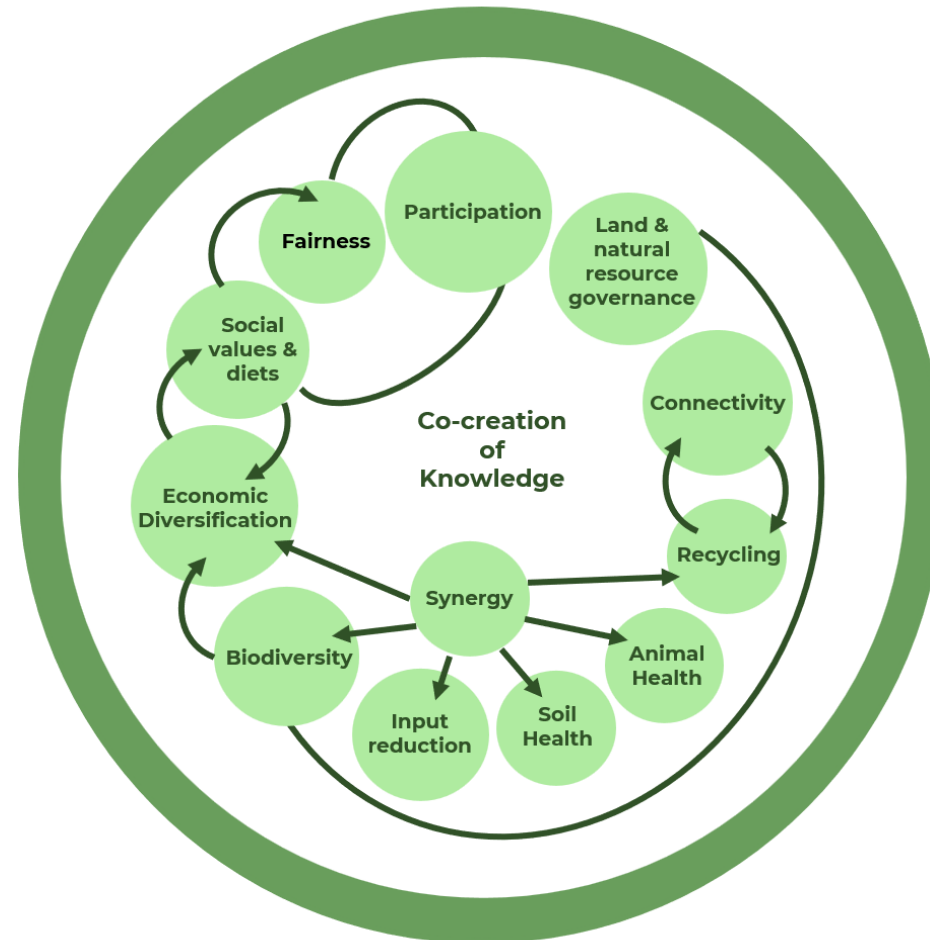
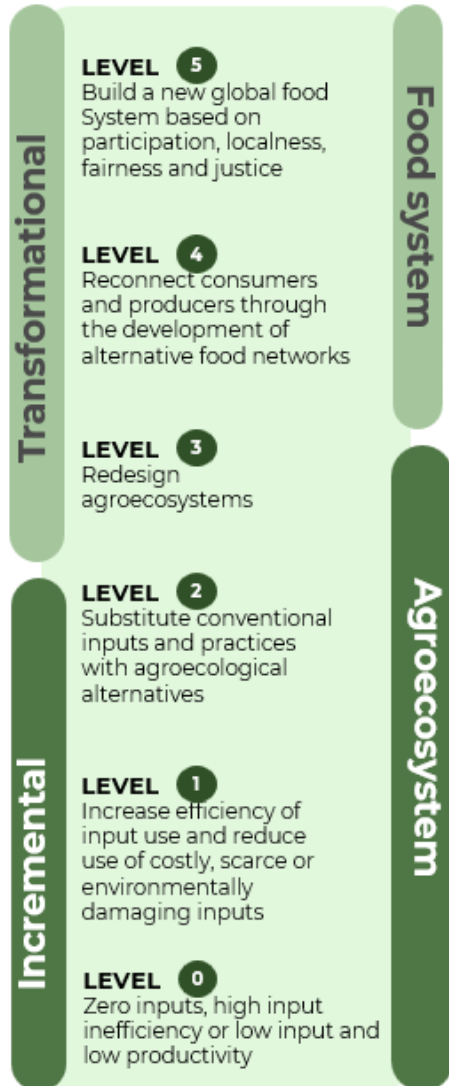


