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GROWING BUSINESSES FOR CLIMATE ADAPTATION IN EMERGING MARKETS

Guidance for Entrepreneurship Support Ecosystems

November 2026

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Creating a Climate for Change

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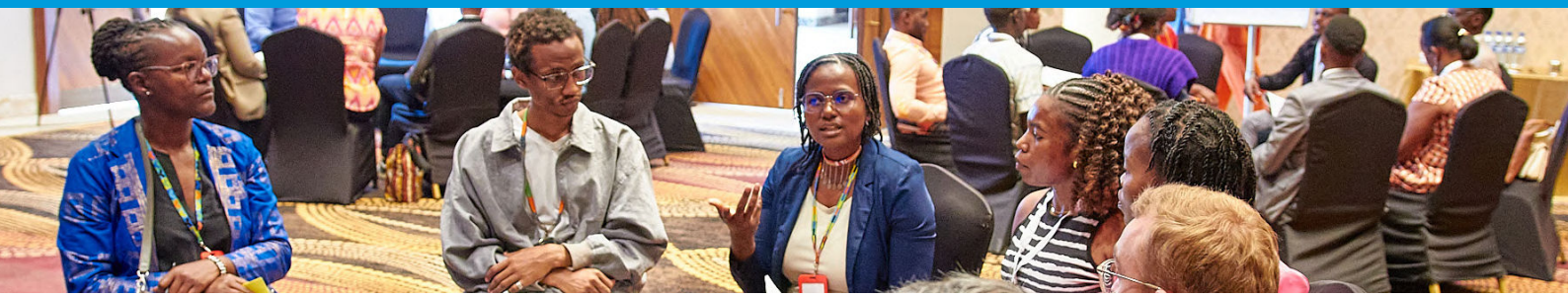


Table of Contents

1	**Introduction**	**9**
2	**A&R as a Business and Impact Area, and Why it Matters**	**11**
2.1	SMEs Relate to A&R in Two Distinct Ways: As Exposed Actors and as Solution Providers	13
2.2	A&R Integration Resists Categorisation across Sector, Solution Type, Hazard Link, and Business Model	14
2.3	Blurred Distinctions in How A&R is Understood by Actors	15
3	**A&R SMEs Needs for Customised Business Support**	**16**
3.1	Building Climate-Risk Expertise: SMEs Need Access to Localised Data	19
3.2	Defining and Measuring Adaptation Impact: Toward Frameworks Built for SMEs	21
3.3	A&R Specific Product Research, Development and Testing Support	21
3.4	SME-Level Risk Management: Providing a Resilience Solution Does Not Make a Business Resilient Itself	23
4	**Designing A&R Innovation Ecosystems to Support the Needs of SMEs**	**24**
4.1	Fragmentation Is a Downstream Effect of Donor Dependency, Not a Result of Shortage of Programmes	26
4.2	Governance Is Often the Binding Constraint on Cross-Sector Collaboration	29
4.3	Accelerator Design Needs to Set Up SMEs for Long-Term Growth	30
4.4	Narrower, Activity-Oriented Programmes Over Broad Mandates	31
5	**A&R SMEs Need Tailored and Value-Chain Specific Financial Incentive Structures**	**32**
5.1	Capital Providers Operate in Silos, Each Defining A&R Around Its Own Interest	33
5.2	The Missing Middle: Grant-Heavy Early Finance, then a Sharp Drop-Off Before Scale	34
5.3	Scaling Works Better Through Value Chains than Through Individual Enterprises	35
5.4	A&R Impact Investment Is a Credible but Still Immature Asset Class	37
5.5	Tailoring Financial Vehicles to Local Context Is What Makes Them Work	39
6	**Local Embeddedness for Effective A&R Entrepreneurship Support**	**41**
6.1	Tech-Savvy Entrepreneurs are more Appealing to Investors than What Local Contexts Actually Need	42
6.2	Founder Profile, Not Just Business Model, Shapes Who Gets Funded	42
6.3	Genuine Local Partnership Pays Off, But Cannot Be Rushed	44
7	**Conclusion**	**46**
7.1	Critical Insights for ESOs	47
8	**References**	**51**

List of Boxes

Box 1	Supporting Aggregators in the Landscape Resilience Fund	18
Box 2	Alignment, Not Capital Type, Predicts Performance	27
Box 3	Designing for Shocks in Bangladesh: Programmatic Resilience and Funder Flexibility	27
Box 4	Designing for Informal Urbanism - The RISE Innovation Challenge	29
Box 5	What Actually Moves the Needle on Accelerator Design	30
Box 6	Verifying Local Value-Add: Independent Data, Local Expertise and the Limits of Trust	35
Box 7	Results-based Finance in SIDS	38
Box 8	MAR+ Fund's Tailoring of Financial Instruments to SMEs	40
Box 9	Vermifarm — Locally Rooted Circular Agriculture in Rwanda's Drought-Prone Bugesera District	43
Box 10	ALIADOS and Building Genuine Partnerships	45

List of Case Studies

Case study 1	Acres of Ice – A Locally Rooted SME Founded and Developed Addressing an Imminent Adaptation Need Caused by Enhanced and Altered Glacier Melt Dynamics in the Himalayas	19
Case study 2	Coastal Biotech – A Science-Led SME Building Climate-Resilient Agricultural Inputs from Seaweed Chemistry in East Africa	22
Case study 3	Mountain Harvest – An Entrepreneur-Led Model for Reshaping Coffee Sector Entrepreneurship Support in Uganda	28
Case study 4	Satellites on Fire (SoF) – Scaling Wildfire Resilience Technology Across Latin America Through Diversified Partnerships	36

List of Abbreviations

A&R	Adaptation and Resilience
AI	Artificial Intelligence
AOI	Acres of Ice
ASAP	Adaptation SME Accelerator Project
B2B	Business-to-Business
B2C	Business-to-Consumer
BDS	Business Development Services
CAIL	Climate Adaptation Innovation and Learning
CGIAR	Consultative Group on International Agricultural Research
CIC	Climate Innovation Centre
CoP	Community of Practice
COVID-19	Coronavirus Disease 2019
CRVA	Climate Risk and Vulnerability Assessment
ES	Entrepreneurship Support
ESO	Entrepreneurship Support Organization
GARI	Global Adaptation and Resilience Investment Working Group
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GRP	Global Resilience Partnership
KPI	Key Performance Indicator
LDC	Least Developed Countr
LRF	Landscape Resilience Fund
MDB	Multilateral Development Banks
MSME	Micro-, Small-, and Medium-Sized Enterprises
NGO	Non-Governmental Organisation
R&D	Research and Development
ROI	Return on Investment
SIDS	Small-Island Developing States
SMEs	Small- and Medium-Sized Enterprises
SoF	Satellites on Fire
TA	Technical Assistance
UNEP	United Nations Environmental Program
UNEP FI	United Nations Environmental Programme Finance Initiative
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development

Executive Summary

This whitepaper builds on a global Community of Practice on MSME Incubation and Acceleration, convened by Climate KIC since 2024 under the Climate Adaptation Innovation & Learning (CAIL) project, financed by the GEF and implemented by UNIDO in partnership with Climate KIC, GARI and UNEP FI. It applies and extends the learnings from the CoP against established literature and interviews with 18 practitioners working at the forefront of A&R and is organized around a single central question:

How can incubators, accelerators and wider entrepreneurship support ecosystems better meet the needs of A&R innovators in emerging markets, LDCs and SIDS?



1/5 Adaptation and Resilience Entrepreneurship Support Needs to Be Based on Conceptually Sound Approaches to Impact

Adaptation is inherently context specific. The same technology or activity can contribute to adaptation in one geography and maladaptation in another — irrigation equipment, for example, can ease drought in one place while depleting groundwater and deepening vulnerability elsewhere. This is why predefined taxonomies of “adaptation solutions” can mislead.

Further, SMEs relate to A&R in two distinct ways that ES program design often fails to distinguish: as economic actors exposed to climate risk themselves, and as providers of solutions to others’ exposure. This distinction necessitates two different kinds of ES – support to develop resilient business models and supply chains, and support to develop strong, market-relevant adaptation solutions. Findings of the paper also point out that majority of SMEs do not start from explicit climate-risk framing but are retrofit into relevant categories at later stages.

For ES then, it is important to distinguish between exposure-reduction and vulnerability-reduction, and further, to acknowledge maladaptation owing to its documented relevance to the sector. Conceptual rigor on A&R impacts needs to be built into the ESO’s own capacity, not only into SME-facing frameworks. Otherwise, programs risk reproducing the same blurred distinctions it is meant to resolve for the businesses it supports.

2/5 Entrepreneurship Support and Business Development Services Need to be Tailored Based on Type and Stage-of-Growth

Across interviews, the main challenges faced by SMEs were business management and operations — financial planning, cash-flow projection, and governance structure, with implications for techical assistance. SMEs in general have different needs, goals and face different challenges across different stages of growth. It is crucial to tailor support to SMEs based on this categorical understanding. Failing to do so risks providing the wrong kind of support to SMEs and burdening them even more.

Within this frame, there are three further underserved gaps specific to A&R businesses. Most SMEs lack localized climate data access, not general climate awareness. Second, linkages to and investment in product research, validation and testing infrastructure are thin in emerging markets, and need to be facilitated by ESOs. Finally, standard program timelines mismatch how A&R technologies mature, since a fixed calendar is structurally the wrong design choice for technologies with seasonal dependencies. ESOs should therefore build structured pathways — data partnerships, technical advisory panels, lab-access facilitation — for founders who lack these by default, and design ES explicitly toward inevitability rather than general capacity alone.

3/5 Program Design Needs to Correspond to Local Realities to Produce Effective SME Outcomes

An overarching finding is that ecosystem and program design is still largely top-down and driven by the requirements and expectations of donors, resulting in ecosystem fragmentation and the prominent “grantpreneur” dynamic, in which ESOs compete for the same visible, fundable entrepreneurs to meet their own donor-set KPIs. Here, the act of building a wider pipeline goes undeveloped. This is a structural pattern in how the funding landscape rewards visibility over pipeline-building.

The paper finds that alignment between an investment’s goals and a company’s own priorities predicts performance better than whether financing is structured as a grant or equity. This means that establishing, verifying, and balancing competing demands towards better alignment should be a priority ESO activity. Data also points to the effectiveness of activity-oriented program design that starts from where a company already wants to go, and co-designs outcomes, goals and financial incentive structures. Separately, narrow ecosystem theses — developed simultaneously by sector, geography, business model and growth stage — could serve local market realities better than broad A&R mandates.

4/5 SME Scaling Needs to be Supported by Structuring Tailored Financial Instruments

SMEs in the contexts studied typically faced challenges when it came to the "missing middle", where there is a structural gap in financing between small and large investment ticket sizes. In this context, it is important to tailor financial instruments deal-by-deal to context. MAR+, for instance, blends concessional and private capital in a ratio calibrated to how close a given company already is to commercial viability, rather than applying one fixed structure across a portfolio.

SMEs are positioned within larger value-chains and add value to these value-chains through innovation. Therefore, it is important for ESOs to enable linkages between SMEs and the relevant value-chains through appropriate program mechanisms, to unlock resilient scaling pathways. In this regard, a core, but often neglected aspect is strengthening local verification capacity, allowing local third-party verifiers to use a combination of climate stress-testing and local knowledge to validate the resilience of a particular business model for potential investment.

5/5 Embedding in the Local Context is Key, but Often Not a Funding Priority

Structural biases and inequalities in the prevailing funding logic result in significant patterns. Companies headquartered in, or with backgrounds in the Global North are increasingly overrepresented further up the funding distribution, and funding is concentrated in major urban hubs in emerging markets. While this is a systemic issue, for ESOs, effectively managing these biases requires them to modify their own organizatio- nal structure. Prosper Global Ventures' (formerly known as Mercy Corps Ventures) deliberate preference for "proximate founders," paired with an investment team distributed across the countries it invests in
rather than centralized in a global-north office, is a concrete example of a structure that reflects this reality.

Where genuine local partnership is built instead — as with ALIADOS' work in the Amazon or Vermifarm's embedding in Rwanda's smallholder and refugee communities — it consistently pays off. This takes years to build beyond a single funding cycle, and needs patient, long-term funding, as well as the ability to build entire local pipelines.

Critical Insights for ESOs

1/3 Tailoring support to SME stage and type

1. Support needs vary by SME type as much as by sector. Map cohorts against a growth-stage and behavioral typology before designing curricula. *(Ch. 3)*
2. Alignment between an investment's goals and a company's own priorities predicts performance better than the type of capital used. *(Ch. 4, Box 2)*
3. Investment-readiness, not a shortage of ideas, is the binding constraint on most pipelines. *(Ch. 3)*
4. Narrow, specific ecosystem design outperforms broad A&R mandates. *(Ch. 4, Box 5)*

2/3 Integrating A&R-specific dimensions into program design

1. Conceptual rigour on A&R must be built into ESO capacity itself, not only into SME-facing frameworks. *(Ch. 2.4)*
2. Support for climate-resilient business models and for adaptation-focused products are distinct needs, routinely conflated. *(Ch. 2.2, 3.4)*
3. A&R timelines rarely fit standard program calendars; patient capital should be calibrated to actual maturation timelines. *(Ch. 3.3, Case Study 3)*
4. Product R&D, validation testing and localised climate data access are concrete, underserved gaps. *(Ch. 3.1, 3.3, Case Study 2)*

3/3 Addressing systemic and structural inequalities

1. Fragmentation is a downstream effect of donor-KPI competition, not simply a coordination failure. *(Ch. 4.1)*
2. Founder-profile bias is structural; countering it requires changes to an ESO's own internal composition. *(Ch. 6.2)*
3. Ticket sizes and instruments are frequently designed around imported fund conventions rather than local SME demand. *(Ch. 5.3)*
4. Independent local verification capacity is chronically underfunded relative to TA and capital. *(Ch. 5, Box 6)*

1. Introduction



3

years of practice

between 2024-2026

18

sessions

9 sessions,
2 in person meetings,
7 viritual meetings

526

participants across Africa, Asia and Latin America

18

extended interviews

Background and Context

Adaptation finance remains critically undersupplied. The UNEP Adaptation Gap Report 2025 puts developing countries' adaptation needs at US$310–365 billion a year by 2035, while the Returns on Resilience report estimates that emerging markets and developing economies alone require US$350 billion annually to build climate resilience. Against this, only around US$54 billion currently flows into A&R each year — roughly one-seventh of what is needed — and the gap is widening as climate risks escalate. International public finance, though indispensable, covers only a fraction of the shortfall: of the above US$54 billion, an estimated US$30 billion flows annually into resilience investment in emerging markets, far below both the scale of need and the commitments made through international climate negotiations (UNEP, 2025).

