



## Transformational agroecology across food, land and water systems

### Initiative Lead and Co-Lead

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### Primary CGIAR Action Area

Systems Transformation

### Estimated 2022 - 2024 Budget

\$30 - \$30 M

### Challenge

Climate change, land degradation, loss of biodiversity, depletion of water resources, and pollution are all impacted by, and act as a major contributor to our degraded food, land, and water systems (FLWS), exacerbating vulnerability to extreme events (e.g. floods and droughts) and other shocks (e.g. COVID-19). In many settings, sociopolitical and economic conditions have favored agricultural practices that have undermined our FLWS with: (i) 40% of arable land degraded (<https://bit.ly/3gkfON3>); (ii) 64% of agricultural land contaminated by agrochemicals (<https://go.nature.com/3soRjAx>); and (iii) forest and biodiversity loss reducing healthy diet and livelihood options for men, women and young people (<https://bit.ly/3aeWQ6i>). Smallholders (83% of all farms globally) play a critical role in global food and nutrition security (producing 30%-53% of the world's calories), yet 95% of published agricultural research is not relevant to smallholders' needs with regard to rural poverty alleviation and food insecurity reduction (<https://go.nature.com/3e6sOTx>). Agroecology-understood as an approach to shift FLWS towards equity, resilience, and sustainability-has the potential to transform elements of FLWS in order to reduce hunger and malnutrition, decrease land and water degradation, and contribute to social inclusion and job creation (<https://bit.ly/2Q8bZQ2>). However, although the multiple benefits of agroecological options have been demonstrated in specific contexts and are gaining prominence in scientific, agricultural and political discourse, enabling mechanisms for widespread implementation remain limited (<https://bit.ly/3dorQ6a>).

### Objective

This Initiative will analyze the impact of agroecological approaches to food production, and aims to minimize adverse environmental impacts, improve farmer-consumer connectivity, and inclusive relationships among food system actors. Through technical, socio-economic and policy innovation pathways, the Initiative will develop and scale agroecological innovations for small-scale farmers (~20% more farmers and ~20% increase in area within exemplar landscapes), and other agricultural and food-system actors across different socio-ecological contexts in seven low and middle income countries (LMIC) (Burkina Faso, Kenya, India, Lao DR, Peru, Tunisia, and Zimbabwe). This will lead to: (1) Improved ecosystem health through- (a) reduced impacts from environmentally-disruptive inputs; (b) 20% increased use of environmentally-sound inputs; and (c) redesigned agricultural systems and landscapes that conserve biodiversity, reduce soil degradation, and improve water quality, availability and productivity; (2) Increased social inclusion and equity through inclusive participation of women, men, and youth in seven business partnerships (one per focus country) that improve profitability of agroecology innovations and generate jobs; and (3) Improved local innovation processes that value local knowledge, and favor social inclusion and local governance in all initiative sites (living labs).

### Theory of Change

This initiative contributes to transforming food, land and water systems (FLWS) to make them more equitable, sustainable and resilient. The transformed systems will encompass diversified agroecosystems and diets, reduced land and water degradation and biodiversity loss, enhanced equity and profitability of farmers and communities. The initiative uses an agroecological approach to food production to harness nature's goods and services whilst minimizing adverse environmental impacts, and to improve farmer-consumer connectivity, knowledge co-creation and inclusive relationships among food system actors (<https://bit.ly/3mZYrIN>)

The initiative follows a holistic, adaptive process which:

- (1) Establishes a network of user-centered multi-actor environments (living labs) to inclusively co-develop context-specific agroecological innovations (technologies, institutional arrangements, policies, services);
- (2) Assesses benefits and trade-offs, in comparison to business as usual and other approaches, of agroecological innovations applied in intertwined FLWS across diverse contexts, and based on available evidence;
- (3) Develops innovative business partnerships and sustainable financial strategies to trial inclusive business models for scaling in targeted territorial food systems;
- (4) Facilitates multi-stakeholder dialogues to identify policy instruments and approaches. This will allow the integration required across sectors and scales to mainstream agroecological principles in FLWS; and
- (5) Explores behavioral barriers constraining changes in practices and attitudes needed for implementing agroecological innovations. This will help understand and influence bottlenecks and accelerate equitable, inclusive agroecological transitions.

The initiative will prioritize scalable innovations by generating user-centered inclusive environments for co-development of agroecological options, underpinned by scientific evidence and local knowledge. Working with farmers, business partners and policymakers, the initiative will contribute to agroecological transformation across equitable, sustainable and resilient FLWS in 7 countries in the Global South.