Source: Alliance, 2022

Legend:



Agroecology, an approach to enhance food system resilience, equity and sustainability





The application of agroecological principles imply



- Making changes in the way food is produced, how farmers are connected to the rest of the food system, and how food reaches consumers.
- Operating at multiple scales: Farms, territories, and food systems.

Initiative overview

Adaptive scaling strategies

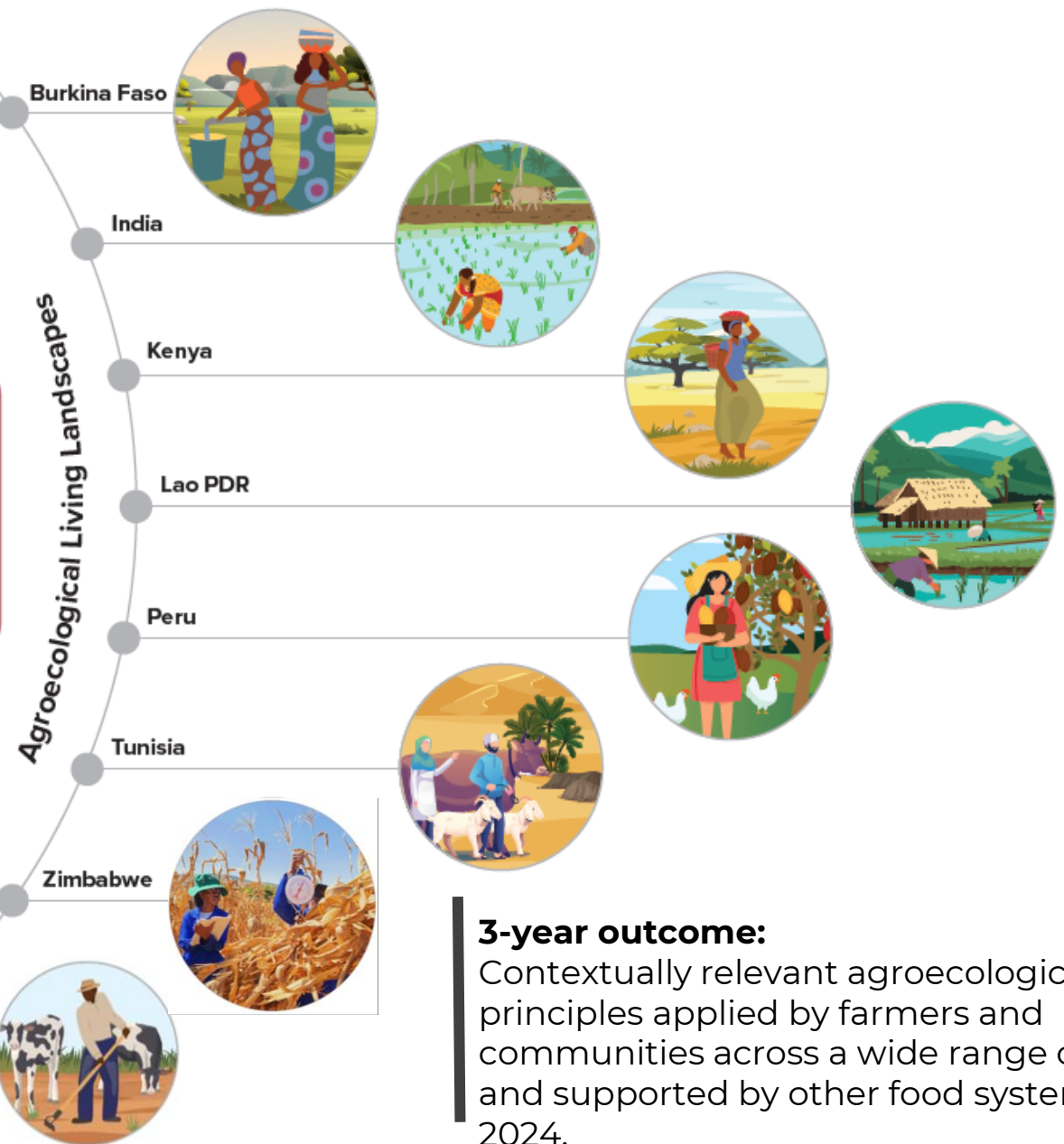
-  Inclusive business models with a focus on agroecological principles (Work Package 3).
-  Coherent policies and institutional arrangements conducive to agroecological transitions (Work Package 4).