The private sector's role in closing this gap is real but bounded. Tracked private adaptation finance flows sit at just US$4–9 billion a year, one to three per cent of total needs for developing countries. Yet where adaptation investment does reach the market, returns are strong: benefit-cost ratios average four times cost, median economic internal rates of return sit at 25 per cent, and every dollar invested in climate adaptation is estimated to yield more than ten dollars in benefits (Systemiq, 2025). This evidence base reframes adaptation and resilience from mere risk reduction to an investment agenda with commercial and macroeconomic returns. For this to become possible at scale, ES ecosystems, financial instruments and the MSMEs at their center must translate that promise into investable, scalable ventures on the ground. This intersection of finance, innovation ecosystem design and local adaptation impact is where this whitepaper is focused, and aims to provide guidance to entrepreneurs, financiers and practitioners.

This whitepaper builds on a global Community of Practice on MSME Incubation and Acceleration, convened by Climate KIC since 2024 under the Climate Adaptation Innovation & Learning (CAIL) project, and 18 extended interviews.

Between 2024-2026, the CoP convened nine sessions — two in-person meetings, in Nairobi and Recife, and seven virtual convenings — reaching over 526 participants across Africa, Asia and Latin America, close to half of them women and a third youth. Its agenda evolved organically around five thematic clusters: ecosystem building, blended finance and the "missing middle," locally led adaptation and inclusive resilience, the investment case for A&R SMEs, and approaches to impact measurement. Across these conversations, a set of rich — and sometimes contested — learnings emerged, alongside open questions the existing literature has not yet resolved. This whitepaper is the primary vehicle through which they are now being tested, extended and translated into practical guidance for the wider A&R ESO field.

2. A&R as a Business and Impact Area, and Why it Matters



In current economic and policy framings, A&R is mostly considered a public good, with responsibility assigned to public sector actors; the private sector's role varies, spanning innovator, financier and provider of A&R solutions. As A&R gains momentum as a business and investment area, a false separation between commercial viability and public value needs to be avoided — A&R sits at the intersection of markets, policy, ecosystems and social resilience.

In this vein, A&R interventions occupy a spectrum from public good to private return, as characterized in the following four-domain typology of adaptation activity organised around who provides an adaptation good or service and who benefits from it. Adaptation activity can be (Tompkins and Eakin, 2012):

1. public provision for public benefit (e.g. a national meteorological service's climate models, freely available);
2. public provision for largely private benefit (e.g. a government subsidy for household flood insulation);
3. private adaptation for private benefit (e.g. an individual buying sandbags to protect their own home); or
4. largely private provision of adaptation goods for public benefit.

The fourth domain is at the heart of this whitepaper. The tension arises when an individual or enterprise bears private cost for adaptive action, but the resulting benefit is non-excludable — it accrues broadly to a community, and in some cases barely accrues to that actor at all[1].

Alongside this, no adequate framework yet exists explaining how adaptation creates value that converts into cash flows an investor can price using standard financial methods; investment cases tend to be built as standard equity, debt or loan instruments, resulting in A&R propositions that never translate into the cash-flow language investors use to decide (Barrett and Chaitanya, 2023). Externalities, information asymmetries, and missing markets for standardised risk-transfer products (Whittaker et al., 2024) compound this value-to-cash-flow gap (see Chapter 5).

Multiple services manage these tensions: cross-subsidisation lets profitable segments fund service to vulnerable ones; tiered pricing charges according to ability to pay; output-based aid ties public payment to verified delivery; and blended capital structures use concessional finance to absorb risk or extend investment horizons to match adaptation's long payback periods (Rincón, 2023). Examples are offered throughout the whitepaper.

However, this process reflects existing power dynamics and unequal socioeconomic relations (Sovacool and Linnér, 2016), and privatisation is one of the most frequently raised governance concerns in community-based adaptation (Selje et al., 2026). In this context, public-private partnerships require contractual frameworks, risk allocation, and accountability mechanisms built in to preserve public good outcomes from the outset and otherwise tend toward private-partner bias (Usman, 2025; Fayolle et al., 2019).

1 Examples: smallholder coffee farmers in Mexico who manage their plantations for vegetation complexity accept potentially lower yields and higher management costs, but in doing so reduce landslide risk and stabilise soil for the wider public, including public roads and infrastructure their own farms have no special claim on protecting. European landholders who remove barriers to riparian flooding lose productive land and harvest income, but reduce flood damage to downstream urban infrastructure and property they will never own. Caribbean homeowners who empty outdoor water receptacles to prevent mosquito breeding bear only the minor cost of the habit itself, but contribute to disease control for their wider community (Tompkins and Eakin, 2012).

2.1. SMEs Relate to A&R in Two Distinct Ways: As Exposed Actors and as Solution Providers

While the term “adaptation SME” is increasingly used (Adaptation Investment Summit for Africa 2026, 2026; ASAP, n.d; GEF, n.d), there is no universally accepted definition. The clearest explicit definition comes from the Adaptation SME Accelerator Project (ASAP) and its Adaptation Solutions Taxonomy (2020)2. Other institutions generally classify the activity, investment or product as adaptation-related rather than designating the whole enterprise an ‘adaptation SME.”

This whitepaper distinguishes between (a) the impact climate change has on SMEs — how they are exposed and how they respond — and (b) SMEs as generators and providers of adaptation solutions. The two are often conflated, connected diffusely through climate risk and vulnerability assessment (CRVA), which is central to much guidance and support material. Awareness of the wider landscape of climate risks and vulnerabilities can surface new business, but few SMEs interviewed reported CRVA as a crucial step in the creation or evolution of their business.[3]

2.1.1. SMEs as Exposed Economic Actors

Many SMEs operate in climate-sensitive sectors such as agriculture, food processing, tourism, construction, transport, fisheries and retail. Floods, droughts, extreme heat and storms affect them through:

- damage to premises, equipment and inventories;
- interruptions to electricity, water, transport andcommunications;
- reduced labor productivity and unsafe working conditions during extreme heat;
- disrupted supplies and volatile input prices;
- falling customer demand following climate shocks;
- loan repayment difficulties and loss of working capital.

SMEs employ a wide range of risk management approaches to make their own operations more resilient. These are generally context-, hazard- and actor-specific, and often embedded in wider business risk management.[4]

2.1.2. SMEs as Innovators and Providers of Solutions

Climate risk itself can be a starting point for new SME activity. However, markets and policies often externalise the losses from climate impacts, reducing incentives for businesses to deliver adaptation solutions and encouraging reactive rather than anticipatory approaches. Where adaptive products and services let users maintain productivity or reduce costs, providers of adaptation solutions are incentivised. The regulatory, legislative and economic framing of a given sector or value chain matters as much as the underlying climate risk.

This whitepaper finds that a considerable share of companies considered in this review do not begin from an explicit climate-risk framing, and adaptation is, for most, not the stated primary aim of the business — even within ES cohorts and investment pipelines with an explicit A&R focus. At best, A&R is a co-benefit or a retro-fitted articulation of the business’s impact. Companies externally labelled ‘adaptation SMEs’ by ES programs or funders have repeatedly not self-classified accordingly.

Overall, this whitepaper finds that funders, ESOs and designers of ES programs, and SMEs themselves, conflate the two categories, such that adaptive or resilient business models or supply chains are treated in the same category as B2B or B2C adaptation solutions, arising from specific climate risk realities – as stated, companies taken up in this review largely did not subscribe to the latter mode of business development. Therefore, it is important for ESOs and program design to be cognizant of this distinction, and support both resilient businesses, and the development of adaptation solutions catering to market needs.

2 ASAP Taxonomy definition: An SME that offers technologies, products, services or intelligence which enable users to identify, assess or manage physical climate risks and impacts, or which address systemic barriers to climate adaptation.
3 See for example: SECCA Business Climate Adaptation Toolkit, Climate Expert
4 Examples include: (1) a food processor installing water storage; (2) a retailer raising stock above expected flood levels; (3) a tourism business diversifying its water supply; (4) a manufacturer adapting working hours and cooling systems to extreme heat.

2.2. A&R Integration Resists Categorisation across Sector, Solution Type, Hazard Link, and Business Model

A&R integration varies enormously by sector, solution type, climate hazard, business model and innovation type. This diversity limits how far specific findings can be generalized and raises questions about whether "A&R" is a coherent category for ecosystem design, investment pipelines or ES cohorts at all — or whether it functions better as a lens applied within existing sectors and business types.

A&R SMEs cannot be categorised using a simple sectoral service model as adaptation needs and opportunities vary across and within sectors and are highly context specific. Irrigation equipment, for example, is not automatically an A&R solution: it could improve drought resilience in one place while contributing to groundwater depletion and greater long-term vulnerability elsewhere. A systematic climate risk and vulnerability assessment (CRVA) is based on a climate hazard analysis specifying the relation to a specific hazard, ranging from quantified, data-based, computer-modelled assessments to simplified, perceptual ones.

A product or service cannot automatically be assumed to support adaptation either — it may do so in some contexts and not others, which is why predefined typologies of "adaptation solutions" (see, for example, ASAP taxonomy or Biagini et al., 2014) can be misleading, and why the prevailing bias towards technical solutions needs addressing, since much adaptation is behavioural rather than technological. This is also why adaptation business taxonomies generally require a demonstrated link between climate vulnerability, the intention to address it, and the activity being financed.

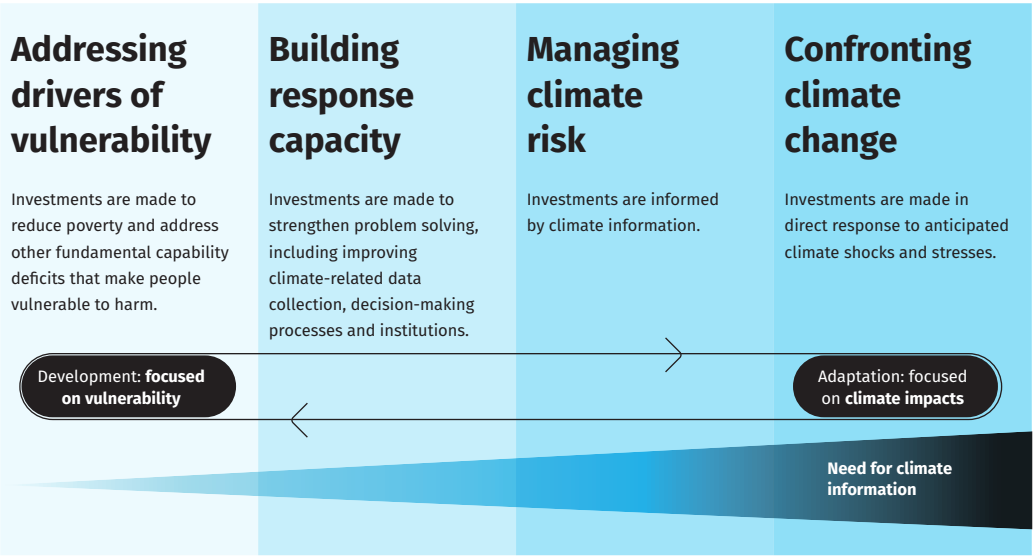


Figure 1
The development-adaptation investment continuum. Source: Based on McGray et al. (2007).

Ultimately, adaptation can be said to be successful it if reduces the negative impacts resulting from specific climate hazards. Linking adaptation actions to specific hazards and impacts is therefore critical. However, adaptation can also involve addressing underlying drivers of vulnerability that are relevant to multiple climate and non-climate hazards and building capacity to address a range of challenges. Similarly, adaptation can involve reactive actions to address emerging risks as well as anticipatory actions to reduce risks from potential future hazards. Adaptation therefore involves a continuum of actions (Figure 1).

Similarly, the degree to which A&R is integrated into a business' model varies immensely, as does the degree to which a measurable change in hazard exposure, vulnerability or adaptive capacity for end users directly affects its sales and revenue.

2.3 Blurred Distinctions in How A&R is Understood by Actors

A&R outcomes measurement has consistently faced methodological challenges (Leiter and Olhoff, 2019), given its relationality to changing climatic conditions, and conflated, complex concepts used as measurement 'units' (vulnerability reduction, enhancement of adaptive capacity). Figure 3 (UNEP, 2022) shows this complexity from left to right.

These distinctions, when not considered in detail, result in significant challenges to translate into robust metrics to be used by investors, financiers, and SMEs and consequently into unclear incentives for action. In this regard, one interviewee from the Landscape Resilience Fund (LRF) reported practical difficulty distinguishing climate risk reduction from climate vulnerability reduction in their own work, conflating hazard-, exposure- and vulnerability-reduction (figure 2).

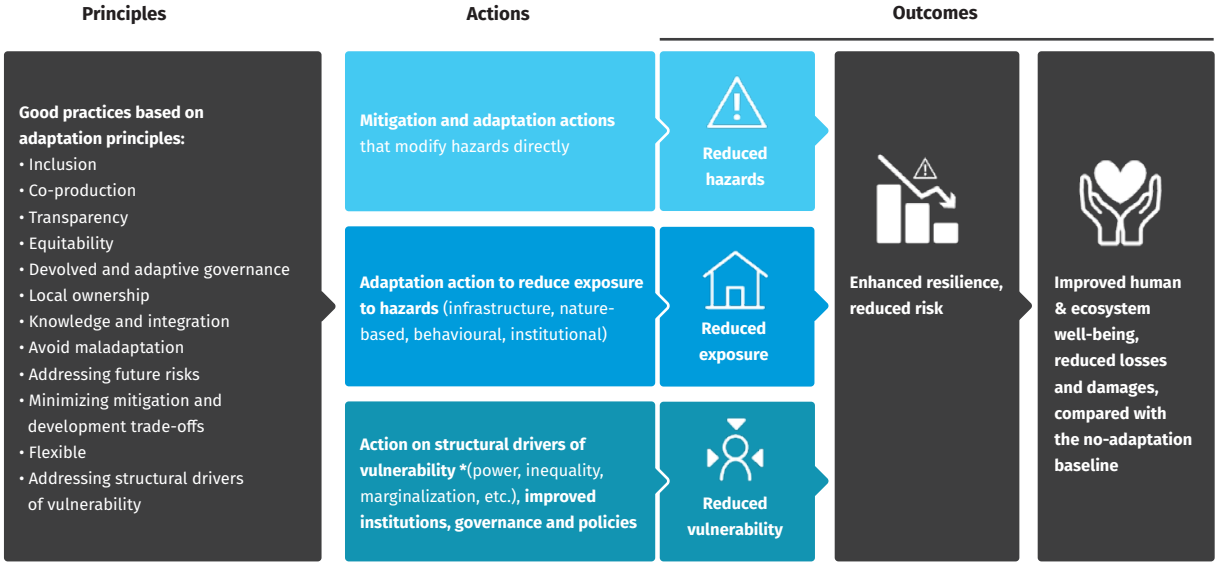


Figure 2
An architecture that relates adaptation actions and adaptation impact/ outcome and related conceptual terminology (source: UNEP 2022)

This lack of distinction opens the door to another notable absence in the interview data: maladaptation, defined as actions intended to reduce climate vulnerability that inadvertently increase it, for the target population or others (Sovacool et al., 2017) — for instance, flood defences protecting an upstream community while increasing downstream risk. Path-dependency in investments can increase rather than reduce exposure, undermine adaptive capacity, displace local knowledge, and deepen inequality (Sovacool et al., 2017)[5]. Maladaptation remains largely underrepresented or at times even absent in current A&R impact measurement frameworks used by the private sector and investors.

