Consortium for Agroecological Transformations

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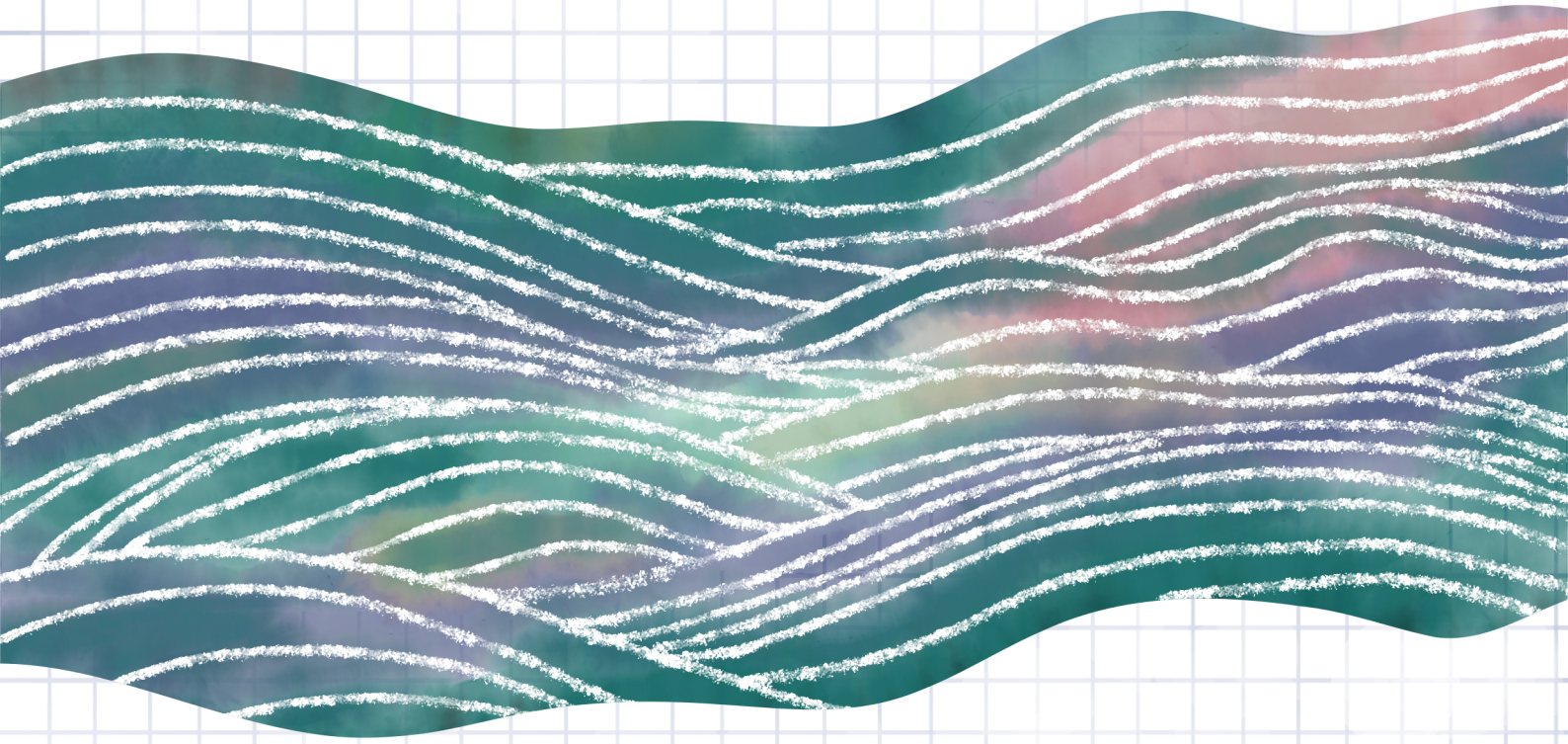
Mainstreaming Agroecology - The Landscape Approach



Concept Note

SEPTEMBER 2025

Introduction
The Consortium for Agroecological Transformations (CAT)

The Consortium for Agroecological Transformations (CAT) is a galvanising force and a visionary roadmap to integrate, scale, and mainstream agroecology in India. It is a collective initiative uniting diverse stakeholders to drive a holistic transition towards sustainable food systems, while addressing urgent challenges such as environmental degradation, climate change, biodiversity loss, soil depletion, overuse of natural resources, social and economic inequalities, and nutritional insecurity. CAT aspires to enable a systemic shift towards agroecology-driven farming practices and build resilience within farming communities.

Setting the Stage: Why CAT, Why Now

India's food and farming systems are at a crossroads. Climate-linked droughts, floods, and heatwaves are depressing yields and undermining livelihoods; biodiversity and soil fertility are in decline; and diet quality and diversity are narrowing. Conventional input-intensive agriculture has reached ecological and economic limits, even as citizen demand for safe, nutritious food grows and policymakers, philanthropies, and practitioners seek credible pathways to sustainability.

CAT responds to this moment with a structured, collaborative approach to scale agroecology—one that intentionally aligns ecological regeneration, livelihood resilience, and public health with national development priorities and global commitments such as SDGs, Paris Agreement and the Global Biodiversity Framework. Its central proposition is to move beyond fragmented pilots and deliver sustained, system-level change, making agroecology viable and mainstream across India.

Scale and Ambition

Over the next decade, CAT aims to catalyse landscape-level transformation for ~30% of India's small and marginal farmer households (~40 million households) across ~40 million hectares. This concerted effort aligns with national aspirations

(e.g., NITI Aayog's targets) and contributes to India's Bonn Challenge pledge on land restoration. Population-scale transformation will create a tipping point, shifting mainstream agricultural support systems - research, credit, procurement, insurance, input policies - toward sustainability.

The ambition is also global; with food systems transformation emerging as a priority, particularly in forums such as CoP 28 and the G20, CAT positions India as a leader in demonstrating the viability of agroecology at scale. The United Nations Environment Programme estimates a $187–359 billion annual gap in climate adaptation funds for developing nations. By unlocking blended finance models, mobilising collective action, and fostering inclusive support ecosystems, CAT seeks to show that sustainability and equity in food production are achievable at scale.