Food system actors apply agroecological principles suited to particular contexts – from food production to consumption

-  Agroecology evidence-based assessments (Work Package 2).
-  Understanding and influencing behavioral change (Work Package 5).

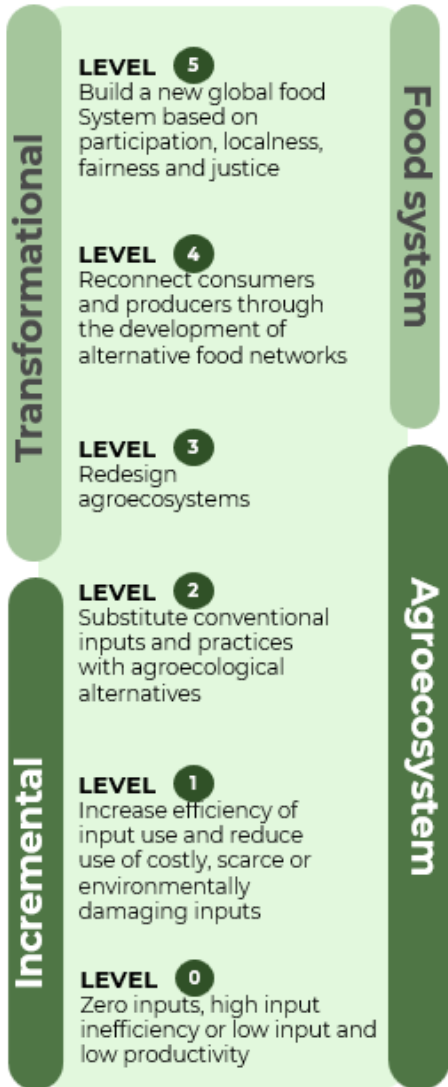
Science-based evidence

Transdisciplinary co-creation of innovations (beyond practices) in a network of Agroecological Living Landscapes (ALLs) to test and understand the benefits of agroecological approaches (Work Package 1).



3-year outcome: Contextually relevant agroecological principles applied by farmers and communities across a wide range of contexts and supported by other food system actors by 2024.

Example 1: Kenya



Connect with country-level efforts led by ISFAA to implement a national agroecology policy implementation.



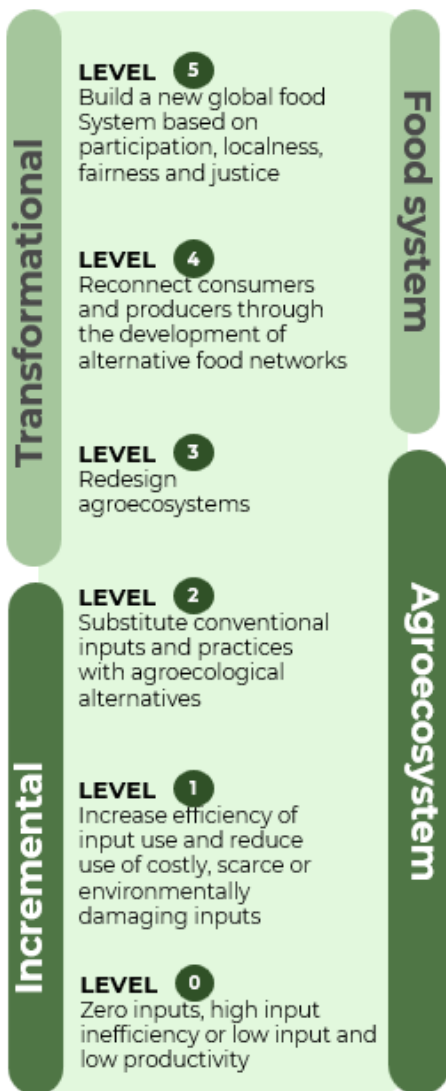
Strengthen farmer's network and connectivity to markets, and creation of inclusive business models in prioritized value chains (mango and green leafy vegetables).