5 A concrete case from Ono Island, Fiji, makes the mechanism vivid: seawall construction there reduced immediate exposure to coastal flooding, but increased long-term vulnerability by encouraging continued settlement in the exposed zone and by disrupting the natural coastal processes that had previously provided some degree of protection on their own (Hidalgo et al., 2021)

3. A&R SMEs Needs for Customised Business Support



A&R SMEs require more than conventional start-up acceleration. This covers technical assistance (TA), like A&R-specific training and innovation support along with value-chain management and operations training, and Business Development Services (BDS), which deal with aspects of business management, investment-readiness and scaling.

Interviewees consistently highlighted that most SMEs require customised conventional ES to work towards commercial viability. This is also clear in the literature, which finds that the needs of early-stage SMEs are dominated by business fundamentals — financial management, marketing, operations — rather than any climate-specific content (Balkaran et al., 2021).

The interviews further highlight that TA and BDS provided is typically not A&R-specific.

An ALIADOS interviewee working in the Amazon revealed that they began their TA model with a business health diagnosis, which surfaced around twenty-two distinct needs, based on which the team prioritized and built a toolkit step by step, rather than applying fixed curricula and modules.

This raises the need for understanding the requirements of different types of SMEs based on their stage of growth. Figure 3 , distinguishing between types of Small-and-Growing-Businesses (used analogously to SME here) in Africa offers a way to classify SMEs in this whitepaper's context as well.



Figure 3
An architecture that relates adaptation actions and adaptation impact/ outcome and related conceptual terminology (source: UNEP 2022)

** Variables identified, prioritized, and validated through stakeholder interviews with ~80 SGB-focused investors operating in frontier markets.*

This typology distinguishes SMEs along three variables: growth and scale potential, product/service innovation profile, and entrepreneur behavioral profile (Hornberger et al., 2023), as follows.

- High-growth ventures pursue disruptive models at scale;
- Niche ventures innovate within smaller markets, prioritizing fit over scale;
- Dynamic enterprises innovate models in established sectors, growing incrementally; and
- Livelihood-sustaining enterprises operate at small, local scales, often starting as microenterprises.

Each type has different needs by stage of growth, and different types working in the same region and sector

share different contexts — making peer-learning across them difficult. Tailoring (even A&R-specific) TA and BDS based on the type and stage of SME is important to avoid redundancies in support needs of different types of SMEs and focus on the explicit and implicit needs of individual SMEs.

An interviewee who had initiated an A&R Innovation Lab highlighted that designing entrepreneurship support was less about A&R specifically, and more about "the common challenges you run into with emerging markets and early stage companies within them." Talking about fundraising, they said that companies in the cohort were "already so capital starved that they were spending so much time fundraising while we were running the program" that it became difficult to get them to show up to the program's own modules.

Because formal business education and management capacity are often limited in LDC and SIDS contexts, early-stage technical assistance is described as doing double duty — building the business itself and building the entrepreneur's underlying capacity (Balkaran et al., 2021). Effective TA must be tailored to the sector it serves, delivered through channels enterprises can actually access, including digital platforms where physical reach is limited, and sustained over time rather than delivered as a single, one-off intervention (Chirambo, 2020).

Facilitating collaboration among SMEs through grouping SMEs for TA delivery benefitted SMEs more than training efficiency, according to an individual from the LRF. Grouping smallholder farmer-facing SMEs for shared financial training and customer-service support made them collectively stronger and helped absorb the working-capital strain of maintaining daily farmer engagement (Box 1). The same interviewee shared that an initial global search for capacity building providers produced costly, poorly matched proposals; asking SMEs who they'd already worked with locally, and who delivered good results, worked far better.

Box 1

Supporting Aggregators in the Landscape Resilience Fund

> Much of the LRF team's pre-investment support to SMEs in LDCs centered on outgrower schemes, where relationships between SMEs and supplying smallholder farmers were paramount. Where aggregation structures already existed — cooperatives in some contexts, informal groupings in others — the team worked to formalize and strengthen them: training outgrowers, building capacity, and in some cases supporting a transition toward organic certification for premium prices.
>
> This work was labor-intensive since SMEs need to maintain daily engagement with their outgrower base, as a farmer left unengaged too long reverts to old practices or sells to a competing buyer. Working capital, here, is used less to expand output than to sustain the trust and reach of the aggregation system itself — which is why outgrower engagement consumed a disproportionate share of SMEs' resources.
>
> This highlights the need for ESOs to develop a robust understand of the landscape they are working in – the types and stages-of-growth of the SMEs in the cohort, their main bottlenecks, and their needs at their current stages, while developing innovative TA strategies to facilitate collaborative solutions to their bottlenecks.

Alongside general business support, ESOs need to help businesses translate complex, location-specific climate risks into viable products, demonstrable adaptation outcomes, investable business models, and demand from customers who may have limited ability to pay. A strong support package should therefore combine key elements in elements listed in the following sections 3.1-3.4.

3.1 Building Climate-Risk Expertise: SMEs Need Access to Localised Data

Many entrepreneurs understand their customers' problems but lack access to sufficiently localized climate science. They need support to:

- identify the specific hazards, exposure, and vulnerability their solution addresses;
- use climate projections, weather data, and local knowledge;
- understand how risks may change over the product's lifetime;
- identify possible maladaptation or unintended harm.

This means support to enable access to climate data and digital infrastructure, which adaptation SMEs too often find expensive, fragmented, technically inaccessible, or insufficiently localised — covering not just access, but the data's uncertainty, limitations, interpretation and responsible use.

This expertise is relevant across SME growth stages, so support needs to be adjusted accordingly.

Case Study 1 (Acres of Ice) shows how the founder's background as a geophysicist enabled access to and use of climate risk data, directly informing product development.



Photo courtesy of Acres of Ice

Case study 1

Acres of Ice – A Locally Rooted SME Founded and Developed Addressing an Imminent Adaptation Need Caused by Enhanced and Altered Glacier Melt Dynamics in the Himalayas

Acres of Ice (AOI), originating in Ladakh, is a strong example of an Adaptation SME whose model is rooted in the local climate-risk and social context of its operations.

Responding to Climate Risk in Mountain Landscapes

Ladakh is a cold desert sustained almost entirely by its glaciers, but snowfall has declined progressively over recent decades, and glacial melt has drifted out of step with the agricultural calendar — water that once arrived in spring, when sowing demands it most, now arrives in summer after the critical window has closed, even as overall meltwater volumes in some cases rise. Farming communities, at times, end up with more water than they need.

Suryanarayanan Balasubramanian, the founder of Acres of Ice, began by managing Sonam Wangchuk's pioneering ice stupa program in Ladakh, then completed a PhD in Geosciences at the University of Freibourg studying Ladakh's sparse precipitation data, glacial dynamics and ice stupa construction, before founding Acres of Ice to automate and industrialize the concept. AOI's technology — sensor-driven fountains that mist rather than continuously spray, timed to freeze each layer before the next, with automated drain failsafes — solves the timing problem directly, storing winter flow as ice that melts in time for sowing. The structures serve villages of up to fifty households, last roughly a decade with minimal upkeep, and cost around fifty times less than cement-tank storage over their working life.

Case study 1 continues on the next page

Scaling, and the importance of engaging with socio-cultural context

Commercially, the company has grown into two businesses: Automated Ice Reservoirs, financed in India through government contracts and, in Nepal and Kyrgyzstan, through grants; and a newer, direct-to-farmer vertical, Automated Irrigation Systems, selling controllers to Kashmiri orchardists for steadier recurring revenue. The revenue mix has shifted accordingly, from almost entirely grant-dependent in the early years to roughly 50–60% contract-based today.

The founders spent their first year self-funded and struggled to raise funds; formal support first arrived through personal trust and regional relationships, since markets instinctively avoid ventures dependent on government-contract revenue, leaving international development agencies as the earliest willing backers. In 2024, AOI joined Mercy Corps Ventures' (now Prosper Global) pilot program, hitting its cost-per-liter target but falling short on pre-booked automation kits. They realized it was the surrounding governance — an active Water Management Committee checking pipelines and fountains monthly — that determined both sustainability and uptake. At Igoo, a large village where the reservoir failed to reach half its households, the lower village's committee disbanded and performance degraded even though the automation kept running. "It's hard to do away with manual oversight," Balasubramanian reflected.

Expansion into Nepal and Kyrgyzstan follows the same process, now partnering with local NGOs to manage the social side of implementation. Balasubramanian's ideal support would come from funders willing to understand an organization closely and become partners in its journey, so support becomes "a complete story" rather than a single transaction.

Photo courtesy of Acres of Ice





Building on this case study, founder technical expertise is one route to localized climate data, but not the only one — ESOs could build structured pathways, such as data partnerships or technical advisory panels, for founders without a scientific background. Additionally, product performance depends as much on local governance and community buy-in as on engineering, so technical assis- tance design needs to address both, not the product alone. Where possible, funders should favor long-term, relationship-based support over single-transaction grants, a preference explicitly stated by the founder.

3.2 Defining and Measuring Adaptation Impact: Toward Frameworks Built for SMEs

Adaptation SMEs often struggle to express their impact in a way that investors and donors expect. They may need to show avoided losses, reduced vulnerability, improved preparedness, or increased adaptive capacity (see also Chapter 2.3). Support focus may help SMEs develop (a) a clear adaptation theory of change; (b) a baseline of customer vulnerability; (c) indicators related to resilience and adaptive capacity; (d) measures of avoided losses or service continuity; (e) beneficiary-level and distributional indicators; (f) systems for monitoring unintended effects and maladaptation.

The deeper problem, though, often comes from the SME's stage of operational and administrative growth. An interviewee from the Landscape Resilience Fund (LRF) described building a landscape-level impact/resilience framework that worked well from the fund's own perspective, but that many portfolio SMEs simply were not prepared to track once applied at enterprise level. Nossa Fruits, an agroforestry-based Açaí company, used this to develop a credible impact narrative built on proper management systems that helped it attract two competing investors. Others found it disproportionately burdensome relative to their stage — effort, in their view, "needed elsewhere" in the business. Some SMEs stated explicitly that they were too early-stage for a system this formal. This challenges the assumption that SMEs can absorb investor-grade reporting once supported in framework adoption, when the binding constraint is frequently administrative capacity itself. This further reiterates the importance of tailoring TA and BDS by type and stage-of-growth of the SMEs.

Victor Ndiege from Kenya Climate Ventures (KCV) describes support architecture as "still not well aligned" to climate adaptation businesses, "trying to fit within a framework that is not particularly designed for them" — citing a generic agribusiness loan ignoring adaptation-specific features, and curriculum-based support misaligned to adaptation-specific needs.

ESOs, therefore, play the role of not simply supporting outcomes frameworks adoption for SMEs, but to actively manage three distinct, often misaligned realities at once — investor expectations, SME operational and administrative capacity, and the national and regulatory landscape SMEs actually operate within — and to balance demands between them, rather than assume alignment can be achieved by explanation alone (Climate KIC, 2025).

Further, adaptation impact frameworks typically underrepresent equity, gender and procedural dimensions in favor of short-term, easily quantified outcomes — gaps include intra-household differentiation (Heltberg et al., 2008), cultural and indigenous dimensions (Fuldauer et al., 2022), community-centered metrics like trust and behavioral change (Robinson et al., 2026), and procedural/recognitional equity (Shackleton et al., 2025; Prall et al., 2023). The ASAP taxonomy itself acknowledges no accepted metric exist for its social outcomes, and lacks explicit coverage of employment, social capital, equity, gender or governance (ASAP, 2020).

3.3 A&R Specific Product Research, Development and Testing Support

Adaptation products must often perform under difficult physical conditions and uncertain future climates. SMEs may need prototyping facilities, field-testing sites, climate stress-testing, access to laboratories and technical experts, demonstration projects with farms, municipalities, utilities or communities, and A&R-specific certification support.

Grant-funded pilots matter because commercial investors are often reluctant to finance unproven products, and customers may hesitate to buy a solution without evidence of local performance. Support should, however, help businesses progress from repeated pilots toward a repeatable commercial model.

An interview with Coastal Biotech (Case study 2), which markets a technologically sophisticated innovation, highlighted the need for highly specific expert input and access to suitable laboratories at the early stages of product development — in their case facilitated by the founder's personal connections, rather than systematic R&D support, which was mostly lacking.

Prosper Global Ventures (formerly known as Mercy Corps Ventures), who run a Venture Lab to provide this support to early-stage ventures,

is an outlier in this case. Their interview revealed a pilot program design testing three hypotheses at once — does the product enhance climate resilience, is it tailored to local needs, is it commercially viable — with timelines varying by geography, weather and sector, making a fixed program calendar the wrong design choice. Here, a key focus is also to verify the veracity of the adaptation solution in question under the particular climate-risk, socioeconomic and institutional context of its implementation. For a bio-coating spray company, "part of the pilot was testing what is the right dosage, what is the cost... at the end we ask farmers their willingness to pay." For a soil-biome diagnostics company, the pilot tested what needed to be in place "for this sugar mill to actually adopt this technology and use it with [smallholder] farmers in a way that's scalable." In both cases, the pilot's job was to identify and develop the business model.

The interviewee reiterated that the right fit capital is the most common constraint, and that building specifically toward financial viability, not just general capacity, was TA's key role.



Photo courtesy of Coastal Biotech

Case study 2

Coastal Biotech – A Science-Led SME Building Climate-Resilient Agricultural Inputs from Seaweed Chemistry in East Africa

Coastal Biotech, founded in Zanzibar, Tanzania, highlights the importance of R&D for strong innovation processes, and how this shapes their solution to the addressed climate-risk.

Responding to Soil and Crop Vulnerability Across East African Agriculture

Across much of sub-Saharan Africa, farmers face a compounding set of constraints: soil moisture deficits, extreme heat, and fertilization rates so low that crops never reach their productive potential. Smallholders growing crops like teff in Ethiopia, for instance, may realize only half their possible yield for want of nutrient availability alone. These constraints are the everyday reality Coastal Biotech aims to address.