Policy Momentum and Opportunity

The emergence of the National Mission on Natural Farming, along with demonstrable state-led programmes such as Andhra Pradesh Community Managed Natural Farming (APCNF) and the Odisha Millets Mission, has been an important development in policy. They indicate that large-scale transitions are feasible when backed by coordinated policy and institutional support. CAT has been set up to amplify and converge such signals into durable, cross-sectoral action.

Financing Context

Despite this momentum, the financial architecture for sustainable agriculture remains misaligned. Existing finance is often structured around short-term cycles, with insufficient support for long-term ecological interventions, community-led initiatives with unclear tenure, and ecosystem services that are difficult to monetise. This systemic undervaluation and exclusion highlight the need for innovative approaches to coordinate resources and direct capital toward regenerative practices. CAT's financing approach is to close these gaps through blended, patient, and outcome-linked capital, sequenced to match the ecological and entrepreneurial contexts. It also seeks to unlock international potential through multilateral institutions such as the World Bank and International Fund for Agricultural Development (IFAD), SDG-aligned donors and climate funds.

CAT recognises that blended finance is more than a tool; it is a strategic imperative. Its financing architecture explicitly acknowledges the long gestation of ecological interventions, the realities of commons-based and customary tenure, and the undervalued contributions of indigenous knowledge and ecosystem services. It values environmental and social returns alongside financial metrics, with transparent methodologies and sequencing, providing a robust foundation for transitions at scale.

CAT: Origins, Structure, and Stakeholders

Why was CAT formed

India has a vibrant landscape of civil society initiatives and state-led programmes in agroecology, but these remain fragmented, under-resourced, and often confined to specific regions or thematic niches. Even strong models struggle to scale without long-term ecosystem support—across inputs, extension, markets, finance, and policy. CAT was created as a collective response to these limitations and was designed to integrate actors across the food system into a sustained, landscape-level transition. Its purpose is not only to strengthen existing efforts but also to converge them into a

coherent national framework capable of delivering systemic change.

Architecture of Collaboration

To scale agroecology and build trust amongst all stakeholders, CAT convenes four stakeholder groups (Fig. 1), whose complementary roles form its architecture of collaboration:

- **Impactors:** These are champion organisations, networks, and individuals with deep ground experience in agroecology, rooted in long-standing relationships with farming communities.
- **Enablers:** These include researchers, think tanks, government agencies, and training and extension bodies that provide the technical, institutional, and policy scaffolding necessary for transitions.
- **Funders:** Who bring philanthropic organisations and impact-aligned investors providing catalytic grants, concessional finance, and risk-sharing instruments to support early stages and de-risk systemic shifts.
- **Marketers:** These are value-chain actors building certification, traceability, consumer trust, market access and fair prices for agroecological produce.

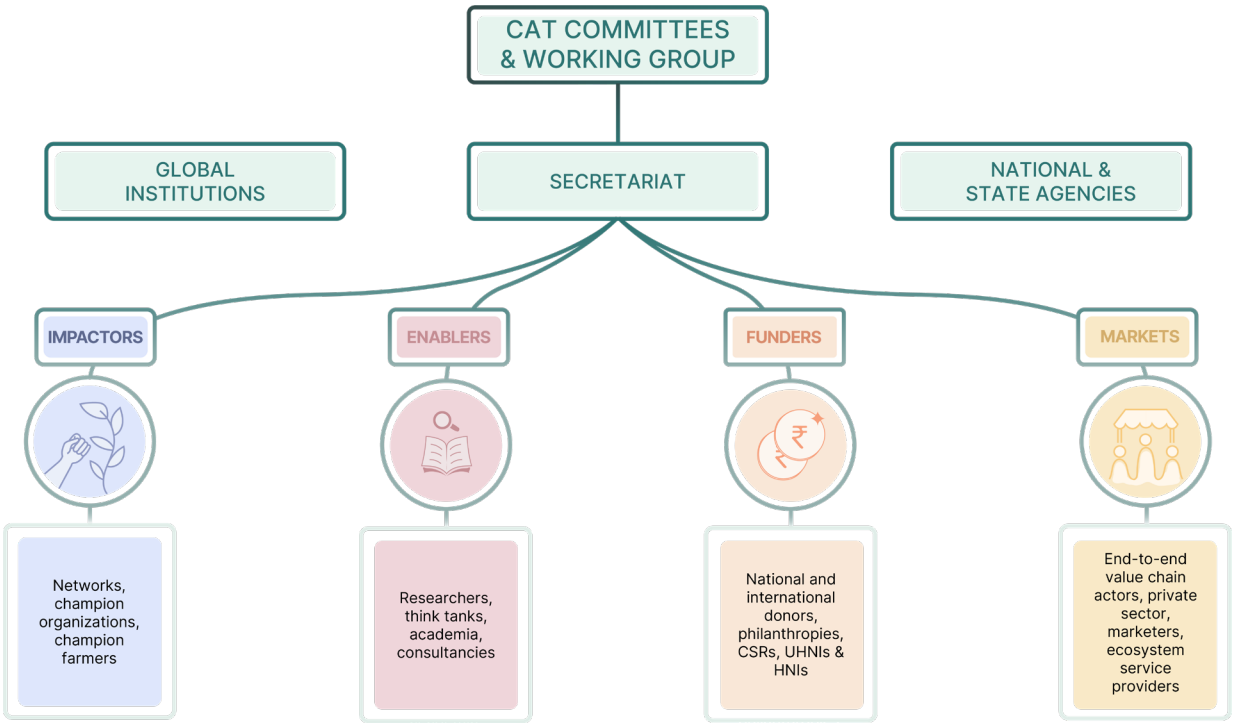


Fig. 1 - CAT Stakeholder Groups

Interim Governance

A working group of organisations (ATE Chandra Foundation, Bharat Agroecology Fund, Children's Investment Fund Foundation, Centre for Sustainable Agriculture (CSA), GIZ, IKEA Foundation, India Climate Collaborative, National Coalition for Natural Farming, Rainmatter Foundation, Professional Assistance for Development Action (PRADAN), Rohini Nilekani Philanthropies, Rockefeller Foundation, Shakti Foundation, Watershed Support Services And Activities Network (WASSAN) and Welthungerhilfe (WHH) currently guides CAT. The working group's guidance is an interim arrangement that will help transition to a long-term, co-created governance structure as the programme matures. The underlying ethos in this relationship is one of mutual respect, transparency, and farmer-centred accountability across all partners.