This initiative will build synergies with other initiatives such as: Nature-Positive Agriculture, National Strategies and Policies, Foresight and Data for Development Pathways, Nexus Gains - Realizing Multiple Benefits Across Water-Energy-Food-Forest Biodiversity Systems, Excellence in Agronomy, From net carbon sources to sinks, ASPIRE, RIs (in common countries of intervention and for knowledge exchange with other countries in the region). By applying a territorial food system approach that addresses institutional, behavioral, and political economy bottlenecks and then co-developing agroecological innovations with food system actors, our initiative complements the Nature-Positive Agriculture Initiative, which focuses mainly on changes at the farm and community level. The Initiative will work closely with the Enabling Gender and Social Equality through Resilient and Inclusive Agri-food Systems Initiative to ensure that the design of the Living Labs incorporates participatory mechanisms that intentionally and systematically solicit the equal participation of men, women and youth. In co-designing and co-trialing the innovations, women and young people will be empowered as active participants in change rather than passive end users. This initiative will also seek synergies with initiatives operating in the same countries to share methods to assess multiple benefits of agroecological practices. For example, we will approach the One Health and Healthy Diets initiatives during the next round of proposal development to discuss collaboration mechanisms for measuring environmental and nutritional health impacts.

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### Highlights

**Reframing the productivity argument for multi-dimensional outcomes** - This initiative proposes a shift in focus from primarily increasing agricultural yields per resource unit used (traditionally key characteristics of CGIAR research) to a focus on FLWS that enhance social agency, deliver socioeconomic outcomes; and prioritize healthy nutrition and environment.

**Inclusive innovation and scaling** - This Initiative recognizes that scientific contributions to problem solving are necessary but insufficient to bring about transformative change. Thus, it will work with local communities and other food system actors and partners to co-develop, test, and scale innovations (technology, institutional arrangements, and services) in various settings (in target countries). Results and learnings will be used to develop innovation processes and approaches that incorporate universal agroecological principles (<https://bit.ly/2QvHiEe> , <https://bit.ly/3x4p8KW> ) and that can be applied elsewhere to promote scaling of agroecology.

**Adaptive learning** - Co-developing agroecological options and scaling-up strategies will consider a non-static environment, where a variety of external factors will continue influencing food-system outcomes. Consequently, the Initiative will use an adaptive approach, where emerging learnings and uncertainties will be recognized and factored in wherever possible.

**Evaluation of trade-offs** - The Initiative will produce tools, metrics and methods required to understand context-specific trade-offs and cost-effectiveness of agroecological approaches. It will also convene debate on contentious issues and tradeoffs (including across social, economic (including income) and environmental impacts) prevalent in current and possible future food-system options.

**Recognizing different starting points** - Depending on local contexts, this Initiative conceptualizes three transition pathways: (i) "intensifying" agroecologically (in current low-production systems with low inputs); (ii) "redesigning" small-scale farming with high external inputs use; and (iii) "converting" (profitable medium-scale enterprises with high external inputs use). This Initiative focuses on the first two.

### Work Packages

	Scope of Work	3-year Outcomes
Agroecological Living Labs (ALLs)	Building an international network of diverse user-centered, multi-actor environments for inclusive co-development of context-specific innovations (technologies, institutional arrangements, and services) and science-based learning combined with local knowledge. These support scale-out and continuous innovation for agroecological transitions in geographically-targeted food systems, in countries with contrasting agroecosystems, and ecological and institutional conditions. Innovation processes and multi-stakeholder dialogu..	Small-scale farmers participate in an international network of "agroecological living labs" (ALLs), bringing together farmers, researchers, and other partners for multi-stakeholder dialogues and co-developing, testing, and scaling context-relevant agroecological innovations (i.e. technologies, institutional arrangements, and services) within the milieu of intertwined FLWS.
Agroecology evidence-based assessments	Research (including participatory monitoring and modeling) to generate usable evidence (underpinned by science and local knowledge) from the current conditions and changes in FLWS related to ecosystem health and biodiversity, resilience, social equity, profitability, water productivity and nutritional diversity. This evidence will enable comparisons of benefits and tradeoffs between 'business-as-usual' and agroecological alternatives across ALLs.	Researchers, farmers, communities, policymakers, and investors use knowledge gained from science-based assessments (implemented in all ALLs, in conjunction with local knowledge, to determine the environmental and socioeconomic costs and benefits of agroecological interventions for different user groups), to implement agroecological innovations that are economically viable, environmentally sound and socially inclusive.
Inclusive business models and financing strategies in the ALLs	Develop innovative partnerships and financing strategies with low-income groups excluded from agri-food businesses (e.g. many farmers and communities), trading partners, investors, and policy-makers, to support developing inclusive, equitable business models and financial mechanisms that encompass agroecological principles, speed up and scale agroecological transitions across landscapes, and promote greater connectivity with consumers.	Investors, trading partners, NGOs, and farmer organizations participate in at least one strategic business partnership established in each ALL and co-develop or adapt business models and financing modalities, linking bundled, contextually-relevant, agroecological innovations to markets and investment.
Strengthening the policy enabling environment	Generate knowledge for overcoming systemic policy bottlenecks to agroecological transitions across ALLs (WP1), and explore policy mechanisms to effect the integration (across sectors and scales) required to support these transitions. Results will feed policy dialogues within ALLs and with national policymakers to strengthen their ability to deliver supportive policies and align agroecology impacts to national commitments (e.g. NDCs, NAPs).	National and regional policymakers and representatives of sectoral organizations co-develop and promote recommendations to effect horizontal (across sectors) and vertical (across scales) policy integration required to mainstream agroecological principles in FLWS, in targeted countries and beyond
Understanding and influencing behavior change	Systematic approaches to understand underlying mechanisms for behavioral change (including incentives) in targeted stakeholders (farmers, investors/trading partners, consumers, policymakers), the political economy of vested interests, and causes of possible unequal participation of women, men, and youth in agroecological transitions. The results will be used to develop effective interventions in WP1, WP3 and WP4.	Scientists, funders and civil society, re-orient or adjust their strategies and action plans based on knowledge gained from scientific studies about the mechanisms driving behavioral change and capacities of farmers and consumers to implement effective agroecological transformation