Lavine Irvine, the founder of Coastal Biotech, discovered women farming seaweed in Tanzania by chance. Research into the seaweed's chemistry, and a subsequent partnership with a seaweed researcher who became her co-founder, led the pair to focus their application on agriculture, isolating a specific sugar molecule whose modified form triggers a biological stress-resilience cascade in crops, improving survival and yield under heat and salinity stress. Results vary by crop, from modest gains in cereals to fertilizer input reductions of up to 40% in tomatoes without compromising yield.

Case study 2 continues on the next page

Innovation Support, R&D Financing, and the Long Road from Lab to Market

Coastal Biotech's journey has revolved around the arduous work of building credible science and finding capital patient enough to fund it. The company has been almost entirely bootstrapped, sustaining its research in its early years through in-kind exchange — supporting professors' own research and publications in return for free laboratory access, an arrangement that worked in Germany but gained little traction in Tanzania. An early attempt to sell directly to greenhouse farms near Zanzibar exposed a structural cash-flow trap: 30-day payment terms meant that the more farms the company onboarded, the further into working-capital debt its own operations sank. The company has since shifted toward a tender-based model selling through government-mediated distribution channels in Tanzania, Ethiopia and Rwanda, and is now closing its first formal investment round.

Two support experiences stand out in shaping the company's approach to innovation itself. Climate KIC's Adaptation and Resilience ClimAccelerator, Irvine noted, distinguished itself from generic biotech program by treating impact narrative — including the negative consequences of the technology itself, down to manufacturing waste — as a central design requirement; a deep impact assessment run through the program directly shaped the company's practice of reusing manufacturing waste material.

Separately, participation in Climate-KIC's Climate Causality Framework validation surfaced R&D considerations Coastal Biotech had not yet built into its practices — including the need to recycle freshwater used in manufacturing rather than discharge high-salinity wastewater into the ocean, and questions around heavy-metal transfer back into agricultural soil. "It can be perceived as time intensive," Irvine reflected, "but... it actually is fundamentals of what we have to implement."

Where support fell short, in her account, was funder awareness specific to R&D-stage ventures: without early guidance on non-dilutive, catalytic capital, founders are often pulled toward venture capital's expectations of returns, a pressure she believes can push a climate-adaptation-focused company away from its core scientific mission. Her closing reflection is a direct call for more, and larger, early-stage non-dilutive science funding in the region — typical grant sizes of around $50,000, she noted, fall well short of what validating a high-tech agricultural innovation requires, along with funding cycles and timelines that reflect the actual timelines of R&D, testing and validation. Coastal Biotech's experience also highlights the importance of facilitating connections and linkages with academic and scientific research institutions – in this case, it was the founder's personal network in Germany that enabled this linkage, but by their own admission, that approach failed in Tanzania. For founders with no networks in the Global North, this is a significant bottleneck that ESOs could aim to support.





Photo's courtesy of Coastal Biotech

3.4 SME-Level Risk Management: Providing a Resilience Solution Does Not Make a Business Resilient Itself

An adaptation SME can provide a valuable resilience solution while remaining highly vulnerable in its own operations. Support could therefore include (a) assessment of physical risks to premises and employees; (b) resilient sourcing and supplier diversification; (c) water, energy, and data backups; (d) business-continuity planning; (e) appropriate insurance; (f) workforce heat and health protection; or similar support services.

Supporting the growth of an adaptation solution and strengthening the resilience of the enterprise providing it are related but separate tasks. IFC's recent work on smaller firms notes many already adapt informally, but their actions and financing needs go frequently unrecognized by existing financial systems (IFC, 2026).

An interviewee from ALIADOS offers an example of increased climate risk-management capacity through diversification: their team built a value chain around wild jungle peanuts to reduce farmer risk and diversify income. Results on the ground were good — higher productivity, plague resistance, farmers eating the crop themselves — but the market side failed, unable to find reliable buyers paying a price farmers thought adequate for the effort. Their takeaway was that a single cash crop is both unsustainable and risky against market crashes, while unstructured diversification is too labor-intensive and uneconomical. Their solution was a "food forest" model sequencing crops by maturity — fast cash crops (manioc, plantain, corn), a medium-maturity crop (Macambo, 2–3 years), long-maturity crops (coffee, cocoa, timber) — mimicking a traditional diverse farming system while staying oriented toward family economics.

4. Designing A&R Innovation Ecosystems to Support the Needs of SMEs



There is not yet a widely accepted typology and overview mapping specifically for A&R entrepreneurship support program or adaptation innovation ecosystems in emerging markets. Existing initiatives describe their activities—incubation, acceleration, finance, ecosystem building, impact measurement—but generally do not place them within a common classification system. The figure below identifies and provides a spectrum of A&R ES Program. These program types are not mutually exclusive, and often, multiple types are involved in each program. The full version of this figure can be found in Annex 2.

This spectrum highlights a key distinction: an accelerator is only one component of an adaptation entrepreneurship ecosystem. A functioning ecosystem must combine venture support with climate knowledge, suitable finance, real-world testing, customers, procurement, enabling institutions and locally rooted intermediaries. The emerging direction of current initiatives is therefore moving from isolated incubation and acceleration towards more systemic support.

To this end, innovation ecosystems in A&R particularly require local contexts, community needs and climate risk profiles to foreground the manner in which actors and roles are organised and multi-stakeholder collaboration incentivised. However, drawing on the interviews conducted, there appears to be a large bias towards the structuring of A&R innovation programs and cohorts that cater to the expectations and regulatory requirements of donors and financiers, leading to a lack of engagement with the fundamental constraints and barriers actually faced by SMEs in LDCs and SIDS. This top-down program design dynamic is apparent across a number of different dimensions of how SMEs and other actors navigate A&R innovation programs and cohorts. Therefore, this chapter details both the different articulations of this problematic, as well as how various actors navigate these ecosystems, and identifies important lessons for program and ecosystem design.

Spectrum of Adaptation & Resilience Entrepreneurship Support Programmes

An overview of programme types ranging from early-stage venture formation to market creation, resilience support and ecosystem development.

	Programme type	Primary purpose
1.	**Adaptation awareness and ideation**	Identify climate problems and generate business ideas
2.	**Pre-incubation and venture formation**	Turn ideas or informal activities into structured enterprises
3.	**Adaptation-focused incubation**	Develop and test early-stage adaptation solutions
4.	**Cohort-based acceleration**	Prepare established ventures for growth and investment
5.	**Sector-specific or value-chain support**	Address adaptation challenges within a particular economic system or value chain
6.	**Place-based innovation clusters**	Build innovation around the climate risks and needs of a specific geography
7.	**Market access and demand creation**	Create customers, procurement pathways and deployment opportunities
8.	**Finance-linked acceleration**	Connect enterprise development directly with suitable forms of capital
9.	**Technology validation and demonstration**	Prove solution performance under real climate and market conditions
10.	**SME business-resilience support**	Increase the resilience of ordinary SMEs to climate shocks and stresses
11.	**Inclusive and community-enterprise support**	Reach entrepreneurs and enterprise forms excluded from conventional accelerators
12.	**Ecosystem-intermediary development**	Strengthen the organisations and institutions that support adaptation entrepreneurs

The programme types are not mutually exclusive: integrated A&R entrepeneurship support initiatives may combine several of these functions.

Figure 5
Spectrum of A&R ES Program
(Source: PlanAdapt)

4.1 Fragmentation Is a Downstream Effect of Donor Dependency, Not a Result of Shortage of Programs

Successful ecosystems enable innovation by providing multi-dimensional support to enterprises. This extends across financial (grants through growth and scale-up capital) (Richmond et al., 2026), technical (R&D, testing, advisory) (Leonard et al., 2024), market (BDS, market information, standards) (Canevari-Luzardo, 2019), and policy and regulatory aspects (legal frameworks, permitting, incentives) (Huber et al., 2026). Innovation depends on these supportive conditions (Hassen et al., 2025), and a gap in one dimension undermines the others (Asha et al., 2025). However, funding structures in LDCs, SIDS and emerging markets produce conditions which do not provide this multi-dimensional support, resulting in structural feedback loops creating multiple challenges, described below (African Scalecraft, 2026).

The first, fragmentation, is largely a downstream effect of aid dependency. LDCs and SIDS rely heavily on ODA and multilateral climate funds (Huber et al., 2026), producing fragmented donor program, short project cycles, poor coordination, and weak alignment with national priorities (Göçoğlu et al., 2025). For MSMEs, this dependency produces a proliferation of small, uncoordinated, unsustainable program (Chirambo, 2020). This requires donor coordination and a shift from project-based to programmatic support. Policy fragmentation across government levels is a parallel problem, addressed through centralized policy harmonization (Baba et al., 2025).

Top-down donor dependency is a power-distribution problem more than a funding-structure one, coinciding with weak regulatory and governance conditions that make it harder to shift agency to local administrative bodies and communities — despite strong evidence that doing so generates adaptation impact more successfully (McNamara et al., 2020; Sovacool et al., 2017). Framing adaptation primarily through finance also makes some solutions and forms of value more visible to funders than others, and decisions follow money rather than need. Co-creating funding mechanisms with communities from the outset is one documented response (Climate-KIC, 2025).

Ecosystem support for adaptation SMEs in emerging markets is not short of programs. It is short of coordination between them. As an interviewee from the Kenya Climate Innovation Centre (CIC) put it, ESOs in that context rarely coordinate, so the same entrepreneur tends to be supported repeatedly by different organisations in turn. Without a shared body tracking who has already received support, each ESO screens and selects independently, competing for the same visible, fundable entrepreneurs rather than building out a wider pipeline.

> ***"The pressure to meet donor KPIs can sometimes drive competition rather than collaboration among entrepreneurship support organisations. Organisations may continue supporting entrepreneurs who are already well served because they offer a more predictable route to demonstrating results, while promising but less visible businesses remain underserved.***
>
> ***Donor accountability is essential, but when programme success is measured primarily through individual KPIs, it can unintentionally encourage duplication of support and competition for the same entrepreneurs. We need stronger incentives for collaboration, pipeline development and reaching underserved businesses"***
>
> Quote by Christine Mbaabu, Kenya CIC

Fragmentation, in other words, is an outcome of donor logic where program outcomes and KPIs cater more to funder expectations than to creating a culture of ecosystem support. Enterprises, on the other hand, face similar compounding challenges that drive them between multiple similar programs.

Other interviews describe similar constraints in different contexts. An interviewee from the CGIAR Food Accelerator Program inverted this rationale by highlighting that the programs themselves consume the time they are meant to free up. Accelerators, bootcamps, incubators and hackathons demand attendance, reporting and in-person presence from founders who are already stretched thin. Running an accelerator for ten companies could easily cost half a million dollars for a development organisation.

Highlighting the experience of the LRF, an interviewee recounted that their program operated under commitments to the GEF that made A&R an implicit requirement of every proposal, "regardless of stated intent." The content of the support being delivered was, in this sense, decided before any assessment of what the supported communities actually needed – although motivated by A&R concerns.

Box 2

Alignment, Not Capital Type, Predicts Performance

A striking finding identified by a researcher from the CGIAR Food Systems Accelerator is that alignment between the investment's goals and the company's own priorities was the strongest predictor of positive performance, stronger than whether the capital was structured as a grant or as venture investment. They identified this by analyzing outcome data — revenue growth alongside self-reported performance indicators — against investment type.

This has a direct implication for how support program are designed. They argued for moving away from outcome-derived program based on predetermined external targets — for example, reaching a fixed number of farmers — and toward activity-oriented curricula built around where a company already wants to go, with alignment established afterward rather than imposed upfront. One example offered was a Zambian juice company that came to the program with a narrow, self-defined problem – poor shelf life. Matching them with a nutritionist led to a reformulated product.

The broader takeaway is that support program spend disproportionate effort designing the financial instrument and comparatively little on verifying alignment before and during disbursement. This insight suggests that lower-cost TA processes aimed specifically at facilitating alignment may do more for a company's outcomes from a program than a larger cheque. This extends into the design of TA services in ecosystems, where ESOs could prio- ritize developing customized, activity-oriented programs which cater to the type and stage-of-growth of an SME and their goals.

An interview with an practitioner from Roots of Impact, working in Bangladesh, reflected a unique proposition. The interviewee described a case involving a portfolio company in electric mobility – a sector characterised as a regulatory grey zone, given uncertainty over how electric three-wheelers would be regulated following a change in government. The company had already received donor funding through one instrument and was being considered for further funding through another; the funder declined, citing the regulatory uncertainty.

Here, donor risk-aversion rules out certain business models. As the interviewee put it, "in classic entrepreneurship logic... for things to be unregulated or under-regulated, this is usually a good thing for scaling businesses" — but in an emerging-market adaptation context, where "everything is political," that same regulatory ambiguity becomes a reason for donors to stay away, regardless of the underlying commercial or adaptation case.

Box 3

Designing for Shocks in Bangladesh: Programmatic Resilience and Funder Flexibility

A Reflecting on delivering a technical assistance and investment program in Bangladesh, an interviewee from Roots of Impact described an implementation period marked by a sequence of external shocks – the program launched during the COVID-19 pandemic, was followed by a political coup that altered the operating environment, and later coincided with USAID's funding withdrawal and the economic ripple effects of the war in Ukraine. Each of these events required the program to adapt rather than proceed as planned.

What made that adaptation possible, in their account, was the nature of the relationship with its funder. Funders can be rigid, holding fixed goals and expectations even when shocks make those goals harder to reach, a position that can push implementers toward solutions that satisfy reporting requirements rather than ground realities. In the case of Roots of Impact's program, the funder trusted the team and its local partner, Light Castle Partners, to determine the right course of action as conditions shifted, rather than insisting on adherence to the original plan.

The key takeaway is that programmatic resilience is inseparable from funder relationship management. Given how frequently emerging-market programs encounter shocks of this kind, the interview highlighted that the quality of that relationship deserves as much deliberate attention at the design stage as the financial instruments themselves. Consolidating previous insights with this, ESOs could strengthen their relationships with donors as well as establish long-term sustainability of ongoing program through strong narratives of impact, strong rooting in local networks with local partners, and leveraging their positionality to build flexible funding and monitoring arrangements right from the outset of the program design phase.

Entrepreneurs themselves are not passive recipients of support, but actively navigate these conditions by pushing back on unfavorable arrangements and leveraging their own relationships with local communities and understanding of their own context, as demonstrated well in the following case study.

Case study 3

Mountain Harvest – An Entrepreneur-Led Model for Reshaping Coffee Sector Entrepreneurship Support in Uganda

Mountain Harvest Coffee, originating on Mt. Elgon, Uganda, shows how entrepreneurs are not just passive recipients of support, but actively shape their own journeys through unfavorable conditions.



