



PROJECT KNOWLEDGE BRIEF 4

CIRCULAR FOOD SYSTEMS IN AFRICA

Lessons for Scaling

Evidence from rural enterprises, lead farmer programmes, and field practice across Zimbabwe, Tanzania, and Mozambique

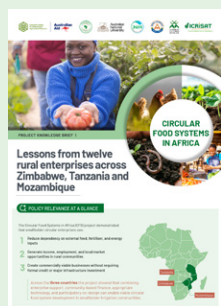
POLICY RELEVANCE AT A GLANCE

The Circular Food Systems in Africa (CFS) project demonstrated that circular food system development at smallholder scale is viable and commercially rational, but that it depends on enabling conditions that markets alone are unlikely to provide. This brief sets out ten evidence-based lessons on what those conditions are and what they mean for programme design, investment, and policy.



About This Series

This is Brief 4 of four CFS knowledge products.



1 Lessons from twelve rural enterprises across Zimbabwe, Tanzania and Mozambique

This brief documents twelve enterprises supported through the CFS project. It presents the project approach and implementation context, then profiles each case study.



3 Inclusion outcomes

This brief summarises how the CFS project approached the inclusion of underserved groups and the resulting outcomes across Zimbabwe, Tanzania, and Mozambique. The focus was predominantly on women and youth, including those with intersecting inequalities: single or widowed women, young women, and women from different cultural backgrounds (including Maasai women in Tanzania).



2 Lead farmer profiles

This brief profiles four lead farmers who participated in the CFS project across Zimbabwe's Insiza and Bubi Districts during the 2023/24 and 2024/25 cropping seasons.



4 Lessons for scaling

This brief distils ten lessons from the CFS project's evidence base across Zimbabwe, Tanzania, and Mozambique. It is written for programme designers, policy actors, funders, and implementing partners with a direct interest in what makes circular food system enterprises viable, replicable, and scalable.

Context

The CFS project worked with over 50 businesses across three countries for just over two years, supporting both established enterprises adding new circular components and entirely new ventures built through a participatory Agricultural Innovation Platform (AIP) process.

The twelve case study enterprises profiled in Brief 1 provide the primary evidence base for the lessons presented here. The Zimbabwe lead farmer programme, which engaged 180 smallholders across Insiza and Bubi Districts, and additional lead farmer activities in Tanzania and Mozambique, provide further evidence, particularly on technology adoption, diffusion pathways, and inclusion outcomes.

The lessons are specific to what the project found in practice and what those findings mean for decision-making. They are stated directly where the evidence is strong. Where a specific claim requires caution, this is indicated, but the lessons as a set should be read as evidence-based conclusions, not exploratory observations.



Participatory co-design through AIPs is a precondition, not a preamble

1



Replacing external inputs delivers the fastest visible impact

2



Formal business planning turns by-products from nuisance into assets

3



Training, peer learning, and business-to-business networking are mutually reinforcing

4



Rural finance constraints are structural and behavioural; both must be addressed

5



Scale-appropriate technologies are enabling conditions, not optional additions

6



Mentoring and business planning multiply outcomes beyond direct programme participants

7



Inclusive co-design must precede technical interventions

8



The circular business model itself generates community welfare effects that are not captured in enterprise performance metrics

9



Circular food system development requires time that short project cycles do not provide

10

1

Participatory co-design through AIPs is a precondition, not a preamble



POLICY IMPLICATION



Fund the AIP process as a distinct investment, not as a sub-activity within enterprise support. Set realistic timeframes: communities that are starting from a lower base will need twelve to eighteen months of co-design before interventions are ready to proceed.

The AIP was the project's core mechanism for ensuring that circular food system interventions were relevant, locally legitimate, and built around the actual constraints communities faced.

The AIP is a structured, multi-stakeholder process that brings producers, small enterprises, extension services, finance institutions, and governance structures together to identify and co-design circular business opportunities. It is not a training event; it is a co-design process whose value lies in what it produces: locally identified niches, community buy-in, inclusion of underserved groups, and a foundation of trust for subsequent technical and financial interventions.