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### Impact Area Contributions

<b>Nutrition, health &amp; food security</b>	The Initiative will test, demonstrate, and scale agroecological innovations that enhance food security and contribute to improved nutrition and health through greater production diversity and reduced use of harmful agrochemicals. By promoting increased connectivity between producers and consumers, we will increase accessibility to and consumption of diverse foods.
<b>Poverty reduction, livelihoods &amp; jobs</b>	By implementing the Initiative's "Agroecology innovation accelerator" approach and inclusive business partnerships, the Initiative will create mechanisms for generating revenues and jobs that will help to sustain livelihoods supported by agroecological principles.
<b>Gender equality, youth &amp; social inclusion</b>	The Initiative will evaluate the contribution of agroecological innovations to improved social inclusion on farm and in business models. Adaptive scaling strategies (e.g. business models and policy instruments) and dialogue platforms within ALLs will increase the agency of women, youth, and marginalized social groups to benefit from expanded options.
<b>Climate adaptation &amp; greenhouse gas reduction</b>	By reducing dependence on external inputs and energy requirements, reversing soil degradation, enhancing water management, and reducing pressure on forests, agroecological production reduces GHG emissions from these sources and increases carbon sequestration. By diversifying and strengthening livelihoods, the Initiative will enhance households' resilience, thereby improving their adaptive capacity.
<b>Environmental health &amp; biodiversity</b>	By conserving and actively managing biodiversity (from farm to landscape scales) and ecosystem services, agroecological approaches will protect terrestrial and aquatic biodiversity, reduce soil erosion, improve soil health, and improve water availability and quality (by reducing environmental pollution related to inappropriate management of external inputs).

### Impact on SDGs



### Regions

Global Central and West Asia and North Africa (CWANA), East and Southern Africa (ESA), Latin America and the Caribbean (LAC), South Asia (SA), South East Asia and the Pacific (SEA)

### Countries



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### Innovations

An international network of Agroecology Living Labs (ALLs) for farmers, scientists, policymakers and other food system actors to co-develop context-specific agroecological interventions, combining local knowledge and science-based evidence, to prioritize interventions and compare the costs and benefits of applying agroecological approaches in diverse settings.

Holistic assessment framework, comprising indicators and metrics underpinned by participatory monitoring and modeling that capture food production, ecosystem health, food security and nutritional diversity, social inclusion, resilience, and profitability to enable evidence-based comparison of agroecological (and non-agroecological) interventions. Will facilitate tracking and reporting on the progress of agroecological transitions.

Inclusive, and equitable business partnerships created through collective action among stakeholders of the targeted territorial food systems to bring agro-ecological farmers together with market agents, investors, and agricultural service providers to make agroecological transitions viable and scalable.

An Agroecological Innovations Accelerator helps local stakeholders (especially youth and women), consumers, and other food-system actors to implement innovative agroecological ideas, connecting them with business partnerships, public investment programs and technical assistance providers, to support the replicability of these ideas at the landscape level, improve income streams, and support poverty-reduction.

Multi-actor agency strategies for agroecological transformation of territorial food systems. These strategies will be informed by the results of the behavior-change research and the contextual understanding of the relationships between different roles and techniques that actors utilize, and the broader dynamics that shape the territorial food systems.