Photo's courtesy of Mountain Harvest

Responding to Climate Vulnerability in Uganda's Smallholder Coffee Systems

Uganda's coffee farmers face a climate problem that arrives less as heat than as timing. While heat is projected to be a significant threat after 2050, the dominant threat currently facing Arabica growing conditions on Mt. Elgon is the shifting rainfall timing. In 2024, rains arrived a week or two early and heavier than usual, wiping out roughly half that year's farmer yield. In other years, excess rain has delayed drying schedules, forcing farmers to travel some sixty kilometers away and absorb new accommodation costs to finish processing their harvest. Heat, meanwhile, is already a storage and transport problem — "fading coffee," a change in flavor caused when beans move from cool mountain storage into hot city conditions, pushed Mountain Harvest to build the country's only temperature-controlled coffee warehouse in 2021.

This was not the aim behind the company's founding, though. Barigye — a decade-plus veteran of non-profit rural development work who grew disillusioned watching the same donor proposals recur in the same communities five years apart — founded Mountain Harvest in 2017 to solve a more immediate problem: making coffee farming commercially viable and changing Uganda's reputation as a source of low-quality coffee. Climate resilience, in his own account, was something the company "gradually realized" it could not separate from their commercial mission, as rainfall timing kept reshaping what farmer prosperity actually required.



Entrepreneurs Shaping Entrepreneurship Support

What distinguishes Mountain Harvest's journey is Barigye's consistent refusal to simply accept the terms support providers offer. Early grants — from Lutheran World Relief, IDH, and the Global Resilience Partnership via the UNDP/GEF funded Resilience for Peace and Stability, Food and Water Security Innovation Grant Program — funded core model-building, but Barigye is emphatic that Mountain Harvest has never sought a grant to fund an isolated activity like farmer training, insisting instead on capital that builds the company's underlying capacity to buy from and pay more farmers. He describes a deliberate practice of front-loading negotiation before accepting any grant, rather than after — pushing back, for instance, when GEF sought a large stated beneficiary count, and negotiating instead toward a model built around replicability rather than raw farmer numbers.

As the company matured, many impact capital providers offered technical assistance, Barigye found, but designed for the lowest tier of SME need — a lender's governance advisory once assumed Mountain Harvest needed convincing to have a board at all, when its actual need was a board charter. Where funders let Mountain Harvest source its own high-caliber TA, the company thrived, hiring international specialists in coffee processing and marketing precisely because, as Barigye put it, "we are not building something local." Where funders insisted the company use their own lower- tier advisory as a condition of the relationship, Mountain Harvest walked away. Earlier this year, Barigye describes pushing back on an impact investor proposing a 12% interest rate comparable to a conventional commercial bank, arguing that impact capital cannot be priced the same way as commercial lending.

Nine years in, his concluding indications to funders are to stop treating climate adaptation as separable from good business- building, fund the underlying organization rather than isolated projects, and judge adaptation investments on the multi-year timeline they require rather than a standard two-to-three-year project cycle. "Fund the business, not only the project," he said, because training farmers to plant trees means little if the company itself lacks the working capital and management capacity to buy and market the coffee those farmers grow.

Mountain Harvest's story provides clear implications for ESOs: to adopt a whole-of-business approach while providing support, thereby enabling SMEs to shape their own priorities, goals and needs, and co-designing and funding their priority activities in that regard. It is important to note that the clarity and maturity with which SMEs may be able to do this depends heavily upon their stage-of-growth, and their type (see chapter 3), thus making it important to provide the right kind of support to the right SMEs to unlock this agency.

4.2 Governance Is Often the Binding Constraint on Cross-Sector Collaboration

Several models exist to catalyse cross-sector, multi-level collaboration. The Triple Helix treats university-industry-government collaboration as a core driver of innovation, applied to climate-smart agriculture where research institutions, government and firms jointly support farmer adoption (Nijhoff et al., 2023); its Quadruple and Quintuple Helix extensions add civil society and the natural environment, arguing climate-relevant innovation needs this broader base (Carayannis and Campbell, 2010; Carayannis and Campbell, 2012). Living Labs operationalise this as "user-cantered open innovation ecosystems" integrating research and innovation within public-private-people partnerships, enabling iterative, real-world experimentation (Tiwari et al., 2022; Barati et al., 2026).

In this regard, a practitioner from OneWorld Investments suggested that governance, not capital shortage, is the primary obstacle — "there are good regulatory frameworks that are just not tied together." A National Adaptation Plan funded separately from development/sector plans, for instance, fails to attract matching investment, and the gap defaults to international grants, further pushing financing back toward top-down, donor-driven logic.

Other interviews showed how actors navigate this context. The Pull Finance Facility, for example, works alongside governments and funders to identify market barriers and co-design solutions jointly, rather than proposing them from outside. ALIADOS, working on territorial governance and conservation in the Amazon, found that a well-incubated business could still fail if territorial governance and land management stayed weak, so it invested through partnerships in strengthening local land management and collective governance, keeping program success deliberately independent of any one government administration given frequent political turnover.

An interview with the Global Resilience Partnership (GRP), regarding their RISE program, added the additional dimension of informality as a governance condition to work with. As the interview highlighted, early planning assumptions that informal settlements would formalize as cities grew was simply wrong — this is "a completely different logic," requiring its own account of rights, equity, and the roles of municipalities and banks financing urban projects. This is corroborated by research showing that informal institutions (kinship networks, faith groups, customary leaders) fill governance gaps, mediate external interventions, and respond quickly to shocks (Greene *et al.*, 2026).

Box 4

Designing for Informal Urbanism: The RISE Innovation Challenge

> The Globarl Resilience Partnership's RISE Innovation Challenge is based on a gap in traditional innovation support design. Much of the existing architecture of project preparation facilities and TA assumes a formal counterpart with agency — a municipality or a national government — even though, in practice, cities in emerging markets are urbanizing in ways that are predominantly informal. Informal settlements and informal labor markets still need businesses, services, financing and microloans, but most innovation support was not built with them as the intended user.
>
> RISE was designed to fill that gap. Its first call for proposals drew around 600 applications, of which six were ultimately funded, reflecting strong demand at the program's early, experimental stage. Our interviewee expects that enterprises at this early stage will need several further funding rounds before their business models and customer bases settle.
>
> A more structural obstacle is funder appetite. Feedback has been consistently positive, but that has not translated into funders willing to co-invest or help enterprises graduate into an impact-investment portfolio — traced largely to "informal" itself carrying a perception of high risk. They locate part of the solution in due-diligence practice — cultivating funders' confidence in informal-market risk is itself a design question.
>
> Since due diligence functions as a risk-management exercise, they argue that cultivating funders' confidence in taking on informal-market risk is itself a design question involving processes of investment and risk mitigation. This highlights the need for innovation in due diligence processes which acknowledges both funder requirements and SME circumstances and context. ESOs must be able to navigate tensions between these two poles through collaborative program and process-design, culminating in effective and tailored programs.

4.3 Accelerator Design Needs to Set Up SMEs for Long-Term Growth

African Scalecraft (2026) gathers evidence on accelerator performance across the African startup landscape. The hub/accelerator landscape keeps expanding in headcount — over 500 hubs across 53 countries reaching 280,000+ entrepreneurs in 2024 — while contracting in sustainability. Of around 1,200 such organizations studied, only 30% were profitable and 70% were donor-dependent, a "double injunction" of serving non-paying beneficiaries while being expected to self-sustain. The share of newly funded African tech startups with accelerator experience fell from 64.5% (2023) to 51.3% (2024), suggesting the market is adjusting to this structural mismatch.

Ecosystem-maturity research highlights that activation strategies must match maturity level — early-stage ecosystems need foundational infrastructure, culture and networks, while mature ecosystems benefit from specialization (Nylund et al., 2019). Argentina's Tandil ecosystem showed a high "Collaboration Index" across public, private and academic actors correlating directly with ecosystem health. Intense, trust-based collaboration is a structural feature that a fixed-duration cohort cannot substitute for (Errandosoro, 2025).

A natural-experiment study of Start-Up Chile, isolating acceleration's treatment effect from selection effect, found cash grants produced no measurable performance improvement, while schooling and mentorship did (Gonzalez-Uribe and Leatherbee, 2018, cited in African Scalecraft, 2026).

A practitioner from the CGIAR Food Accelerator Program offered a sharp critique: running an accelerator program for ten companies easily costs half a million dollars for a development organization, yet "mapping operational activities to financial instruments very often is regarded as a secondary activity, because there's a certain naivety in the development sector that says, well, if we have these businesses and they have pitch decks, then we can easily find investors... but does the deal flow? Nine out of ten times it doesn't."

> ***"Mapping operational activities to financial instruments very often is regarded as a secondary activity, because there's a certain naivety in the development sector that says, well, if we have these businesses and they have pitch decks, then we can easily find investors (...) but does the deal flow? Nine out of ten times it doesn't."***
>
> Quote by Hauke Dahl, CGIAR

> ***"How much does the goal of the investment align with your company's priorities (...) that was actually the highest predictor for positive performance."***
>
> Quote by Hauke Dahl, CGIAR

Box 5

What Actually Moves the Needle on Accelerator Design

An interviewee from the CGIAR Food Systems Accelerator was critical of the conventional approach to accelerator program design. Many programs conclude with a demo day built around whichever investors happen to be locally accessible, rather than around investors whose theses match the companies being presented. The result is a room full of encouraging feedback and very little actual capital deployed. They argue that engaging the financial community early — designing the financial vehicle in parallel with the technical assistance, months before the conclusion — produces better outcomes.

Their research, through AI-enabled diagnostic tools piloted with agribusinesses across several value chains in Eastern Africa, also showed that structured, multi-agent risk assessments could produce finance, climate and behavioral diagnostics comparable in quality to consultant-led assessments, at a fraction of the time and cost — a methodology that went on to inform a soil-health innovation program supporting ten ventures across testing, precision agriculture, biofertilizer and carbon-sequestration tracks.

A key implication of this finding is that program design must fit into, and build, the overall pipeline of ES across stages of growth. This could involve, as highlighted, engaging the financial community and co-designing financial vehicles for individual SMEs right at the outset of programs, and enabling SMEs to envisage long-term goals, targets, and preparing business development and scaling strategies in line with their goals. The primary element here is the long-term financial viability of the SME and the co-design and engagement of financial instruments at early stages of activity. This further involves setting up arrangements for and facilitating long-term trust and collaboration across SMEs, academia, public sector and civil society.

4.4 Narrower, Activity-Oriented Programs Over Broad Mandates

A practitioner from the Adaptation Innovation Lab, argued that even with a strong network, no intermediary has a "Rolodex" good enough to serve companies across many countries and verticals with real impact. Their proposed solution was to narrow along multiple lines simultaneously — sector, geography, B2B/B2C, commercial-maturity thresholds (minimum revenue or funding raised) — producing "a really tight theory of change," narrow enough to genuinely know who you're dealing with while staying A&R-, innovation- and emerging-markets-focused. The current model of A&R ecosystems — "some ag[riculture], some weather, some insurance, some resilient infrastructure" — is a case where each sectoral addition seems reasonable individually, but the cumulative effect is a lack of specificity and expertise.

The same interviewee raised a more fundamental question: whether A&R should be the organizing category at all, or whether structuring it that way is more a function of donor-heavy funding logic wanting "adaptation and resilience writ large" within broad thematic buckets rather than a tightly scoped, single-hazard thesis. Their own preference was a single, narrowly defined market — extreme heat, water sanitation, a "drought market," a "clean air market" — since a market-specific frame reduces the definitional ambiguity that otherwise consumes program design effort.

Another actionable suggestion raised for this end was to design programs around 'activities conducted' rather than 'outcomes achieved', centering learning — incentivized monetarily or programmatically — and starting from where a company wants to go rather than "forcing a predetermined schematic", with program-level KPIs redesigned to reflect this shift toward tailored learning.

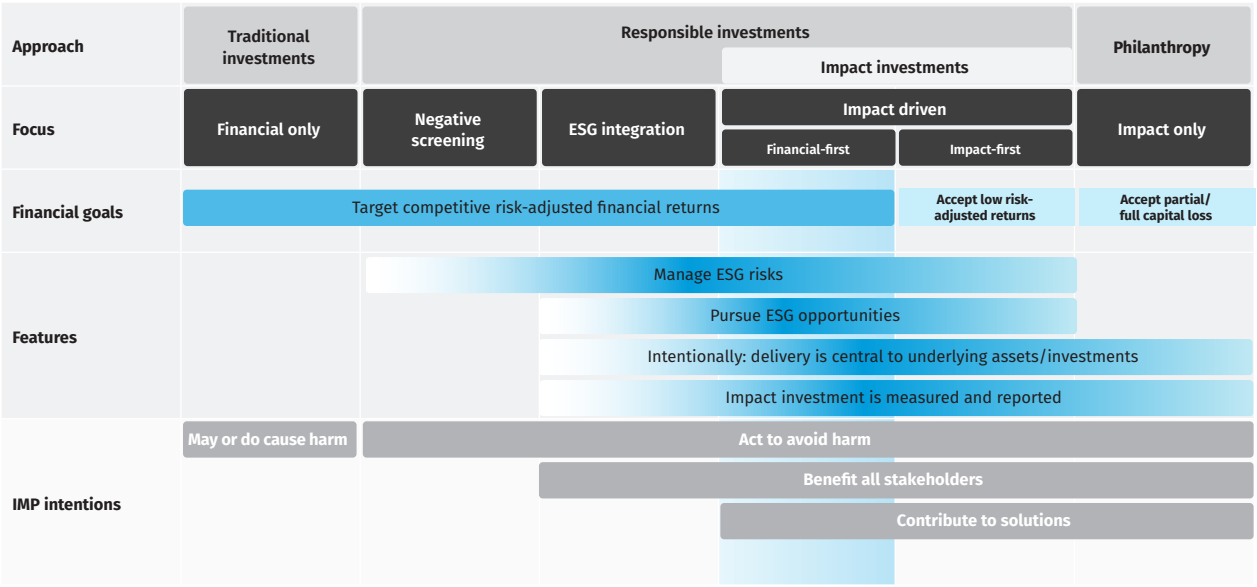
5. A&R SMEs Need Tailored and Value-Chain Specific Financial Incentive Structures



This chapter examines some of the financial instruments used to support adaptation SMEs from a practicioner perspective. Blended arrangements — mixing private capital with catalytic or concessional capital to address market failures — have been deployed in many ways and contexts. In A&R specifically, where intersecting vulnerabilities and differing climate risks shape radically different experiences of climate change, blended finance has the potential to address the systemic barriers that women, youth and other marginalized or excluded groups face in LDCs and SIDS.

We highlight strategic priorities, enabling conditions, and regulatory frameworks that shape how ES actors implement financial instruments and their results. As in Chapter 4, a structural bias catering to funders' expectations and priorities produces mismatches between local SMEs, contexts and climate risk profiles. The chapter also identifies successful, locally-grounded models for implementing blended finance instruments.