Why a Landscape Approach

Scaling agroecology cannot rely on scattered "pockets" of practice. Farmers often encounter labour shortages, input bottlenecks, and thin or unreliable markets; without an enabling ecosystem, transitions tend to stall or even reverse. The Green Revolution offers a reminder: it achieved scale not because of individual farmer innovation alone but because it was scaffolded by extensive public support through research, subsidies, irrigation, procurement, and extension. Agroecology requires an equally comprehensive ecosystem—one designed not for extractive productivity but for regeneration, resilience, and equity.

Landscape as the Minimum Viable Unit

CAT defines a landscape as the block-level administrative unit—the minimum viable scale where ecological processes, social institutions, and governance mechanisms can converge. This minimum viable scale is defined as:

- Large enough for integrated watershed and biodiversity planning, seed and bio-input systems, farmer institutions, advisory services, value addition, and markets; and
- Specific enough to link directly with Panchayati Raj Institutions (PRIs), district planning, and scheme convergence.

Guiding Principles and Design Matrix

The 13 principles of agroecology, as set out by the High Level Panel of Experts (HLPE, 2019), provide the normative compass for transformation at the landscape level. CAT translates these principles into practice through its 35-domain Agroecology Matrix (Fig. 2) — a planning and monitoring scaffold that spans soil and water systems; biodiversity and seed

systems; cropping, livestock, and fishery systems; energy and nutrient cycles; institutions, equity, and participation; post-harvest and market linkages; and data and extension. The matrix allows interventions to be systematically designed, tracked, and aggregated, so that domain-level actions contribute to broader landscape outcomes.

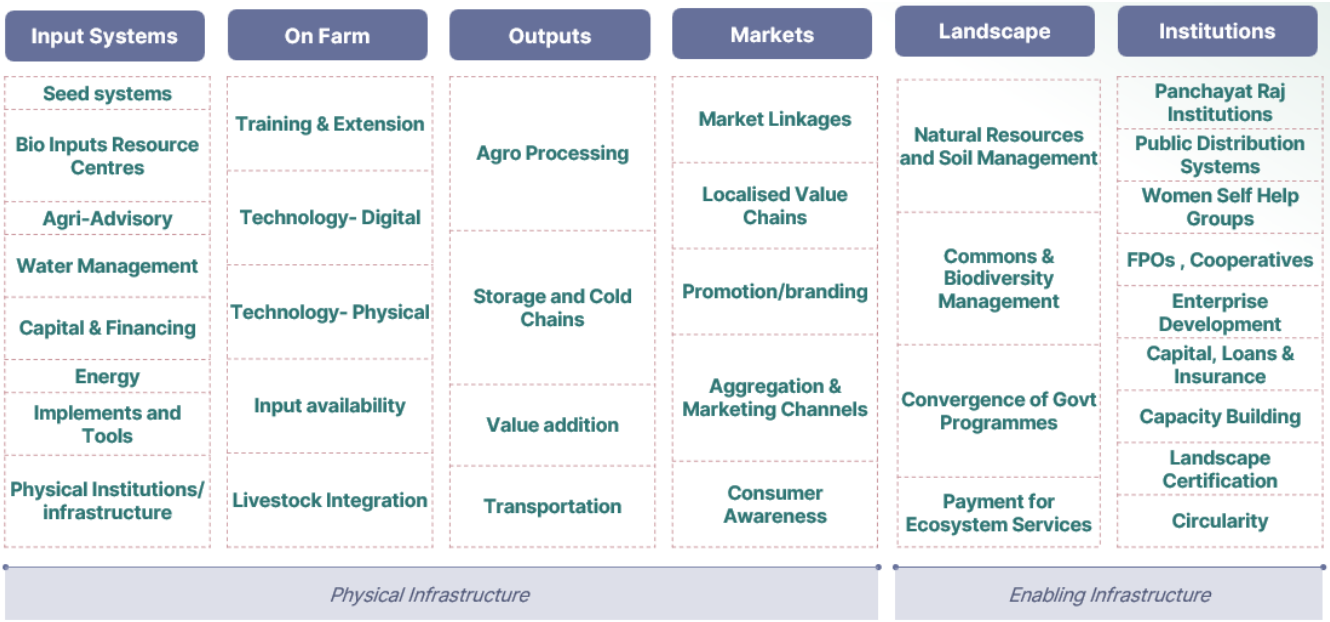


Fig. 2 - CAT Agroecology Matrix

Further, six broad goals guide CAT's landscape-based agroecological transformation. These are:

1. Improving the quality of natural resources such as land (soil), water, flora, and fauna.
2. Increasing income to make agriculture an attractive livelihood choice for the younger generation.
3. Preserving and enhancing biodiversity.
4. Ensuring the well-being of smallholder farmers, women, and landless labourers.
5. Enhancing food and nutrition security.
6. Addressing the climate crisis.

Landscape Design Committee (LDeC)

A dedicated Landscape Design Committee (LDeC) has been set up to ensure that each plan reflects these principles in practice. The LDeC defines the criteria for selecting landscapes, appoints and coordinates consultants and subject experts, reviews the coherence of designs with agroecology principles, and facilitates cross-landscape learning. Its role is not just technical but strategic: ensuring rigour, comparability, and mutual learning across diverse agroecological and institutional contexts.

CAT's Theory of Change

CAT's theory of change rests on three interdependent pillars that together enable durable, population-scale transformation. Each pillar has been designed to reinforce the others, ensuring that practice, policy, and markets advance in step.

1. Landscape-Level Implementation

Each landscape follows a ten-year, multi-dimensional plan covering seed and bio-inputs, water and soil management, diversified cropping and livestock, agroforestry and NTFPs, farmer collectives, advisory and data systems, post-harvest and value addition, and local-to-institutional markets. These plans have been phased and sequenced to allow farmers and institutions to take on change at a manageable pace, while maintaining momentum over time. Civil society anchors, community institutions, and technical partners co-implement these in phased sequences, with blended finance to manage risk and sustain momentum. Each of the ten landscape reports outlines a plan that is both locally grounded and aligned with CAT's overarching national vision.