Advance sustainable production systems including practices such as plant-based biopesticides, farmyard manure, terraces, water harvesting and agroforestry.



Example 2: Tunisia



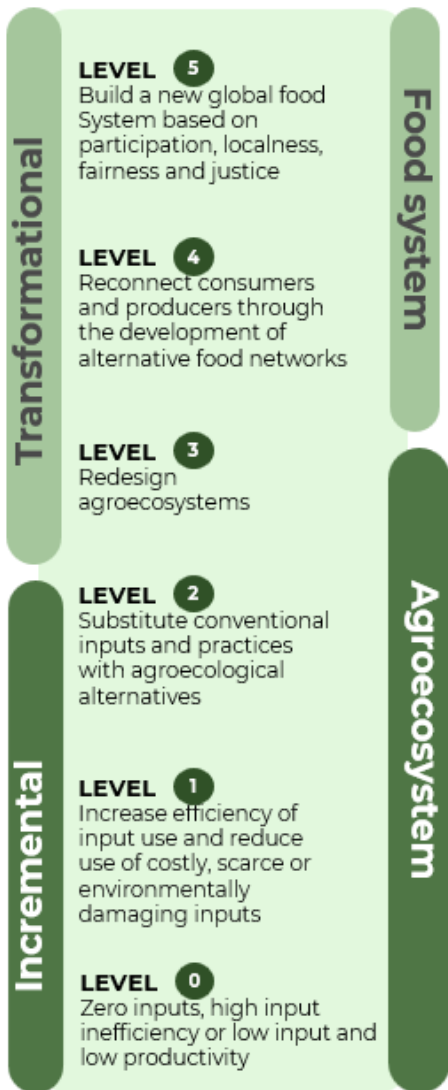
Support the development of national agroecological strategies for crop-livestock systems.

Improve business models of olive oil to increase market value.

Improve crop diversification and rotation, feed management to cope with forage scarcity during dry periods, reduce inputs, and increase recycling.



Example 3: Peru



Explore carbon markets as a complementary financial strategy for the transition.



Increase inclusivity of the current business models and scaling the approach in the region with greater support from policy makers and investors.