Figure 6
Impact Investment Spectrum



Source: Adapted from Bridges Fund Management (2014), PRI (2013), RIAA (2019), UK NAB (2017), Impact Management Project (IMP) (2018)

5.1 Capital Providers Operate in Silos, Each Defining A&R Around Its Own Interest

Figure 6 highlights the different types of investment and motivations across capital providers, each deployed with a different operational and regulatory logic — fragmenting multiple capital types pursuing the same ultimate goals.

Whittaker et al. (2024) shows that adaptation finance faces a fourfold challenge: a public-goods problem, externalities that accrue broadly rather than to the financing investor, information asymmetries between investors and enterprises, and missing markets for standardized risk-transfer products; and, unlike mitigation's unified "tons of carbon emissions" metric, there is no unified quantitative measure of impact. In this absence, each capital provider develops its own bespoke assessment method, which makes co-investment across capital types difficult. Cadge (2023) adds that weak financial systems and institutional capacity in LDCs and SIDS — patchy land/marine tenure governance, weak enforcement of existing regulation — independently raise the risk profile faced by capital providers, regardless of the underlying regulation's adequacy.

One interviewee describes investors approaching A&R "from a macro level," chasing problems they find interesting rather than assessing where capital is most needed by risk profile — "investors, in my mind, at the end of the day, aren't saying, show me your water deals. They're saying, show me a solution that can help a [specific] utility save money in this particular aspect of its operation." This highlights the need for shared definitions letting different capital types talk about the same risk, rather than each provider defining the space around its own sector interest.

"Investors approach A&R 'from a macro level and do not really define it from a risk level perspective.' Like investors, in my mind, at the end of the day, aren't saying, show me your water deals. They're saying, show me a solution that can help a [specific] utility save money in this particular aspect of its operation."

Quote by Hauke Dahl, CGIAR

A second interviewee locates a related failure in fund design itself: cost-consciousness should anchor to a fund's actual costs, not an external benchmark, since a newer, smaller fund's real costs are not reflected in benchmarks calibrated to larger funds. Both findings describe the same problem from different angles: capital gets structured around what's legible to the provider rather than the enterprise's actual risk profile or operating reality.

5.2 The Missing Middle: Grant-Heavy Early Finance, then a Sharp Drop-Off Before Scale

The "missing middle" is a well-established dilemma: international impact funds routinely seek USD 1m+ minimums, excluding earlier-stage organizations by construction, not merit, across Latin American social enterprises and emerging markets generally (Study of Social Entrepreneurship and Innovation Ecosystems, 2016); in climate-finance terms, MSMEs in LDCs or SIDS are too large for microfinance and too small or high-risk for commercial banks, with adaptation finance flowing overwhelmingly to large infrastructure instead (Crick et al., 2018; Anjanappa, 2025). Under 5% of global climate finance supports adaptation at all, and SMEs get a negligible share of that (Asha et al., 2025). Private capital that facilitates scaling is most likely to enter only where A&R creates identifiable cash flows, cost savings, asset protection, or productivity gains.

One documented attempt to close the missing middle combines several instruments simultaneously rather than relying on a single fix. Examining capital-rai sing constraints for agro-enterprises specifically, one framework proposes a multi-tiered response — concessional financing, digital financial services, weather-indexed agri-insurance and risk-sharing partnerships between public, private and donor actors, layered together rather than deployed as alternatives (Otunba et al., 2025). The same source recommends hybrid instruments blending grants with performance-based equity or revenue-sharing, and digital microloan platforms to reach enterprises a standard ticket-size threshold would otherwise exclude, corroborated further in Box 8 on the following page.

The LRF's experience illustrates the mismatch: LDC-based SMEs sought USD 100,000–500,000, while the facility's ticket sizes ran USD 1–2 million, built around an assumption that pre-investment SMEs would reach that scale — "that was the strongest criterion that made us turn down some of the SMEs." Structured around a pipeline originally built for SMEs headquartered in the US or Europe who could meet that eligibility bar, the mismatch skewed who the facility could serve, regardless of the merits of LDC-based businesses turned away.

A second interviewee, from the MAR+ initiative in Latin America, echoed the same challenge: financial providers decline these SMEs structurally, not on individual merit, since each provider's own investors, risk tolerance and return horizon exclude an SME outside that pre-set structure regardless of quality. Their response was to blend patient concessional capital with private capital, calibrated deal-by-deal to how close an SME already is to commercial viability.

"There seems to be a reliable amount of funding available up to US$200,000 ticket sizes, predominantly grants as catalytic finance. And then there's a really big jump and you see investors, or fund managers, or blended finance looking to allocate ticket sizes in the millions per enterprise. There seems to be very, very little in that middle bracket to support SMEs to graduate from grants into institutional capital and to build their own capacity to absorb capital and deliver at scale."

Quote by Corina Angeloiu, GRP

The binding constraint is sometimes pipeline, not ticket size. Instiglio's Pull Finance Facility in the Caribbean treats TA as a deliberate secondary response — working with government and local partners to diagnose whether the gap is readiness or capital, and only then investing in TA.

5.3 Scaling Works Better Through Value Chains than Through Individual Enterprises

Vertical linkages (smallholders to buyers/processors) and horizontal linkages (cooperatives enabling collective marketing) are documented as enabling market access and TA for agricultural MSMEs (Weldeslassie et al., 2019). Information asymmetries between large buyers and small suppliers routinely leave smaller enterprises unable to access linkage opportunities, and power imbalances can produce unfavorable contract terms even where a linkage forms (Cruz et al., 2022; Anand et al., 2021). Documented enabling conditions include supplier development programs, matchmaking platforms, payment guarantee schemes, and industry associations that let smaller actors bargain collectively (Weldeslassie et al., 2019; Cruz et al., 2022).

ALIADOS, working in the Amazon, was able to develop a Goldenberry (an indigenous fruit) supply chain with a subsidiary of a major multinational buyer. When a severe plague hit shortly after they began working with these farmers, rather than abandoning the value chain, they applied regenerative agriculture methods and farmers recovered ~80% of production. A parallel intervention with the Chachi indigenous group on cocoa saw productivity more than triple, alongside strong cocoa prices and higher farmer incomes. Their key lesson was that single-commodity depth is often necessary for commercial viability and impact, but can't be the only model if resilience is the goal.

Their account of Winak, a farmer association, is a good example of scaling through a value chain rather than a single enterprise. Winak exports certified cocoa, wayusa, plantain, and manioc, generating USD 500,000+ annually, and used several rounds of flexible capital to triple cocoa sales in a year after export capacity had bottlenecked. It then evolved into an export hub, aggregating and exporting products from other incubated communities not yet able to export independently. The funding structure was explicitly three-way (fund, association, overseas client, with the client paying the fund directly).

Victor Ndiege from Kenya Climate Ventures (KCV) added that embedding adaptation into market mechanisms could enhance the value and recognition of A&R. Their example was a drought-tolerant value chain built around indigenous vegetables, where effective documentation, marketing and communication of the vegetables' origins could result in premium prices.

Box 6

Verifying Local Value-Add: Independent Data, Local Expertise and the Limits of Trust

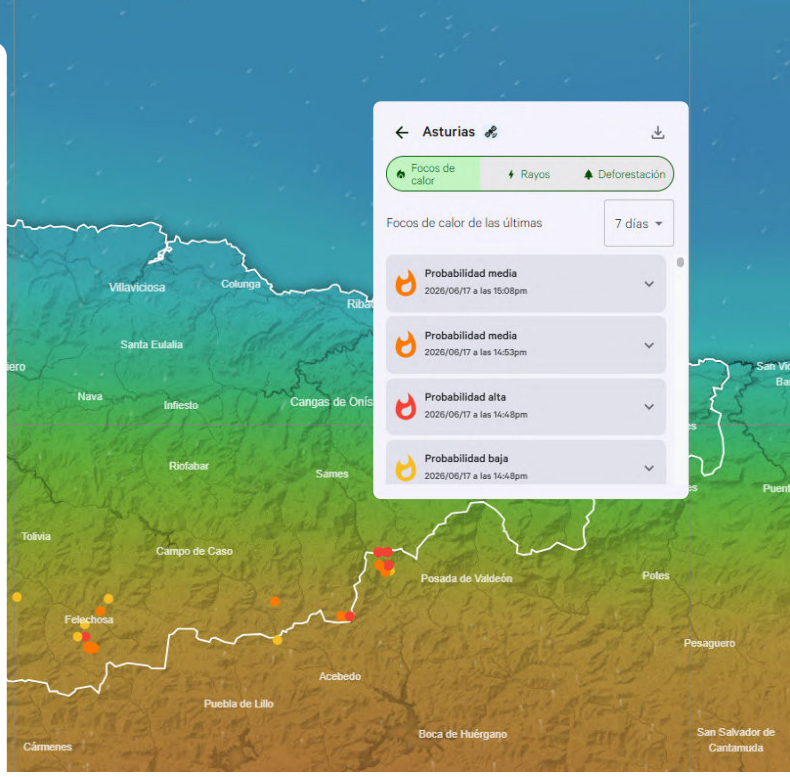
> A structural feature of Roots of Impact's program in Bangladesh is that funding is disbursed against independently verified figures, checked by a local verifier identified and trained early in the program (2020–2021), using the methodology from the broader Impact-Linked Finance model, focused closely on value-add to local stakeholders. That verifier has since localized and adapted the approach for the Bangladesh portfolio specifically — a capacity our interviewee noted does not yet exist at the same depth in many comparable markets, partly because funders are often more willing to pay for technical assistance and concessional capital than for the verification services that let that funding be trusted.
>
> This verification infrastructure is combined with local sector and market knowledge — from partner LightCastle Partners — on how a specific business model would hold up against a specific climate stressor: not a generic climate-adaptation score, but a concrete judgement, for example, of how an agri-tech company serving flood-prone riverine communities would maintain service delivery through a flood event. This is the difference that produces defensible investment-committee decisions.
>
> The two forms of local expertise reinforce each other in terms of reporting: every supported business must raise external investment as a funding condition, so Roots of Impact are effectively obligated to build an ongoing investment case for its portfolio.

The section highlights the importance of strong value-chains, built on strong enabling conditions, to unlock scaling pathways for individual SMEs. These enabling conditions are particularly important to develop, and extend from development program design considerations – including matchmaking platforms, payment guarantee schemes and collective marketing strategies – to developing strong industry bodies and trade associations to enable collective bargaining. In other words, the entire enabling ecosystem needs to be strengthened to unlock scaling pathways for SMEs. Strong value-chains are also built on resilient business models, as demonstrated in the case of ALIADOS and Winak. Developing local verification capacity, which uses a combination of rigorous stress-testing with local landscape knowledge to verify and demonstrate the resilience of SME business models to investors, and designing programs which utilize this to unlock multiple investment streams for SMEs, is an important step towards institutionalizing such design aspects.

Leveraging a core business model which could be tailored to fit various institutional and financial contexts enabled Satellites of Fire to scale by attracting diverse capital types and funders, as illustrated in next case study.

Case study 4

Satellites on Fire (SoF) – Scaling Wildfire Resilience Technology Across Latin America Through Diversified Partnerships



Satellites on Fire, originating in Argentina, is an example of an SME where growth has been built not on a single capital relationship but on a deliberately diversified stack of financial and institutional partnerships across sectors.

Responding to Escalating Wildfire Risk in Vulnerable Landscapes

Wildfire risk in Latin America is a result of ignition sources as much as drought. In Argentina, roughly 95% of wildfires are human-caused, not always intentionally, with lightning strikes accounting for most of the remainder, including the largest fire of the 2024–2025 Patagonia season. The risk is sharpest at the "interface" — where wildland meets villages, towns, and cities — a phenomenon technical lead Ignacio Martinez compares directly to the devastating Los Angeles fires.

Satellites on Fire was founded into this reality as a school project by three young Argentines — Franco Rodríguez Viau, Ulises López Pacholczak, and Joaquín Chamo — following wildfires that struck people they knew personally in Córdoba. The founders built their understanding of the problem by interviewing firefighters and government specialists, with early detection as their defining priority. The technology that resulted has scaled in deliberate stages — satellite-based detection first, on-site cameras roughly two years later, and a fire-spread and risk-modelling capability a year after that, where each stage was built on validated ground-truth data supplied by communities and partners, culminating in a 2024 AI detection model that identifies approximately 30% more wildfires than public satellite systems alone.

Scaling Through Diverse Business Models and Cross-Sector Partnerships

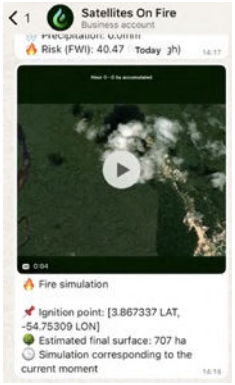
SoF's growth has been built through a varied set of financing relationships. Its earliest years combined angel investment, NGO-linked support, and accelerator program including Techstars and 776, run alongside a dedicated grants function chasing equity-free capital for impact-oriented product work that couldn't fit purely commercial criteria. This year, the company closed its seed round, led by Dalus Capital. Notably, they were not affected by the "missing middle" funding gap common to SMEs scaling past early ticket sizes,, and they did not face the heavy forward-projection demands larger institutional capital usually requires.

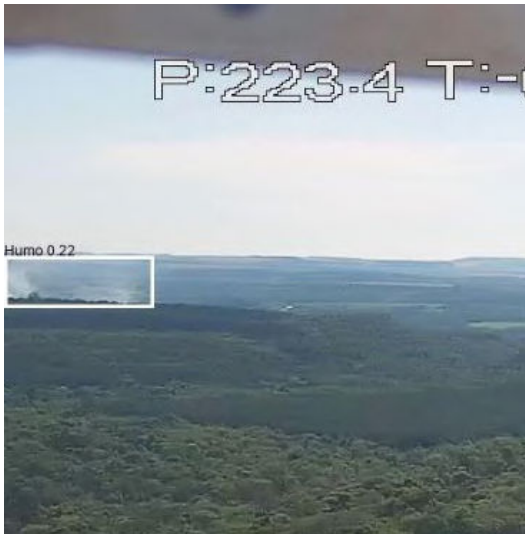
In 2024, SoF was selected for Mercy Corps Ventures' AI for Climate Resilience program, leading to a pilot in Misiones, Argentina, with the support of Nideport. The pilot's fire propagation models were built specifically to protect both local ecosystems and the Indigenous Mbyá Guaraní communities of the region, integrating satellite imagery and meteorological data alongside local knowledge to simulate wildfire spread across roughly 24,000 hectares — validating the company's approach of grounding its detection and prediction models in, community-sourced ground truth rather than relying on public satellite data alone.

The company now serves four principal client segments — governments, carbon credit program, forestry and agriculture, and a combined government/carbon/forestry/energy segment — deliberately building core detection features to serve all of them simultaneously rather than developing siloed, segment-specific products. Alongside paying clients spanning insurers, forestry companies, and governments, the company extends free access directly to individual users, such as unaffiliated firefighters without institutional budget — a deliberate "win-win," in Martinez's words, since these users continue generating the validated ground-truth data the detection system depends on.