Where the AIP process was given adequate time, the result was better-designed enterprises, stronger community uptake, and more durable inclusion outcomes. In Tanzania, the process required fifteen months before the first enterprise was ready for seed funding. This is not a design flaw; it reflects what genuine community-based co-design requires.

2

Replacing external inputs delivers the fastest visible impact



The businesses that demonstrated the quickest and most tangible results were those that substituted purchased inputs (commercial fertiliser, commercial feed, fossil fuel) with by-products generated within the farm or business. Freshmark and Sebenza in Zimbabwe reduced synthetic fertiliser use by up to 80% within a single season through on-farm manure and fishpond water recycling. Kapungu in Tanzania cut poultry

house construction costs from an estimated 6 million Tanzanian shillings (Tsh) to 1.34 million Tsh by using local timber and rice straw. Hauke Dairy in Zimbabwe sources over 70% of feed from crop residues on scheme plots. Input substitution does not require new markets or external customers; it improves margins immediately, which builds entrepreneur confidence and creates visible evidence for neighbours considering adoption.



POLICY IMPLICATION



Target feed and fertiliser substitution as the entry point for circular enterprise programmes. Design support tools that explicitly quantify by-product flows and assign economic value to them. Results within one season build the community case for wider adoption.

3

Formal business planning turns by-products from nuisance into assets



The CFS project's business planning methodology introduced a systematic way of identifying and valuing by-product flows that most entrepreneurs had not previously applied: milling bran as a sellable product rather than waste; fishpond effluent as fertiliser rather than overflow; Black Soldier Fly larvae as feed rather than insects.

Some circular practices existed on farms before the project, but the project made the economic logic explicit and traceable. What changed was not only the practices but how entrepreneurs thought about the material flows on their farms and what they were worth.

Businesses that completed the planning process reported improved cost-efficiency and better investment decisions. Those that maintained financial records were markedly better positioned to approach lenders, as Kapungu's successful NMB Bank loan application demonstrated.



POLICY IMPLICATION



Integrate formal business planning, with explicit by-product flow mapping and financial record-keeping, into all circular enterprise support programmes. Record-keeping is not administrative overhead; it is what makes formal credit accessible over time.

4

Training, peer learning, and business-to-business networking are mutually reinforcing



Technical training is a threshold input: it provides knowledge and changes what farmers and entrepreneurs know is possible. But training alone does not change business behaviour. Peer networks, exchange visits, and business-to-business learning events produced measurably different outcomes in combination with training.

Nhlizluc Poultry optimised its water abstraction after learning from Freshmark through a CFS-facilitated exchange. Mentees across all three countries became mentors within the same project cycle. The lead farmer programme in Zimbabwe showed clearly that farmers who watched a neighbour's herd survive the drought through urea-treated stover were far more motivated to adopt than farmers who had only attended a training session.

Peer learning and B2B networks should be framed as complements to training, not substitutes for it. The sequence matters: training changes the knowledge base; peer observation creates demand for application; mentoring and B2B networking sustain behaviour change over time.



POLICY IMPLICATION



Design enterprise support programmes to include structured peer learning and B2B facilitation alongside technical training. Budget for exchange visits and mentoring as core programme activities, not optional extras.

5

Rural finance constraints are structural and behavioural; both must be addressed



Only two of twelve case study businesses accessed formal commercial loans: Sebenza in Zimbabwe and Kapungu in Tanzania. The remainder relied on asset liquidation, savings, family remittances, cooperative pooling, and NGO grants. This reflects a genuine structural barrier:

Formal banks require a documented history of bank transactions before extending credit, and most rural enterprises cannot generate that history without first accessing some form of structured support. Breaking this cycle requires de-risked lending mechanisms, grant-backed revolving facilities, or partnerships that allow entrepreneurs to build a formal track record before approaching commercial lenders.