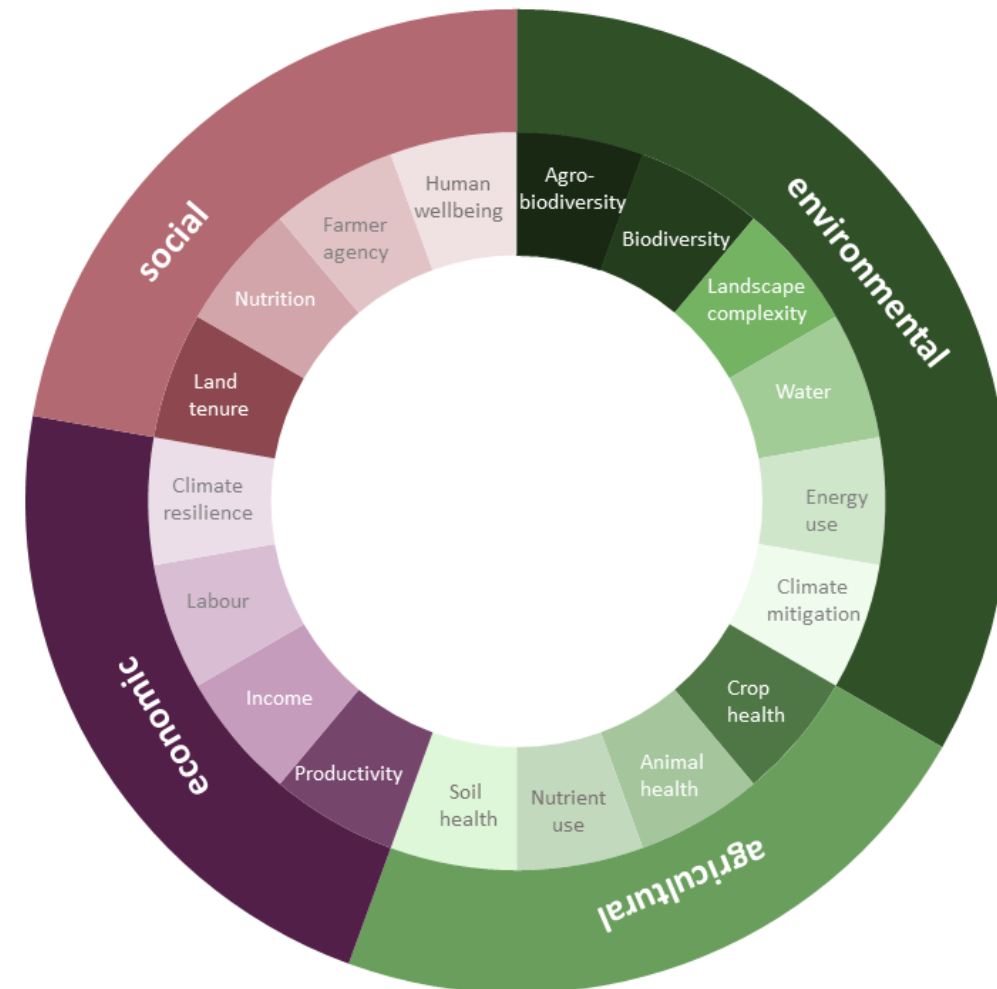


Enhance the sustainable production of organic cocoa systems including agricultural diversification of smallholders farming.



Evidence-based agroecological assessments

- Science-based [assessment of the agroecological context](#) of the ALLs highlighted their remarkable biophysical and socio-cultural diversity.
- A [holistic assessment framework](#) is being applied, to understand what works, when, and for whom, including localized indicators determined by food system actors.
- Studies of past agroecological initiatives in the ALL regions distil the key determinants for behavioural change.



Performance Assessment Themes

I. Biodiversity Conservation

Higher levels of biodiversity correspond to higher level of **food security and more resilient food systems.**

Practices like: Crop Diversity, Polyculture, crop rotation, beneficial insects inclusion - > positive impact on levels of Biodiversity

Farms, Landscape, Territory



Case Study: Diversity for Resilient Agroforestry Banana plantations in East Africa (D4RABs)



Funded by Biovision Foundation

Location: Uganda

Main Objective: to develop a polyculture concept for banana cultivation that increases the **resilience** of banana cultivation and the **ecological functionality** of the cultivation area. Thus, the project contributes to strengthening **local livelihoods** in terms of **food and income security**, and **promoting biodiversity**.