2. Enabling Policy Environment

Persistence of agroecological transitions depends on deliberate policy convergence and reform. Key strategies include repurposing elements of MSP and PDS, embedding agroecological procurement into school meal programmes, aligning MGNREGA with soil and water restoration, and restructuring input and energy subsidies to reinforce ecological outcomes. Equally critical is the realignment of research, extension, and R&D incentives, so that institutions such as KVKs directly support ecological practices. PRIs and community institutions are enabled to plan and steward commons, while outcome-linked funding and reporting create accountability. The challenge, as CAT acknowledges, is not only to design interventions but also to implement them across landscapes marked by diverse natural resources, socio-economic conditions, and farmer behaviours. Systems thinking, therefore, underpins policy strategies, ensuring they are adaptive and inclusive.

3. Market Development

Market transformation is essential to stabilise and scale agroecological

farming. Demand for safe, nutritious, and chemical-free food forms a reinforcing loop: as consumer trust and willingness to pay grow, farmers find more substantial incentives to sustain and expand ecological practices. CAT supports evidence-based public awareness (including on health impacts of pesticide residues and GMOs), credible certification and labelling, digital traceability, and multi-actor market platforms linking FPOs and brands to institutional and retail buyers—aiming for trust, accessibility, and fair price realisation.

Integration and accountability

The Landscape Design Committee (LDeC) orients all actors to a common results framework. Key indicators include the percentage of farms under diversified regenerative practices, the number and quality of scheme convergences, improvements in soil organic matter and water security, producer price realisation gains, and inclusion of women and tribal communities. Risk registers are maintained to track barriers such as policy inertia, weak consumer uptake, credit bottlenecks, and climate shocks, with clear mitigation pathways.
The entire approach is explicitly designed through a systems-thinking lens, acknowledging the interplay of feedback loops, external drivers, and the dual rhythm of change: incremental adoption at the farm level and the transformational shifts required in markets and policy to enable persistence at scale.

From Idea to Action: The Pilot Landscapes

Selection of Landscapes

CAT issued a call and assessed 18 candidate landscapes using a structured, comparative scoring framework. CAT assessed these landscapes based on the following criteria:

Strong presence of anchor Civil Society Organisations (CSO): This was evaluated based on the presence of CSO with a 5–10+ years of regional experience in agroecology and across domains spanning agriculture, forestry, livestock, food systems, governance; strong local teams; credible governance; preferably part of existing networks; willingness to collaborate; ability to manage large projects; presence of a champion leader; and strong relationships with government.

Community preparedness: CAT gauged landscapes based on several indicators, such as pre-existing agroecological practices amongst 20–30% farmers in the given landscape, the presence of default-organic or tribal areas, minimally touched by Green Revolution inputs, and, for intensive agriculture areas, clear community and government willingness to transition.

Institutional and government support: This included the presence of strong CBOs, SHGs, Cooperatives, and FPOs, alongside enabling signals at the village, block, district, and state levels—organic declarations, dedicated schemes, Minimum Support Price (MSP) incentives for natural farming, and demonstrated convergence potential.

Selecting consultants and expert teams

Consultant entities were selected through a rigorous process: sectoral experience, geographical and thematic relevance, track record in comparable agroecological contexts, depth of expert bench, and cost and feasibility. CAT shortlisted individual subject-matter experts for each domain after a thorough review of their profiles and backgrounds.

Phase-I landscapes and partnerships

From the 18 proposals that were reviewed by CAT, three pilot landscapes were selected;

- **Ahwa block, Dang, Gujarat** — Anchor: AKRSP(I); Consultant: Civil Society Academy.
- **Chitrakonda block, Malkangiri, Odisha** — Anchor: WASSAN; Consultant: Catalyst Management Services.
- **Dantewada block, Dantewada, Chhattisgarh** — Anchor: Centre for Sustainable Agriculture (CSA) & Nirman; Consultant: Ecociate.

Planning the Transformation - Landscape Investment and Implementation Plans

Immersion and baseline

Consultants and anchor organisations conducted immersions with farmers, SHG federations, FPO leaders, village heads, local CSOs, and line departments. Agroecological adoption levels profiled villages. Secondary data mapped topography, land use, irrigation, cropping patterns, market linkages, natural resource status, policy environment, and institutional landscape.

Co-creation of interventions

Stakeholders then co-created interventions to scale existing activities and introduce new elements across the value chain, aligning with ongoing government programmes. Candidate interventions were shortlisted collaboratively.

Expert-led refinement

A 4-day design workshop was conducted where consultants, anchors, and subject experts stress-tested feasibility, scalability, and fidelity to agroecology principles. Feedback from this helped revise the designs.

Validation and investment planning

Community and government consultations re-validated the plans; financial experts structured investment needs and potential sources such as public scheme convergence, community contributions and catalytic capital. The LDeC's final review produced the ten-year investment and implementation plans per landscape, with results chains, indicators, and governance/delivery backbones. Each plan also incorporates risk registers and clear mitigation pathways, ensuring that implementation remains adaptive to policy, market, and climate uncertainties.

Conceptual and Practical Frameworks for Agroecological Transitions

Most Indian farmers are small and marginal, often cultivating less than one hectare of land, with household incomes below ₹1,00,000 (USD 1,142). Their livelihoods are not solely dependent on farming but are diversified across multiple income sources such as wage labour, seasonal migration, and small enterprises. These realities in the lives of farmers create high vulnerability to climate and market shocks. Any agroecological design must therefore operate simultaneously at both the farm and household levels—optimising available resources to ensure food and nutritional security, reducing exposure to risks, and creating resilience. At the same time, it must enable farmers to navigate imperfect and unequal markets that larger, resource-rich actors frequently dominate. Without this dual focus, agroecological transitions risk excluding or overburdening the very farmers they seek to support.

Systems Boundaries

Effective landscape design requires clarity on where systems begin and end, and how they interact across scales. These boundaries are not rigid but provide a framework to ensure interventions are coherent and impactful.