### Key Partners

<b>Demand</b>	Government	National governments through the participation of different sectors (agriculture, environment, health, economic development)
	Local Government	Local authorities of the targeted territorial food systems
	Other Public Sector	Development agencies with programs in the territorial food systems
	Partner Country based NGO	Local NGO working in the targeted territorial food systems on rural sustainable livelihoods
	Private Sector	Business model partners: investors, trading partners, social lenders
<b>Innovation</b>	Academic, Training and Research	International Research Organizations: CIRAD and French research organizations, ICRAF-CIFOR.
		National Agricultural Research (NAR) institutes in selected countries
	International NGO	Biovision
	Other	Farmers' and local communities organizations
	Private Sector	Business model partners: investors, trading partners (e.g. food companies), social lenders
<b>Scaling</b>	Academic, Training and Research	Country extension services
	Government	National and local policy makers from multiple sectors
	Multilateral	Development and multi-lateral agencies (e.g. IFAD, FAO, UNEP)
	Private Sector	Business model partners: investors, trading partners (e.g. food companies), social lenders
	Public Private Partnership	The Transformative Partnership Platform (TPP) on agroecological approaches ( <a href="https://bit.ly/3tqcdk3">https://bit.ly/3tqcdk3</a> )



# Transformational agroecology across food, land and water systems: theory of change



contributing to SUSTAINABLE DEVELOPMENT GOALS

**Outcome:**

**Contextually relevant agroecology principles are applied by farmers and communities across a wide-range of contexts and supported by other food system actors**

**Living Labs**

User-centered multi-actor environments for codevelopment, participatory and evidence-based assessment, and co-adaptation of inclusive agroecological options in agro-landscapes (Work Package 1)



**Science-based evidence**

Agroecology evidence-based assessments (Work Package 2)



Understanding and influencing behavioral change (Work Package 5)



**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)




**INALL**  
International Network of Agroecology Living Labs: a Network of territorial food system for scaling out and accelerating innovation for agroecological transitions

**Planned comparisons across different contexts under different agroecological transition pathways**

- i) intensify" (i.e. low production systems with low inputs)
- ii) "redesign" (i.e. unprofitable small-scale farmers using high levels of external inputs)
- iii) "convert" (i.e. profitable medium-scale enterprises that use high levels of external inputs)

## KEY DEFINITIONS (adapted for this initiative):



**Agroecological Living Labs** is a space for all actors to exchange their views and codevelop and adapt agroecological solutions. Integrate activities of agricultural, environmental and socioeconomic research as part of a continuous innovation cycle with a territorial approach. Involve a diverse set of partners (e.g. producers, consumers and local authorities ) that are part of the territorial food systems and landscapes into which living labs are embedded. Partners get involve in the design of agroecological adaptive scaling strategies (business models, policies, economic mechanisms, etc) and in multi-stakeholder dialogue to promote these. (<https://bit.ly/3siUtpu>)



**Territorial Food Systems** in territories of all sizes are linked in multiple direct and indirect ways to land and water systems. All include both formal and informal markets, intermediary marketers, distributors and processors, as well as many small-scale producers, local processing, and agricultural and food system workers. A territorial approach in food systems foster direct links with consumers, encompasses diversity of food products from the territory, facilitate -and encourage- a collaboration between spaces and sectors. (<https://bit.ly/32IGswl>, <https://bit.ly/3snU8St>)




**Agroecology** encompasses the science, practice and social movements working towards transformation to sustainable and equitable food systems from production through to consumption. They emphasise use of biodiversity, natural processes and recycling to reduce impact of environmentally disruptive inputs and increase the resilience of farming systems, the co-creation of knowledge with local stakeholders to ensure culturally relevant innovation and responsible and inclusive governance of natural resources. They recognise the importance of agency of all actors involved in food systems and of connecting producers and consumers to ensure that methods of production and processing match consumer expectations. (<https://bit.ly/3mQAMnV>)



**Agroecological transitions** describe, for a defined context, how agroecosystems or food systems change over time through the application of agroecological principles to become more environmentally and economically sustainable and socially equitable. Transitions may focus on the application of some but not necessarily all agroecological principles and encompass parts of whole food systems, for example, farming. Transitions are grounded in the state of the system at the starting point for the transition and the context that shapes trajectories of change. (<https://bit.ly/3toHDrb>)



**Agroecological principles** are explicit statements comprising normative and/or causative aspects, that guide decisions and action towards meeting agroecological objectives. There are 13 widely accepted agroecological principles derived from the literature, which are complementary to FAO's ten elements of agroecology, but more explicit and, therefore, consistently interpreted. (<https://bit.ly/2QvHiEe>, <https://bit.ly/3x4p8KW>)



**Agroecological transformation** describes the change of whole food systems to sustainable and equitable states, involving change in norms and institutions in the public and private sector that govern how food is produced, processed, transported, sold and consumed and the relationship between consumers and other actors along food chains, including producers. A transformation may be contributed to by a number of incremental transitions occurring over time. (<https://bit.ly/3uVrbPj>)