MY FARM TREES

Restoration for Resilience

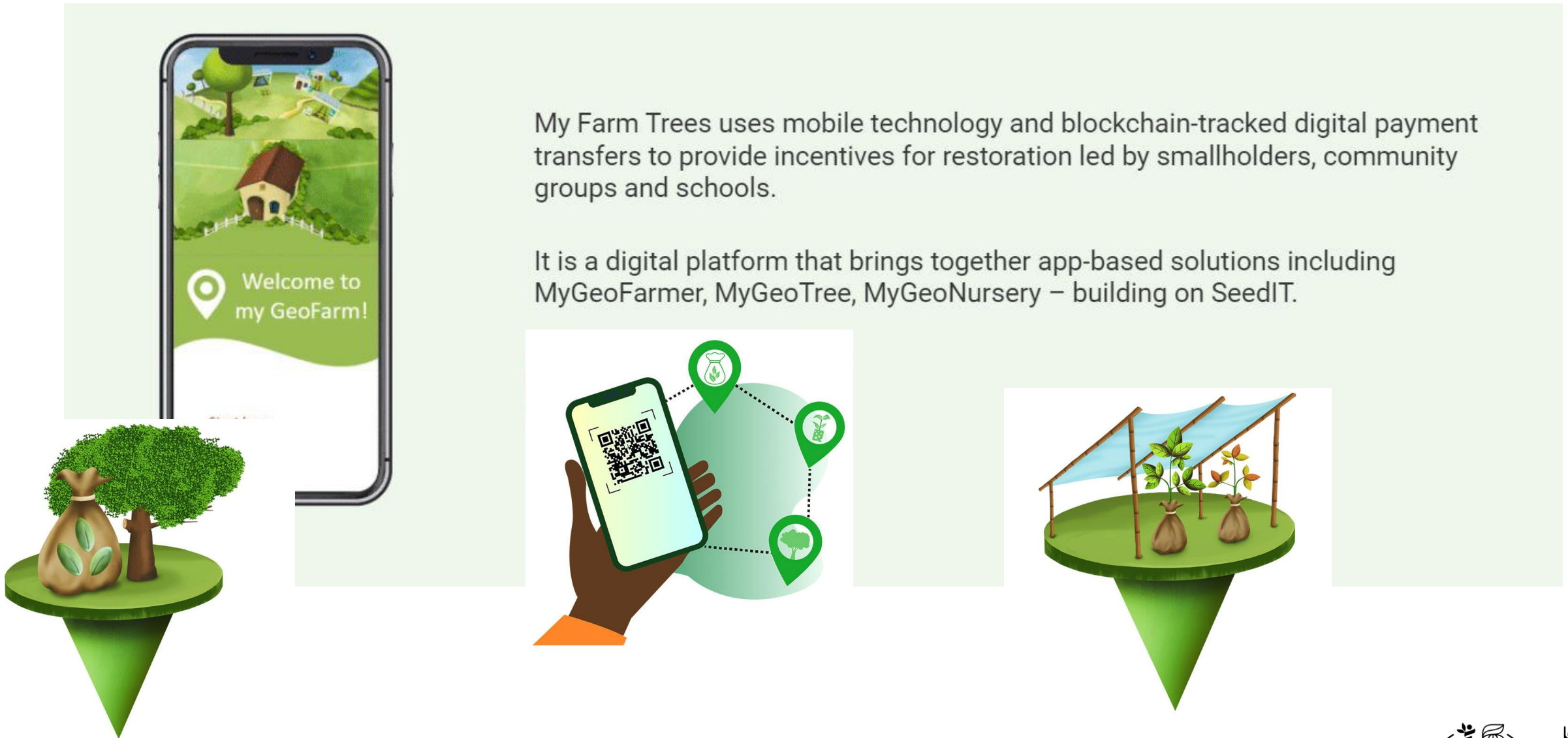
My Farm Trees incentivises farmer- and community-led tree-based restoration of degraded landscapes.

Global environmental benefits, resilient economic development, improved livelihoods

New Technologies for Agroecology

My Farm Trees uses mobile technology and blockchain-tracked digital payment transfers to provide incentives for restoration led by smallholders, community groups and schools.

It is a digital platform that brings together app-based solutions including MyGeoFarmer, MyGeoTree, MyGeoNursery – building on SeedIT.

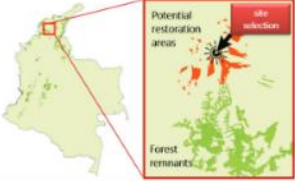


Promoting diversity in forest landscape restoration

RESTORATION DECISION-SUPPORT TOOL FOR THE SELECTION OF MOST APPROPRIATE TREE PLANTING MATERIAL
Seasonally dry tropical forest in Colombia as a model

1 Suitability modeling to assess species' adaptive potential under current and future climate conditions

A list of all possible tree species with known propagation protocols and habitat suitability under current and future climate for any given area.