These include:

Spatial boundaries: From the farm and household, to the village and landscape level, to regional and national contexts, and further outwards to global drivers such as trade policies, climate change, and food system dynamics.
Temporal boundaries: Recognising different time horizons - short-term (1–5 years) changes such as practice adoption and training; medium-term (5–20 years) recovery in soil fertility and biodiversity; and long-term (20+ years) transformations including climate resilience, cultural shifts in production and consumption, and intergenerational knowledge transfer.

Ecological boundaries:
Encompassing biodiversity, soil health, water cycles, and nutrient flows that underpin productivity and resilience.

Socio-economic boundaries:
Including labour availability, knowledge and skills, market access, access to credit and finance, and the broader policy environment that shapes farmer choices.

Boundaries of knowledge & innovation: Centred on farmer-led experimentation and participatory research, combining traditional and indigenous knowledge with appropriate modern science and technology in respectful and context-specific ways.

Institutional & political: Spanning Panchayati Raj Institutions (PRIs), community-based organisations, self-help groups, farmer producer organisations, state and district departments, civil society, and private actors, each of which influences resource access, decision-making, and accountability.

Levels of Change

It is imperative to note that any change in the agroecosystem differs in its form depending on the level at which it occurs. At the level of the farm, household, and landscape, change is typically incremental given the resource and risk constraints. In contrast, at the food system level, at the level of institutions, policymaking and the market, change must be transformational to accelerate and stabilise transitions.

Agroecosystem-level Transitions: Practical Guidelines

For agroecosystems to transition, several granular components of these systems, such as soil health, water use, cropping systems, and non-pesticidal management, amongst others, warrant comprehensive interventions. These practical guidelines play a critical role in ensuring a smooth transition.

Soil Stewardship

Healthy soils form the foundation of resilient agroecosystems. Transitioning to agroecology requires both the protection of existing soil quality and systematic rebuilding of degraded soils.

- **Improved Soil Structure:** This includes minimising disturbance and compaction as far as possible. This means minimising tillage, avoiding puddling in rice cultivation, and shifting, where feasible, to methods such as direct seeding in rice or dibbling in cotton and vegetables. Over the medium term, adopting agroforestry and horticulture plantations not only enhances soil structure but also improves long-term carbon sequestration and microclimate regulation.

- **Increased Soil Organic Matter:** A key goal is to maintain soil organic matter (SOM) at or above ~1% (equivalent to ~0.58% SOC), which significantly improves resilience. This can be achieved by incorporating biomass such as green and greenleaf manures, applying mulches, or growing cover crops (for example, horsegram or diverse mixes that contribute ~0.3–1.0 t C/ha/yr). Well-decomposed compost, applied at roughly 5–10 t/ha/yr (or 5–7 tons per acre annually), can increase SOC by 0.1–0.3 percentage points over 3 to 5 years. Continuous ground cover must be maintained wherever possible. In the early stages, plant roots exude organic carbon into the soil. It is important to note, however, that tropical soils are prone to higher SOM losses due to intense heat and leaching during monsoons, making regular replenishment essential.

- **Improved Soil Biology:** Encouraging biological activity within the soil is as critical as managing soil structure and organic matter. Indigenous microbial cultures such as jeevamrut and panchagavya can accelerate decomposition, mobilise nutrients, and support biological nitrogen fixation.

Maintaining and nurturing soil fauna like earthworms improves soil porosity, aeration, and nutrient cycling.

- **Nutrient availability:** Nutrient availability is a dynamic phenomenon that depends on the soil mineral matter, organic matter, soil biology and the soil chemical properties like cation exchange capacity, pH, salinity, etc.

- **pH balance:** Ideal soil pH levels maintained between 5.5 and 6.5 are necessary to prevent imbalances that may cause toxicities or deficiencies. Macronutrient deficiencies occur (Nitrogen, Phosphorus and Potash) in conditions where pH levels are low, while micronutrient deficiencies are seen in situations where pH levels are higher. Tracking synergies and antagonisms among macro- and micronutrients helps avoid hidden challenges that can undermine crop performance.

Sustainable Water Use

Water management is a central determinant of agroecological success, particularly in rain-fed and climate-vulnerable regions. Effective interventions must consider the entire water cycle at the farm and landscape levels.
Water Harvesting: Rainwater harvesting must be a critical component of any intervention at the level of the farm and must be an integral part of any design. At the landscape level, larger water harvesting structures must be planned.

- **Drainage:** Adequate drainage to prevent waterlogging, especially in compacted or clay-heavy soils, must be ensured. Drainage design should also account for increasingly intense and unseasonal rainfall events caused by climate change. Unseasonal rains, increased rainfall intensity over short periods, soil compaction due to puddling and heavy machinery use create serious drainage problems. A good drainage plan is essential at the farm and village/ landscape level.

- **Water budgeting based on cropping patterns:** Cropping patterns need to be designed based on total rainfall received, and groundwater must be used only for supplementary irrigation. Water budgeting should become a practice at the farm and landscape level to make crop choices.

- **Moisture management:** Plants require moisture in the root zone. Water can potentially kill plants. Therefore, a water use plan maintains good soil structure, covering the soil with crops or mulch so that an adequate amount of moisture is retained.

Cropping Systems and Diversity

Agroecology thrives on diversity, which buffers risks and stabilises production in uncertain climates and markets.
Mixed/poly-cropping: Planting multiple crops together enhances nutrient cycling and provides dietary diversity.

- **Intercropping:** Strategic combinations of cereals, legumes, and vegetables reduce pest incidence, improve resource use efficiency, and ensure year-round ground cover.

- **Rotations:** Rotating crops interrupts pest and disease cycles, improves soil fertility, and maintains balance in nutrient demands.

- **Perennials and agroforestry:** Integrating perennials stabilises soils, increases carbon sequestration, and diversifies

incomes through fruits, fodder, fuelwood, and timber. Keeping living roots in the soil throughout the year is a key principle for regeneration.

Sustainable Seed Systems

Seed is both a technology and a cultural resource. Agroecological transitions depend on resilient and locally adapted seed systems.