Mozambique's Gapi AIP partnership, in which a formal lender joined the co-design process directly, is the most significant structural innovation in the portfolio. Risk aversion is also real and should not be dismissed. For entrepreneurs who have never borrowed formally, the combination of unfamiliar processes, variable income, and perceived consequences of default creates a behavioural barrier that sits alongside the structural one. Programmes that address only the structural dimension will not reach all excluded entrepreneurs. Both barriers need attention.

POLICY IMPLICATION



Invest in de-risked lending mechanisms as a core component of circular enterprise programmes: revolving loan facilities, formal lender AIP partnerships, and tiered rural credit instruments. Pair these with financial literacy support that builds confidence in formal borrowing alongside the skills to manage it.

6

Scale-appropriate technologies are enabling conditions, not optional additions



POLICY IMPLICATION



Budget for solar and mobile processing technology as integral to circular enterprise viability in remote smallholder settings. Apply appropriate cost-sharing models (matching grants, leasing, cooperative ownership) that make these technologies accessible to enterprises with limited starting capital.

Solar and mobile technology were consistent enabling factors across the portfolio.

Solar pumps eliminated fuel costs and fuel-availability constraints simultaneously; Freshmark saved USD 1,000 per year and removed dependence on a volatile input. Nhlizluc's solar hatchery made commercial-scale poultry production viable in a community without reliable grid access. Jathalwasi's mobile hammer mill brought processing services to households too labour-poor to transport produce to a fixed facility, transforming the accessibility of milling in the community. In each case, the technology was not an add-on; it was what made the business model viable. Programmes that treat solar and mobile equipment as discretionary technologies may underestimate the evidence.

7

Mentoring and business planning multiply outcomes beyond direct programme participants



The CFS project's investment in mentoring, pairing experienced entrepreneurs with emerging ones, and facilitating structured business planning consistently produced outcomes that extended beyond direct participants.

Mrs. Dube at Freshmark trained ten farmers who started their own businesses. Lucy Majele in Tanzania created an eight-person reseller network with zero additional project support. Kapungu's business inspired women's groups in his community to start poultry ventures independently. Zimbabwe's Follower Farmer initiative will see each of the 180 lead farmers train another 15–20 farmers. Structured mentoring is among the highest-return interventions in the portfolio, producing results at both the recipient and community levels with no significant additional programme cost once the initial mentoring relationship is established.



POLICY IMPLICATION

Invest in mentoring and structured business planning as primary programme activities. Identify and support lead entrepreneurs and lead farmers who have both the technical credibility and the community standing to serve as effective diffusion agents. The multiplier effect is real and cost-efficient.

8

Inclusive co-design must precede technical interventions



The CFS project was able to successfully engage women and youth in circularising local food systems because the AIP process created a legitimate space for them to shape the agenda before technical interventions were designed. Women ensured feed training included small livestock (not only cattle), securing a practical niche for themselves and their enterprises in the circularity programme. Youth claimed space in the AIP for a seedling nursery enterprise that responded directly to local market demand. The inclusion outcomes

documented in Brief 3 were not accidental; they resulted from design choices: the AIP co-design process, deliberate participant selection criteria, and a mandate that went beyond participation to encompass economic improvement, leadership, decision-making, and access to assets.

Co-design that precedes technical interventions is an important mechanism for inclusive scaling.

POLICY IMPLICATION

Embed inclusion analysis and participatory co-design in the AIP process from the outset. Use the RBET (Reach, Benefit, Empower, Transform) framework to articulate desired inclusion outcomes at project design stage, not retrospectively.