In this regard, SoF's pilot under Mercy Corps Ventures' program highlights the kind of support that is valuable to tech-focused business models like SoF: by facilitating strong community partnerships, and validating the model in a real-world context in partnership with affected communities, SoF was able to leverage the pilot program to attract diverse capital providers, and scale across sectors.

In a conclusion on the support provided to SMEs like SoF, Martinez pointed not to any single funder's shortcoming but to a structural gap across the field: the absence of a clear playbook for balancing commercial growth with public-good impact at the same time. "It's not that they don't understand," he reflected, "but... most of them, they don't have their specific recipe for this." His own advice for those designing support programs for ventures like his was equally direct — resist a one-size-fits-all strategy, and to acknowledge that building genuine partnerships across sectors and geographies requires the patience to understand each context on its own terms.





Photo's courtesy of Satellites on Fire (SoF)

5.4 A&R Impact Investment Is a Credible but Still Immature Asset Class

Social and impact investment for A&R in emerging markets is moving from a niche, donor-led field toward an identifiable investment market — but it remains small, fragmented, difficult to measure, and heavily dependent on concessional capital. Figure 7 maps the main types of capital and its roles in this ecosystem.



Figure 7
Different forms of capital and their respective functions and roles in the A&R impact investment ecosystem (Source: Author's own work)

The wider impact-investing market is now substantial and growing. Yet A&R represents only a small and poorly disaggregated share, because most climate-impact portfolios remain concentrated in renewable energy, energy access, transport and other mitigation-oriented sectors (also evidenced through interviews).

A&R impact investment is becoming a credible field, but not yet a mature asset class. Its greatest near-term potential lies in combining social-impact capital, public and philanthropic risk absorption, local financial institutions, and entrepreneurship support to finance solutions that are commercially viable but cannot yet compete for conventional capital.

In this regard, A&R impact measurement, monitoring and reporting frameworks and practices are slowly emerging, in line with increasing requirements by major funders (GCF, MDBs) as a condition of investment (Climate Policy Institute, 2026).

The LRF built a landscape-level impact/resilience framework, drawing on the ASAP Taxonomy, that failed at enterprise level — illustrating why a framework's altitude matters. Design was straightforward from the funder's side; applied to individual SMEs, many were not prepared to track what it asked for. Their environmental/social management system (built on IFC Sustainability Standards) produced similar results: one SME found it burdensome, taking time "needed elsewhere," while a second SME in the same cohort found it useful and implemented it.

"...on applying impact frameworks to SMEs: they would at first take a step back and say, please, we're struggling here, please don't pressure us so much... it was very early stage for them to actually have such a robust system..."

Quote by Carolina Kitchen, South Pole (Landscape Resilience Fund)

The same interviewee found that SMEs in their program felt less pressure to report ROI at pace, and "they actually felt that they were more committed to the impact side than the financial side," while understanding the financial side remained mandatory, owing to the Fund's flexibility in dealing with them.

A second interviewee from Instiglio's Pull Finance Facility, working on adaptive results-based payment mechanisms, added that impact frameworks should be built backward from a country's risk profile through a theory of change, not forward from a generic template. Citing methodological work on payment metrics/ KPIs tied to long-term impact, they described building in adaptive course-correction to manage non-payment risk.

Box 7

Results-based Finance in SIDS

Instiglio's work applying pull — or results-based — finance to climate adaptation is new territory. While mitigation has some precedent in this space — clean cooking and industrial decarbonisation among them — adaptation has almost none. Their team's facility, set to launch across Caribbean small island developing states, uses pull finance to reward solutions once a defined outcome is achieved, rather than funding activities upfront.

A results-based mechanism works best where a viable solution already exists but the market fails to deploy it because the risk-return profile doesn't support investment without an incentive — and where the outcome being paid for is independently verifiable and clearly linked to the intended impact. Enterprises whose technologies cannot support that clarity aren't ready for a pay-for-results structure. Where a solution doesn't yet exist, the team considers a challenge prize instead; where it exists elsewhere and needs local adaptation, an advance market commitment or broader results-based structure fits better, since the barrier is absorption, not innovation.

Where a solution does not yet exist, the team is considering a challenge prize, incentivising innovators to develop new solutions. Where a solution exists elsewhere and needs adaptation to local conditions, a different instrument — an advance market commitment or a broader results-based financing structure — fits better, since the barrier is absorption and adaptation rather than innovation.

Because every results-based mechanism ties payment to performance, risk sits at the centre of each instrument's design. Instiglio deliberately avoids tying a high share of an enterprise's total funding to results, calibrating instead how much payment an innovator needs simply to operate safely versus how much functions as an incentive on top — so the incentive motivates better performance without making core operations contingent on hitting a target.

Choosing the payment metric is where much of this risk gets managed in practice — for an energy-security mechanism, the metric under consideration was the share of the population gaining access to climate-resilient energy sources. Instiglio's role is identifying which specific indicators within a broader payment metric are both verifiable and capable of shaping how the enterprise actually operates, since a poorly chosen indicator can distort incentives even when the headline metric sounds reasonable.

Equally salient is the risk of non-disbursement: an enterprise does the work but isn't paid, whether from a miscalibrated metric or harder-than-expected verification — threatening the enterprise's finances and exposing donors to accountability questions. Their response is to design flexibility in from the outset: a pilot phase to observe how enterprises respond, with frequent check-ins to shift funding between metrics or resize an advance payment or result-linked bonus that proves too small or too ambitious.

Instiglio's example is particularly relevant in highlighting the inseparability of financial and non-financial support and indicator framing in structuring the right incentives for the right SMEs, based on their type and stage of growth. In this sense, results-based financial instruments can be a valuable tool in the right context. The next section elaborates on this approach further.

5.5 Tailoring Financial Vehicles to Local Context Is What Makes Them Work

This theme draws together threads running across the whole chapter — instrument design, the missing middle, and the balance between concessional and non-concessional, financial and non-financial support — into a single explicit design principle: financial vehicles in this space perform poorly when they are externally driven, rather than built for the specific country, sector, and business-model realities they are meant to serve.

A conducive environment for private-sector adaptation investment requires international agencies supporting government adaptation planning, demonstrating commercial viability through risk-sharing rather than declaring it, and fostering viable local business models rather than applying standard templates (Rincón, 2023).

The analysis begins with the capacities of the teams structuring and implementing financial instruments. An interviewee from the Landscape Resilience Fund recounted that on-the-ground conditions repeatedly diverged from design assumptions, requiring disbursement timing and repayment schedules to be adjusted mid-implementation — an organizational-design question as much as a technical one, requiring the competencies and processes to reassess and redesign instruments midway through implementation.

To tailor repayment conditions to SME capacities, the LRF designed repayment clauses so an SME took on repayment risk only after benefiting. This took the form of a TA grant with a built-in repayment clause, triggered by a defined investment or revenue milestone — reversing the default of fixed repayment terms regardless of whether repayment is realistic.

Viwala, from the MAR+ initiative, developed "impacting loans" as "a translation of the outcome-based finance or the bonds," because standard outcomes-based/bond instruments require generating impact before payment, "and this doesn't work for SMEs… because they don't know how to do it." Outcomes-based financing needs a dedicated, locally rooted translation function between instrument and enterprise to become accessible to SMEs (Box 8).

Tailoring extends to payment timing itself. Paying farmers in cash, rather than through an association or delayed instalments, directly improved supply-chain reliability — cash-paid farmers reliably honoured purchase orders, while others sold to whoever offered cash first regardless of prior agreements. Tailoring isn't just about instrument type or ticket size, but how, when, and in what form payment reaches the person it's meant to support.

Box 8

MAR+ Fund's Tailoring of Financial Instruments to SMEs

The MAR+ initiative provides a valuable example to ESOs in showcasing how financial incentives are structured to the needs and goals of specific SMEs, and how non-financial support is accordingly provided. In the Mesoamerican Reef region, where fishing- and tourism-dependent communities span four countries at widely varying development levels, conventional lenders assume a return horizon, risk ceiling and repayment expectation that doesn't match SME operations — mainstream banks are built for companies with an established breakeven, and non-bank institutions price the resulting risk prohibitively high. Viwala concluded the mismatch required a different kind of vehicle entirely, blending patient concessional capital with private capital in a ratio calibrated to how close a given company was to commercial viability on its own.

Working across the roughly 90% of the region's economy that SMEs constitute, Viwala adapted outcomes-based finance — the logic underpinning social and environmental bonds — for a segment conventional bond structures were never designed to serve. A standard outcomes bond requires generating the impact first and receiving payment afterward; most SMEs don't yet have systems in place to generate reportable impact without support.

The resulting instrument, 'impacting loans', restructures that: after the usual financial and risk analysis, each borrower receives a detailed impact plan broken into discrete, trackable actions, each priced into the loan's interest rate — completing every action earns the full discount, completing half earns half. Direction mattered as much as structure: starting with a higher rate and lowering it as actions complete produced stronger compliance than starting low and raising the rate for non-completion.

This mechanism has been adapted across different impact themes without changing its underlying architecture — diversity and inclusion policies in one instance, a transition to sustainable water, waste and energy practices in the region's hospitality sector in another — with Viwala bringing in different specialist consultants per theme, since shifting a hotel's water treatment bears little resemblance to shifting its hiring practices.

This model depends on a layered capital stack: grant funding to cover tool development, a growing pool of guarantees, concessional capital, and private capital priced to the underlying risk. In the adaptation theme specifically, unlike gender, Viwala is still working to secure a concessional funder willing to accept a lower return for the impact generated.

The financial redesign was only part of the response. The initiative brought together five distinct actor types: two conservation funds with deep reef-ecosystem expertise, a business accelerator (New Ventures), and a financial instrument — MAR+ operating as an ecosystem creator combining acceleration, transactional advisory, blended loans and conservation-fund grants into one coordinated offering, on the premise that no single instrument could address a problem this complex alone.

Assembling this coalition created friction between conservation and private-sector actors, who shared neither a common language nor common priorities despite nominal alignment around impact — compounded by Viwala, itself built by impact investors, being neither a conservation actor nor a conventional private-sector one, and needing to establish credibility with both sides. Three to four years in, the interviewee describes those tensions as manageable: ecosystem-level financial vehicles don't eliminate the need for ongoing negotiation between differently motivated partners.

6. Local Embeddedness for Effective A&R Entrepreneurship Support



Success in A&R innovation often demands strong uptake and ownership among local communities. Robinson et al (2026) indicate that long-term success is more reliant on the continuity of relationships between people, institutions and place than on technical design and short-term project outputs. While SMEs themselves do develop strong community relation-ships through their operations, these relationships are also laden with their own tensions and challenges, and differ based on sector and context. This chapter identifies some of these aspects of SME activity focusing on facilitating community ownership and relationship-building.

Bringing together the findings of the last three chapters, this chapter also highlights that a structural, top-down approach to program design ends up elevating certain entrepreneurs and solutions that may not reflect the diversity of activities or needs of local communities in a given region. Various aspects of this dynamic are highlighted, as are the strategies used by different actors to navigate these conditions.

6.1 Tech-Savvy Entrepreneurs are more Appealing to Investors than What Local Contexts Actually Need

From this whitepaper's review and interview data, there is an evident bias towards technology-enabled, engineering-heavy A&R solutions, often at the cost of attention to local context, conditions, and how a solution actually operates within its user base.

An interviewee from the CGIAR Food Accelerator Program critiqued this, saying that solutions are frequently engineered beyond what local conditions require or can support. Their alternative was prioritizing value addition to processing, shelf life, packaging, local distribution — factors that represent concrete needs of local markets.

A second interviewee, from the MAR+ Initiative, distinguished between types of businesses based on scalability and entrepreneurial capacity: a "very good entrepreneur" who already has expertise and mainly needs help raising money, versus a non-entrepreneur by background — illustrated by a jam-business owner — needing fundamental help with management and sales; and local companies solving problems for their own market versus better-resourced, more tech-oriented companies headquartered abroad and building global-scale solutions, resulting in a difference of market size, not quality (the Mesoamerican coral reef region, a small specific market with a lower growth ceiling, was her example). "Tech-focused versus locally rooted" is actually reframed as situating entrepreneurial sophistication and addressable market size — and a company can occupy any position on that spectrum.

A third interviewee, from Prosper Global Ventures (formerly known as Mercy Corps Ventures) offers locally-embedded technology as a counterexample to "tech-first" and "locally rooted" being opposites: one portfolio company (Case Study 1) built technology serving an existing local strategy, not replacing it; another developed a highly innovative leaf-cooling biocoating spray pairing chemistry/material-science and agriculture expertise. Both are technology-intensive and rooted in specific local problems at once.

6.2 Founder Profile, Not Just Business Model, Shapes Who Gets Funded

Structural marginalization through exclusionary financing criteria and accessibility challenges are well-recognized in the sector. The interviews revealed a different, additional form of structural bias shaping A&R investment, particularly in Africa but applicable elsewhere.

This is corroborated by Kabengele and Hahn (2025), who, in their survey of investment data among African firms, found that non-African-led teams were 22% of the sample but 40.4% of top-quartile-funded startups and 50% of top-decile — increasingly overrepresented further up the funding distribution. Their explanation is investor homophily: non-African investors, facing information gaps, prefer founders who resemble them to reduce perceived risk, a pattern they trace partly to colonial-era power structures.

> ***"The funding landscape is structurally unequal. The majority of funding, the larger ticket sizes, goes to a certain founder profile. And that founder profile is white, non-African, and educated outside of Africa. (...) The long tail of companies that are underfunded maybe have the same business models, maybe have the same narratives, but are led by a different type of founder profile."***
>
> Quote by Hauke Dahl, CGIAR

Multiple other interviews highlighted the same pattern: founders educated in or headquartered in the global north had significantly more access to funding, networks and R&D services than founders based in the local context.

Interviews also noted that investment data is highly biased toward hubs like Lagos and Nairobi, consistent with a founder-network effect where hubs with the thickest global-north-linked networks attract disproportionate capital, reinforcing their centrality for future funding rounds.

In contrast, an interviewee Prosper Global Ventures (formerly known as Mercy Corps Ventures) described deliberate preference for "proximate founders" — founders from the community a business serves, with personal experience and incentive to stay connected. Most of their portfolio has local founders, and their own investment team is distributed across the coutries they invest in, not centralized in a global-north office.

This example showcases the importance of embedding a sensitivity and cognizance of structural inequity and justice concerns not just at the programmatic and design level, but at the level of organizational structure of the funding and facilitating agencies.