- **Decentralised multiplication:** Secure local availability of quality seed through farmer-led and community-based multiplication, preferably under organic/natural conditions.
- **Foundation seed access:** Ensure farmers can access both traditional and improved varieties suited to their ecology and markets.
- **Seed microbiomes:** Recognise that seed performance in low-input systems is influenced by the microbiome it carries; conserving and enhancing this microbiome is essential.
- **Custodianship:** Farmers, especially women and indigenous communities, are often the custodians of traditional seed knowledge, and their role should be strengthened.

Non-Pesticidal Management (NPM)

Agroecology relies on preventing rather than curing pest and disease outbreaks, treating these as signals of imbalance in the agroecosystem rather than as isolated problems.

- **Prevention:** Healthy soils, diverse cropping, habitat management, and sanitation create conditions for the prevention of pests and diseases.
- **Surveillance:** Regular monitoring enables farmers to act before outbreaks become unmanageable.
- **Control:** Biological, mechanical, and ecological controls (such as pheromone traps, neem extracts, and predator conservation) are preferred over chemical interventions. The aim here is to keep populations below economic thresholds, not to eradicate them.

Understanding Transitions

While changes are being planned, involved parties may be aware of an ideal destiny, an end goal, but pathways to reach this goal, this destiny, are always complex and are influenced by various factors, including farmers' socioeconomic conditions and behavioural patterns, compounded by market demands and inadequate policy support. Therefore, at the agroecosystem level, the transition is always incremental. Whereas, at the market and policy level, change needs to be transformational.

- **Good Agricultural Practices (GAP):** These enhance the efficiency of existing industrial inputs (e.g., optimising irrigation or pesticide use). In areas with high input use, focus must be on reducing the use of agrochemicals and water. GAP focuses on incremental improvements to current systems. An example of this could be adopting precision farming techniques.
- **Sustainable Agricultural Practices (SAP):** Replaces industrial inputs with alternatives (e.g., organic fertilisers instead of synthetic ones). SAP aims to reduce environmental harm while maintaining productivity. (Example: Using vermicompost to substitute chemical fertilisers.

- **Regenerative Agriculture:** Redesigns agroecosystems based on ecological processes to restore soil health and biodiversity. This emphasises long-term sustainability and resilience. (Example: Implementing agroforestry or cover cropping across a farm.)

- **Incremental Transition:** Gradual adoption of SAP or GAP (e.g., reducing water use by 20% with drip irrigation), adopting non-pesticidal management, converting part of the land, etc.

- **Transformational Transition:** Full shift to regenerative systems (e.g., converting to organic farming with no external inputs and integrated farming systems that promote regenerative soils, balanced ecosystems and recycling).

Principles for Land Use and Design Features (at the Landscape Level)

CAT's land-use and spatial design choices balance ecological integrity, productivity, and equity. Eight guiding principles shape how interventions are sited, sequenced, and scaled. These are described below:

- **Diversity & integration:** Combine crops, trees, livestock, and fisheries to stabilise yields, spread risk, and ensure nutrition and multiple income streams, while enhancing soil fertility and pest regulation.

- **Soil & water stewardship:** Use contouring, mulching, cover crops, ponds, recharge structures, and drainage suited to monsoon variability to conserve soil and manage both excess rainfall and drought.

- **Ecosystem connectivity:** Maintain corridors, wetlands, riparian buffers, and commons so that pollinators, beneficial insects, and wildlife can thrive and continue providing ecological services.

- **Climate adaptation:** Promote diversified livelihood portfolios, stress-tolerant crop varieties, and contingency cropping to buffer smallholders against droughts, floods, and market shocks.

- **Participatory planning & inclusion:** Co-create plans with Gram Sabhas, SHGs, and FPOs, ensuring leadership roles for women, tribal, and marginalised groups to embed equity and ownership.

- **Local resource optimisation & circularity:** Maximise use of on-farm biomass, manures, recycled crop residues, and renewable energy to reduce dependence on external inputs and strengthen self-reliance.

- **Renewable energy & efficient infrastructure:** Prioritise biogas, solar drying, efficient irrigation, and frugal cold-chains to cut costs, emissions, and post-harvest losses.

- **Adaptive management:** Keep planning flexible, adjusting through monitoring, farmer feedback, and community learning to stay responsive to climate, market, and social changes.

Financing the transition

With ten-year investment blueprints validated for each pilot landscape, the next challenge is mobilising and aligning finance to match ecological timeframes and the enterprise realities.

Financing agroecological transformation is central to building resilient food systems in a context marked by climate change, land degradation, and rising inequality. Rooted in the 13 principles of agroecology—recycling, input reduction, soil health, animal health, biodiversity, synergy, economic diversification, co-creation of knowledge, social values and diets, fairness, connectivity, land and natural resource governance, and participation—this transformation offers a pathway to ecological, economic, and social sustainability.

The outcomes sought include:

- Enhanced farmer incomes and livelihoods.
- Improved soil and water health.
- Increased climate resilience and biodiversity.
- Strengthened local food systems and community agency.

To realise these outcomes at scale, there is a critical need to mobilise and align funding from diverse sources—public, private, philanthropic, and community—that currently operate in silos. This calls for innovative blended financing strategies that can coordinate resources, de-risk investments, and direct capital toward long-term system change.

Why Conventional Finance Falls Short

The structural misalignment of existing finance with agroecological transformation shows up in three critical areas:

Long gestation of ecological interventions

- Agroforestry, soil regeneration, and water harvesting often require 3–7 years or more before measurable returns.
- Most traditional finance instruments, such as loans and subsidies, are designed for short-term cycles (1–2 years) with expectations of quick returns or gains.
- As a result, long-term ecological value (carbon sequestration, biodiversity restoration, water retention) is underfunded because it's not "bankable" in conventional terms. These interventions, therefore, are primarily funded by the Government.

Community-led or commons-based initiatives with unclear tenure or ownership

- Many agroecological landscapes, such as tribal areas,

forest fringes, and shared grazing lands, operate under collective or customary tenure.
- Traditional lenders/investors require clear legal titles or land deeds to extend credit or equity. Community resources often fall outside these frameworks, despite being intensely productive and socially embedded.
- As a result, there is a systematic financial exclusion of large populations of Indigenous groups, women, and smallholders. This requires an overall systems change for it to be effectively addressed.