9

The circular business model itself generates community welfare effects that are not captured in enterprise performance metrics



Lesson 9 focuses on what structured programme support (mentoring and business planning) produces in the people it reaches. This lesson is about something different: the economic and social effects that the circular business model itself generates, independently of programme activity. Lucy's dairy business in Tanzania enabled eight resellers to enter food markets through a distribution structure built into the enterprise, not through a project intervention. Kapungu's business supplies a resale network of six people, a structural feature of how he sells eggs, not a programme output. Jathalwasi's mobile milling service reduced drudgery and post-harvest losses for households across multiple wards as a direct consequence of its mobile model. Daniel Mathe's apiculture provides pollination services that improve yields on neighbouring farms at no cost: a purely ecological externality of how beekeeping works. These effects are real and

measurable. Programmes and evaluations that assess only direct enterprise performance systematically undercount the contribution of circular food system businesses to community-level welfare.

POLICY IMPLICATION

Broaden programme evaluation frameworks to capture community-level economic effects: indirect employment, secondary enterprise creation, drudgery reduction, and ecosystem services. These outcomes are part of the case for investment and should be counted.

10

Circular food system development requires time that short project cycles do not provide



The CFS project built on a decade of prior investment through the TISA initiative, which improved irrigation scheme governance, profitability, community trust, and entrepreneur capability. This foundation was a precondition for CFS: without it, the project would have needed to build that base before any circular enterprise development could proceed. Even with that foundation, Tanzania's experience shows that building entirely new group enterprises through a participatory process required approximately fifteen months before the first enterprise was ready for seed funding. Zimbabwe's faster implementation trajectory was possible because the project focused on expanding or adding circular components to existing businesses rather than starting from scratch.

A two-to-three-year project cycle is insufficient to establish bankable circular enterprises from scratch in communities without a TISA-equivalent foundation. The appropriate framing is a three-phase development process:

1. foundation work equivalent to the ten-year TISA programme, building irrigation governance, community trust, and enterprise culture;
2. CFS Phase I, an approximately three-year pilot to establish circular business networks through AIP co-design and enterprise development (the current phase, running to 2026);
3. a potential CFS Phase II to scale viable enterprises and connect them to formal finance.

Phase II has not yet been confirmed or funded, but it is the essential next step for the enterprises the current pilot has developed.



POLICY IMPLICATION

Fund circular food system development as a multi-phase investment, not a single project. Design project cycles of four to five years minimum for communities starting from a lower base. Advocate for Phase II funding before Phase I enterprises are mature enough to scale but not yet connected to commercial finance.

The Central Systemic Insight

Where those preconditions exist, circular businesses emerge, produce visible results quickly, and begin to diffuse practice and opportunity to surrounding communities. Where they are absent, technical assistance alone will not substitute for them. The policy and investment implication is direct: fund the preconditions before the enterprises.

THOSE PRECONDITIONS ARE:

- 1 Profitable irrigated agriculture and functional irrigation scheme governance (the TISA foundation or its equivalent).
- 2 Participatory and inclusive co-design through the AIP process, to ensure relevance, incentivise adoption, and identify legitimate niches for underserved groups.
- 3 Accessible, de-risked community-level finance mechanisms that allow enterprises to build formal track records before approaching commercial lenders.
- 4 Patient enterprise support processes: business planning, mentoring, record-keeping, and peer learning, sustained over adequate timeframes.
- 5 Deliberate inclusion design, embedded from the start, with an explicit mandate that goes beyond participation counts to economic improvement, agency, and leadership.

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Affiliations: ¹International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Zimbabwe, ²Australian National University (ANU), ³Ardhi University (ARU), Tanzania, ⁴Universidade Eduardo Mondlane, Mozambique, ⁵National Institute for Irrigation (INIR), Mozambique, and ⁶Food, Agriculture, Natural Resources and Policy Analysis Network (FANRPAN), South Africa.



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141 Cresswell Road, Weavind Park 0184
Private Bag X2087, Silverton 0127, Pretoria, South Africa

Phone: +27 12 804 2966 **Facsimile:** +27 12 804 0600

Email: policy@fanrpan.org **Website:** www.fanrpan.org

EDITING, DESIGN AND LAYOUT
KANDS Collective / hello@kandscollective.com