2 Functional and other traits for selection of tree species that are best-matched to restoration goals and site-specific stress conditions

Restoration goals: Carbon sequestration, biodiversity conservation, timber production, increase soil fertility...

User defined: Number of species to plant

Stress conditions: Aridity, fire, erosion, fragmentation, flooding...

Different options of species combinations

- Prioritize species with functional traits that correspond best with restoration objectives and have adaptive potential to stress conditions at planting sites
- Maximize niche complementarity for other traits.

High wood density, long-lived and high root biomass: high carbon sequestration

Fast-growing large leaves producing abundant shade: avoid proliferation of (acid) heliophytes and provide conditions for germination of shade-tolerant species.

Red list species: Species and biodiversity conservation

Deep taproots, thick bark and coppicing capacity: fire resistance and subsoil water and nutrient uptake

High-value timber: Commercial wood production

Abundant production of fleshy fruits and high canopy complexity: biodiversity conservation and landscape connectivity by attracting seed dispersing birds and other animals

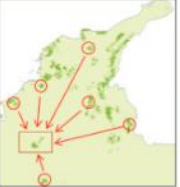
Extensive superficial root system, high leaf lameness and N2 fixation: protect soil against erosion and enhance soil fertility and structure

3 Ensuring the genetic quality of planting material and recommendation on best practices for collecting seeds

3.1. Promote site-adaptedness and adaptability of planting material, anticipating expected alterations of habitat conditions in light of climate change

3.2. Ensure genetic diversity: of planting material: source populations should be large, and seeds should be obtained from a high number of (>30-60) mother trees

3.3. Seed provision: List of seed providers (nurseries, small-scale farmers, private land owners, indigenous and local communities, protected areas...)



References and further reading

Bozzano, M., Jalromeo, R., Thomas, E., Boshier, D., Gallo, L., Caseres, S., Bortolice, S., Smith, P. & Loo, J., eds. 2014. Genetic considerations in ecosystem restoration using native tree species. State of the World's Forest Genetic Resources – Thematic Study Rome, FAO and Biodiversity International.

Biodiversity International, 2015. Importance of genetic considerations in forest landscape restoration. Biodiversity International, Rome, Italy. <http://bit.ly/2hAeYqj>

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Nutrition-sensitive forest landscape restoration



Landscape Complexity and Agroecology



<https://www.diversityforrestoration.org/>

- Species distribution models
- Spatially explicit threat analysis
- Assessment of species vulnerability
- Functional traits
- Colombia
- Peru
- Burkina Faso
- Cameroon

How to capture that

HOLPA: Holistic Localized Performance Assessment: Tool for collecting evidence on the impact of Agroecology



INITIATIVE ON
Agroecology

Objective: generate evidence-base on the efficacy of agroecological approaches to provide sustainable, resilient and inclusive livelihoods and food systems across contexts.

Socio-ecological
context

Agroecology
adherence

Holistic Performance Assessment

What are the household and farm-level agronomic, environmental, social and economic **impacts of implementing agroecology?**

Trade-off analysis, sites with and without agroecology and/or along gradient of agroecology, controlling for socio-ecological context

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Agroecology module



Socio-ecological
context

Agroecological
adherence

Performance

Principle	Details	Indicator
1. Recycling	Seeds, nutrients, energy sources	Adherence (1 to 5)
2. Input reduction	Trends in input use	
3. Soil health	Soil conservation practices	
4. Animal health	Animal welfare practices	
5. Biodiversity	Biodiversity on-farm	
6. Synergy	Practices to enhance ecosystem functioning	
7. Economic diversification	Number of income sources	
8. Co-creation of knowledge	Knowledge exchange across food system	
9. Social values and diets	Access to healthy, diversified, seasonal and traditional foods	
10. Fairness	Fair price for farm products, adequate income	
11. Connectivity	Producer-consumer connectivity	
12. Land and natural resource governance	Decision-making on land and natural resources	
13. Participation	Participation and leadership in associations	
Cross-cutting (self-perception)		



Thanks!

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