Integration of indigenous knowledge and ecosystem services

- Agroecology thrives on local knowledge systems, seed diversity, mixed cropping, and ecological stewardship - all of which are crucial for climate adaptation and resilience but are non-monetised in conventional financial models.
- Conventional finance focuses on cash flows, yields, and fixed assets and ignores ecosystem services (e.g., pollination, nutrient cycling, carbon sinks) and non-market values (e.g., food sovereignty, cultural practices).
- As a result, there exists a systematic undervaluation of regenerative practices.

Blended Finance as a Strategic Imperative

Blended finance is not a financial tool but a strategic imperative for systemic transformation. It addresses market failures, redirects existing flows, and unlocks new capital, and hence it can bridge the gap where conventional finances fall short. Here are some critical ways in which it can contribute:

Redirecting existing flows: Channeling a significant portion of private finance toward agroecology by using risk-mitigation and return-enhancement mechanisms.

Unlocking international potential: Mobilising underleveraged international finance to complement domestic resources, helping close funding gaps and contributing to global adaptation efforts. These flows bring patient capital, technical expertise, and global legitimacy to agroecology as a scalable climate adaptation strategy.

Addressing market failures: Providing the necessary de-risking instruments to make agroecological investments attractive to commercial lenders who currently prioritise conventional, input-intensive farming models.

Implications for Blended Finance Design

Blended Finance combines catalytic capital (grants, concessional finance) with private and public investment to reduce risk, increase impact, and align incentives across diverse stakeholders. These models will:

- Introduce patient capital and long-term blended structures that align with ecological timeframes.
- Involve the private sector from pilot design - for example, including NBFCs and banks from pilot design can help crowd in private capital faster.

- Leverage community validation, customary rights, or collective governance frameworks as a basis for investment - not just individual titles.
- Build in metrics for ecological and social returns to ensure accountability - such as soil organic carbon improvements, water security gains, biodiversity restoration, women's leadership, and price realisation. These KPIs align with financial disbursals, ensuring that ecological and social outcomes are as visible and valued as financial returns.
- This approach is especially relevant for landscape-scale transformations, where interventions must go beyond farm-level changes to address upstream (soil, water, forests) and downstream (market, processing, logistics) systems, and often across jurisdictional boundaries.

Methodology: How We Frame Financing Strategies for Agroecological Landscapes

Financing strategies must reflect that interventions differ in maturity, profitability, and risk. CAT's methodology matches the type of capital with the intervention type, risk profile, time horizon, and capital suitability through a structured sequence of steps:

Step 1: Classify the Nature of the Intervention

Interventions fall across the agroecological transition pathway, each serving a distinct purpose and requiring different forms of financial support:

- Community mobilisation and planning
- Pilot or experimental models
- Regenerative natural resource management (soil, water, forests)
- Market-linked enterprises
- Livestock or input support
- Ecosystem service creation (carbon, biodiversity, watershed)
- Digital enablement or market access

Step 2: Determine Maturity and Revenue Model

This can be done by addressing the following.

- Is the intervention in a pre-commercial or early-stage phase (e.g., pilots, community engagement)?
- Does it generate direct financial returns (e.g., product sales, enterprise profits), or does it deliver indirect or long-term ecological returns (e.g., groundwater recharge, soil fertility)?

This helps decide whether the appropriate support takes the form of grants, concessional finance, commercial capital, or results-based instruments.

Step 3: Assess Risk Profile and Time Horizon

- Consider exposure to market, climate, or institutional risks.
- Identify whether the return horizon is short-term, medium-term, or long-term:
  - Short-term: e.g., working capital for FPOs
  - Medium-term: e.g., processing units, agri-tech platforms
  - Long-term: e.g., agroforestry, ecosystem restoration
- This assessment determines whether patient capital, results-based finance, or short-term working capital is most appropriate.

Step 4: Check Land Tenure and Governance Context

- Does the intervention operate on individual titled land, commons, or collective rights (e.g., CFRs)?
- Are rights formal/legal or customary/community-based?
- Where tenure is unclear or collective, grants, guarantees, or risk-sharing mechanisms are essential, as traditional lenders avoid such contexts.

Step 5: Match with Capital Type

Apply the following logic to align capital with intervention type:

- High-risk, non-revenue, early-stage → Grants + Technical Assistance
- Long-term ecological outcomes → Results-Based Finance / PES / Blended Concessional Debt
- Input support and asset creation → Concessional Loans / Priority Sector Lending
- Market-linked, revenue-generating activities → Equity / Commercial Debt / Blended Finance
- Digital or scalable innovations → Venture Capital / Agri-FinTech Investors
- Carbon or biodiversity benefits → Performance-linked finance, outcome payments, credit markets

Step 6: Identify the Appropriate Capital Provider

Potential sources include:

- Grants: Philanthropy, Corporate Social Responsibility (CSR) and government schemes (e.g., National Rural Livelihood Mission {NRLM} and Mahatma Gandhi National Rural Employment Guarantee Act {MGNAREGA})
- Concessional Finance: National Bank for Agricultural and Rural Development (NABARD), multilateral development banks, and climate adaptation funds
- Commercial Capital: Banks, NBFCs, agri-tech venture funds, supply chain financiers
- Results-Based Finance: Donors, carbon markets, environmental funds
- Blended Vehicles: DFIs, state-level funds, global SDG-aligned platforms

Step 7: Layer and Sequence Financing
Different forms of capital must be combined and sequenced over time:

- Early Stage: Grants for planning, institutional building, and demonstrations
- Scaling Phase: Concessional loans, catalytic equity, and working capital
- Maturity Stage: Commercial investments and outcomes-based finance as risks reduce.
- Digital or scalable innovations → Venture Capital / Agri-FinTech Investors
- Carbon or biodiversity benefits → Performance-linked finance, outcome payments, credit markets.

In sum, this methodology provides a coherent approach to sequencing and layering capital, enabling funders, policymakers, and practitioners to deploy the correct form of finance, at the right time, and corresponding with the proper intervention—maximising ecological impact, financial sustainability, and landscape-level transformation.

Types and Sources of Capital: Options Across Agroecological Landscapes

Financing agroecological transitions depends on a diverse palette of instruments and actors, each designed for different purposes. Blended finance operates along a continuum of capital, ranging from impact-only instruments such as charitable giving and donations, which have no expectation of financial return and focus purely on generating ecological and social outcomes, to fully non-concessionary commercial capital such as venture capital, private equity, and commercial debt, which prioritise market-rate returns. Between these two ends lies a broad spectrum of blended instruments that combine impact and return in varying degrees. It is this continuum that allows the right mix of capital to be matched with the maturity, risk profile, and objectives of agroecological interventions, ensuring that resources are effectively aligned with both ecological imperatives and financial realities.

	Grants & Technical Assistance	Concessional Debt	Commercial Loans	Equity and Impact Investment	Guarantees and Risk-Sharing Mechanisms	Results-Based or Outcomes Finance
Source	Philanthropy, government schemes (e.g., MGNREGA), CSR	NABARD, multilateral banks, development finance institutions - IFC, DFC, ADB, etc	Commercial banks, NBFCs, Agri fintechs	Impact investors, agri-tech venture funds, blended equity pools	Multilateral institutions (e.g., World Bank, IFAD), blended finance facilities	Development agencies, climate funds, SDG-aligned donors
Use Case	Early-stage capacity building, demonstration pilots, community mobilisation, planning processes	Input provisioning, irrigation, FPO-led procurement, livestock asset creation.	Working capital for agri-enterprises, equipment leasing, and warehousing.	Scaling sustainable agri-businesses, processing and value addition units	De-risking lending to smallholders, early-stage FPOs, and nature-based enterprises.	Payments for ecosystem services (PES), carbon and biodiversity credits, social impact bonds
Landscape Fit	Degraded landscapes, tribal commons, areas with low institutional capacity	Semi-arid regions, rainfed farming belts with FPO presence	Areas with high market integration, peri-urban horticulture belts	Aggregated zones with market access (e.g., high-value crops, organic clusters)	Remote or politically sensitive landscapes with high default risk	Forest landscapes, watersheds, ecologically sensitive zones with co-benefits

Implementation
Design and Governance

Effective implementation requires a multi-tiered governance framework that unites government, community organisations, financial actors, and knowledge partners. Each level has defined responsibilities, ensuring accountability, convergence, and alignment with CAT's Theory of Change. Here is a brief overview of what different stakeholders must do.

Central Government

- Provide oversight and monitoring of landscape initiatives.
- Champion inter-ministerial convergence for coordinated policy support.
- Study alignment with national policies and evidence-based feedback to improve scheme design.

State Governments

- Adopt the Theory of Change in its entirety and align schemes with landscape objectives.
- Launch new schemes where gaps exist.
- Ensure implementation support, inter-sectoral convergence, and regular monitoring.

District & Block Administrations

- Act as the primary administrative interface for implementation.
- Mobilise local resources and converge schemes.
- Facilitate monitoring, data collection, and reporting; escalate issues to the state.
- Strengthen local institutions and engage with PRIs for participatory governance.

Gram Panchayats & Gram Sabhas

- Anchor grassroots governance, ensure community ownership and participatory decision making.
- Integrate agroecological interventions into GPDPs, including climate contingency plans.
- Mobilise village resources, community cadres, and para-workers.
- Act as communication conduits between communities, anchors, and government.
- Support anchor organisations in community engagement.
- Promote gender-inclusive leadership and strengthen local institutions (such as on water, markets, FPOs).

Anchor Organisations

- Mobilise communities and manage para-workers.
- Build and support CBOs/FPOs; liaise with PRIs and expert organisations.
- Implement interventions within their expertise; coordinate with others where needed.
- Support enterprise development, market linkages, and access to finance.
- Liasoning with financial institutions.

Expert Organisations

- Implement specialised interventions with anchors, CBOs, and government bodies.
- Support the development and training of community cadres for sustained delivery.
- Liasoning and reporting to financing institutions on intervention progress.

Industry & Trade Bodies

- Act as market actors by sourcing inputs/services and buying outputs.
- Facilitate and build reliable value chains and consumer confidence.
- Financing Institutions
- Provide timely capital and adapt instruments to evolving needs.
- Monitor progress against financing plans and adjust modalities accordingly.

Role of the CAT Secretariat

- Monitoring, Evaluation and Research: Lead M&E with GIS/remote sensing; track financing plans.
- Technical Assistance: Support domain-specific technical expertise, including biodiversity registers, PES design, and help integrate GP-level resilience plans.
- Capacity Building: Strengthen women leaders, FPCs, CBOs, and grassroots institutions.
- ICT & Extension: Build digital platforms for knowledge sharing and farmer-to-farmer extension.
- Community Mobilisation: Design and promote reward mechanisms and community events (e.g., Shram Dan, Haseeru Habba) to encourage innovation and social mobilisation.
- Coordination: Orchestrate inter-landscape learning and adaptive management through a central Secretariat.

This note has set out the rationale and vision for the Consortium for Agroecological Transformations (CAT), explaining why the block-level landscape is the most appropriate unit for systemic change—large enough to integrate ecological processes, institutions, and governance, yet specific enough to connect with Panchayati Raj and district planning. It has described CAT's integrated Theory of Change linking practice, policy, and markets over a ten-year horizon, while noting that the challenge lies in implementing such frameworks across diverse ecological and socio-economic contexts.

The note also outlined the pilot landscape selection process, in which proposals from across the country were reviewed and three sites chosen through rigorous criteria, and described the participatory planning methodology. It framed the guidelines for agroecosystem transitions, covering soil stewardship, water use, biodiversity, seed systems, and farmer institutions, emphasising the need for a systems-thinking lens. Financing architecture was presented, highlighting a blended and layered capital stack, differentiated financing pathways, and the importance of ecological and social return metrics alongside financial KPIs. Finally, it set out the governance design, with defined roles for governments, community institutions, anchors, expert organisations, financiers, and the CAT Secretariat, ensuring that the transformation is investable and accountable. The landscape reports that follow build on this foundation.