Photo courtesy of ALIADOS

Box 9

Vermifarm — Locally Rooted Circular Agriculture in Rwanda's Drought-Prone Bugesera District

Rwanda's A&R landscape

Agriculture employs roughly two-thirds of Rwanda's population and contributes about a quarter of GDP, yet remains highly rain-fed and climate-exposed — over a million people were affected by climate-related disasters between 1980 and 2017 alone (The World Bank Group, 2021). Bugesera district, where Vermifarm operates, is itself a documented case of this vulnerability, with drought, demographic pressure and deforestation compounding over time, and irrigation knowledge, diversified livelihoods and credit access identified as farmers' main resilience levers (Nzeyimana et al., 2024). Rwanda's response is comparatively institutionalized for the region: its Green Growth and Climate Resilience Strategy sets sector-level adaptation targets (Ministry of Environment, 2022), and the Rwanda Green Fund (FONERWA) — the country's national climate fund since 2012 — has mobilized over USD 300 million to date (National Climate and Nature Finance Strategy of Rwanda, 2024). Vermifarm's own funding path — a national challenge, an international resilience prize, a carbon-credit facility — reflects this layered landscape.

Vermifarm

Vincent Sindikubwabo founded Vermifarm in Nyamata, Bugesera, in 2021, after studying physics, chemistry and biology in Rwanda and environmental science and management in Belgium. Vermifarm's uses red wiggler worms to convert food and agricultural waste into vermicompost and a liquid pesticide, producing a fertilizer that improves soil water retention and lifts yields by 30–40% relative to conventional fertilizer. Vincent's combination of local grounding and international technical training shows in his framing of Vermifarm as one system, where "local farmers are at the center of the production system," demonstrating the inseparability of community resilience, environmental health and climate adaptation. The business understood itself as resilience-oriented and nature-positive from the outset.

What support programs underfunded, in his account, was the tedious, market-facing work: overcoming public hesitation about a fertilizer made from worms required sustained investment in demonstration plots and farmer training that most programs' visibility and mentorship offerings didn't cover. Vermifarm built its own evidence instead, measuring soil moisture and temperature before and after treatment on its own demonstration plots. This demonstrates the argument made in chapter 2 – that the social innovation, market linkage and category creation work that several SMEs are engaged in as part of their operations, do not fit into the value recognizable by funders, and so, receive less funding.

Local embeddedness runs through both Vermifarm's market and its workforce. It prices its fertilizer for smallholder affordability, and builds market access through agro-dealers who double as trainers, farmer cooperatives, and government agricultural events — channels Sindikubwabo describes as far easier to build locally than internationally. Part of Vermifarm's small team is a dedicated cohort of young women who experienced early or unplanned pregnancy — a group he identifies as acutely climate-vulnerable, and Vermifarm has also set out plans to train refugees in vermicomposting.

Sindikubwabo's clearest reflection for support programs is that the visibility and coaching that helped Vermifarm start has not been matched by equivalent follow-on support for market development and growth-readiness once a venture moves past the pilot stage. As he puts it: "Natural fertilizer has a permanent market, it is a business with a future."

Vermifarm's experience and its co-founder's reflections highlight the need for a long-term approach to TA and ES for SMEs, developed in conjunction with a strong understanding of local context through the SME's eyes. This would involve a deep understanding of the social context in which the SME is located, and the corresponding innovation being run by the SME, with a view to developing strategies to support this in TA programs. ESOs could also design follow-on support for the post-pilot gap specifically: growth-readiness and market access, not just seed-stage visibility and coaching, was the founder's clearest ask for what would help Vermifarm scale.

6.3 Genuine Local Partnership Pays Off, But Cannot Be Rushed

Strong relationships, trust and co-design with local communities are established as central to successful A&R implementation. Effective co-design moves beyond consultation to genuine power-sharing, with communities holding real authority over adaptation priorities and resources (Bailey et al., 2024), engaged from the earliest planning stages and sustained over time rather than front-loaded (Senaratne, n.d.), and working through traditional governance systems and cultural protocols, with trust-building named as its own intervention area alongside recording traditional practices and engaging traditional leaders (Motsumi et al., 2024). A dedicated SIDS framework for Latin America and the Caribbean makes local ownership and self-determination the basis for climate-informed governance, not a downstream add-on (Caudill et al., 2025); participatory solutions are more likely to be adopted and sustained (McNamara et al., 2020); indigenous knowledge is a substantive input to adaptation design, not a symbolic one (Vunibola et al., 2024); and direct engagement of vulnerable populations produces locally relevant, culturally appropriate, sustainable outcomes (Shammin et al., 2022). Concrete methods matter as much as the principle — in Fiji, culturally specific protocols (Talanoa dialogue, Isevusevu kava presentation) build the trust needed for local knowledge to have an impact at all (Hidalgo et al., 2021) — and inclusive participation requires deliberate effort to reach marginalized groups (women, youth, ethnic minorities, persons with disabilities) rather than assuming open participation is neutral by default (Wabnitz et al., 2021).

Robinson et al. (2026) identify seven interlinked factors — volunteerism, local-institutional partnerships, embedded leadership, national alignment, locally tailored livelihoods, perceptions of fairness and inclusion, and long-term community enthusiasm — indicating adaptation projects' long-term sustainability after funding ends, developing a relational framework around relational durability as a lens treating relational capacities as core progress indicators.

An interviewee from ALIADOS, working with indigenous communities in the Amazon, admitted that "we really started at zero... we did not have much idea except strong commitment to principles of learning and adaptation. But we've been building our toolkit" (Box 10).

Adopting a farmer-centric approach, they described facilitating communities of practice and farmer research networks, identifying pioneer farmers and bringing them into "a process to apply experiments and see how they can address their own learning questions" — paired with small-scale, community-embedded infrastructure like "artisanal bio factories" producing local organic fertilizer rather than externally supplied inputs. Improving smallholder productivity alone isn't enough, since smallholders individually produce small volumes; it is vital to strengthen the local business ecosystem itself, so someone locally rooted can purchase, aggregate, add value to, and commercialize those products at scale.

Rather than functioning as buyer and aggregator themselves, they judged marketing and distribution at scale poorly suited to them, resting the durable case for their work on strengthening local leadership instead: "if you become central and then you leave, then what have you really developed?"

This offers a guiding question for similar ventures elsewhere: what forms of market linkage and value-chain development are most appropriate for the given context — considering product, capacities, institutional and regulatory mechanisms, and community goals?



Photo courtesy of ALIADOS

Box 10

ALIADOS and Building Genuine Partnerships

For ALIADOS the central challenge of TA was building strong relationships. Most rural organisations in the Amazon survive on philanthropic project finance, training them to hop from project to project rather than build a durable business. Aliados had to overcome the stereotype they, alogn with other outside actors were cast in, where they were treated as financiers to be tapped or implementers to be tolerated, not as partners.

Navigating it meant slowing down. Rather than chase large grants to work shallowly across hundreds of businesses, ALIADOS works intensively with a small cohort, expecting success with a few. The clearest case is the incubator Aliados co-designed with eleven indigenous organisations in the Amazon, piloted with Inter-American Development Bank funding, pairing TA with flexible-capital financing. The results positioned Aliados as a national partner in a larger, pan-Amazonian initiative — incubating 100 community businesses and reaching 8,000 smallholder farmers across six countries, led by a Brazilian counterpart. Appropriately, the model for scaling across borders was partnership with an equivalent local actor in each country, not direct expansion by a single organisation.

Trust is built one step at a time, starting with a business-health diagnostic that typically surfaces around 22 distinct needs per enterprise — far more than any program can address at once, leading ALIADOS to prioritise. The first substantive step is almost always a shift from project to business mindset, helping enterprises define a mission, product, price and client using a two-sided tool combining a business model with a theory of change, so commercial viability and impact are built together. Financial planning follows by building projected cash flow against a confirmed purchase order, building toward working capital loans of USD 50,000–60,000, disbursed within roughly two weeks of an order, alongside support on operational efficiency and cost of goods sold.

ALIADOS's instruments are technically refundable grants, but deliberately packaged as "catalytic investments" rather than grants, to pull organisations toward commercial thinking rather than project-implementer dependency. The fund is young and still piloting — roughly USD 300,000 disbursed, zero defaults — deliberately serving businesses from USD 5,000 to USD 600,000–700,000 in annual revenue, because "there isn't a pipeline of investable businesses [in the Amazon]... we come in very early. Our goal is to try to help that pipeline exist."

A specialist team member embedded in the local culture over three decades, including family ties to an indigenous community, paired with international marketing expertise to negotiate responsible purchasing agreements abroad, enables market access for ALIADOS' partner SMEs. Sustaining this brought its own difficulties — retaining staff able to apply tools systematically proved consistently hard, and cultivating donors willing to fund multi-year engagement took deliberate effort, one that paid off when ALIADOS weathered a period of financial contraction relatively unscathed. The organisation is now replicating the same from-scratch, local-partner approach with a new incubator in the Chocó region financed by Rainforest Trust, and a further one in the Andes.

ALIADOS is a case-in-point of how cultivating strong, deep ties with local communities, working with them long-term to build a business pipeline, and co-designing goals and priorities across diverse stages of growth is key to financial sustainability and A&R.

7. Conclusion



This whitepaper finds that innovation accelerator programs, cohorts and wider entrepreneurship support ecosystems remain shaped by a top-down, donor-driven logic, articulated in various structural pattern and biases, and highlighted in every chapter. Donor-set KPIs reward visible, already-fundable entrepreneurs over building a wider pipeline, producing the fragmentation and the grantpreneur dynamic, while financial instruments and programs often do not incentivise and drive linkages to local value-chains. Further, structural biases in funding practices result in the prioritisation of what is legible to a funder, not what a given enterprise, in its own context, actually needs.

This whitepaper advocates for an approach to A&R technical assistance, entrepreneurship support and business development services that is built on a stage-of-growth- and type-led understanding of SMEs, and of what they need to scale, achieve financial viability, and contribute A&R solutions to local market realities. By gathering evidence of how various actors navigate this reality in diverse contexts, it identifies how actors have built sustainable long-term partnerships with local communities, attracted investment, and collates enabling conditions for program design. The critical insights that follow summarise this.

7.1 Critical Insights for ESOs

The evidence gathered across this whitepaper's literature review and the CAIL Community of Practice does not amount to a validated set of recommendations: the interview sample is not large enough to support that claim, and generic, context-free prescriptions are of limited use in a field where adaptation value is, by definition, context-specific (see Chapters 2 and 6). What follows instead is a set of critical insights — the most significant and most generalisable patterns identified across the whitepaper's chapters, case studies and boxed examples — offered as a starting point for ESOs, funders and policymakers to test and adapt within their own operating context, rather than as a checklist to be applied uniformly.

1/3 Tailoring Technical Assistance, Entrepreneurship Support and Program Design to SME Stage and Type

Support needs vary by SME type as much as by sector. High-growth, niche, dynamic and livelihood-sustaining enterprises (Hornberger et al., 2023) differ in growth potential, innovation profile and entrepreneur behaviour, and therefore in what kind of TA and BDS actually helps them. ESOs should map their cohort against this typology before designing curricula, rather than applying a single support model across a diverse pipeline. *(See Chapter 3.)*

Alignment between an investment's goals and a company's own priorities predicts performance better than the type of capital used. This was found to be a stronger predictor of positive outcomes than whether financing was structured as a grant or as equity. ESOs should fund the lower-cost work of establishing and verifying alignment, and design activity-oriented programs that start from where a company already wants to go, rather than imposing predetermined outcome targets. *(See Chapter 4, Box 2.)*

Investment-readiness, not a shortage of ideas, is the binding constraint. Across multiple interviews, the limiting factor was not promising concepts but businesses not yet able to absorb capital responsibly. Support should be designed explicitly toward investability — financial planning, cash-flow projection, governance structure — not general capacity-building alone. *(See Chapter 3.)*

Narrow, specific ecosystem design connects to market realities more than broad A&R mandates. A program thesis scoped by sector, geography, business model and growth stage could allow ESOs to build scalability and networks in relation to local market realities, as opposed to a broad "adaptation and resilience" mandate. Programs also perform better when the financial community is engaged from the outset — designing the financial vehicle alongside the technical assistance — rather than left to a final demo day. *(See Chapter 4, Box 5.)*

2/3 Integrating A&R-Specific Dimensions into Program and Ecosystem Design

Conceptual rigour on A&R needs to be built into ESO capacity itself, not only into SME-facing frameworks. Practitioners interviewed for this whitepaper — including at an established landscape resilience fund — reported genuine difficulty distinguishing hazard-, exposure- and vulnerability-reduction in their own work, and no interviewee named maladaptation directly despite its documented relevance. Without this conceptual clarity inside the ESO itself, program design risks reproducing the same blurred distinctions it is meant to resolve for SMEs. *(See Chapter 2.4.)*

Support for climate-resilient business models and support for adaptation-focused products or services are distinct needs that must be developed in parallel. SMEs relate to A&R both as economic actors exposed to climate risk in their own operations and as providers of solutions to others' exposure — and these two dimensions are routinely conflated in program design. A company can offer a valuable resilience solution to its customers while remaining highly vulnerable itself, so ESOs should support both explicitly rather than assuming one substitutes for the other. *(See Chapters 2.2 and 3.4.)*

A&R timelines do not fit standard program calendars, and support structures should be designed accordingly. Prosper Global Ventures (formerly known as Mercy Corps Ventures) deliberately varies pilot timelines by geography, weather and sector rather than fixing a calendar, and Mountain Harvest's founder argues exp- licitly that adaptation investments should be judged against multi-year outcomes rather than a standard two-to-three-year project cycle. Patient capital and flexible program design, calibrated to a technology's or behaviour change's actual maturation timeline, is a distinct and recurring A&R-specific need. *(See Chapter 3.3 and Case Study 3.)*

Product R&D, validation-testing support and localised climate data access are concrete, underserved gaps specific to A&R ventures. Founders without access to Global North networks or laboratory infrastructure — as in Coastal Biotech's reliance on the founder's personal academic contacts — face a significant bottleneck that systematic ES support rarely fills; likewise, most SMEs lack access to sufficiently localised climate data and context-specific technical stress-testing, not general awareness of climate risk. ESOs should build structured pathways — data partnerships, technical advisory panels, lab-access facilitation, local verification capacity — for founders who lack these networks by default. *(See Chapters 3.1 and 3.3, and Case Study 2.)*

3/3 Addressing Systemic and Structural Inequalities in A&R Entrepreneurship Support

Fragmentation is a downstream effect of donor-KPI competition, not simply a coordination failure. Where ESOs compete for the same visible, fundable entrepreneurs to meet their own donor-set targets, the same founders are repeatedly supported while a wider pipeline goes undeveloped. ESOs can address this by pooling data on who has already been supported, and by pushing donors to redesign KPIs around pipeline-building rather than around entrepreneurs who were already fundable. *(See Chapter 4.1.)*

Founder-profile bias is structural, and countering it requires changes to an ESO's own internal composition, not only its screening criteria. Non-African-led teams are heavily overrepresented in top-quartile and top-decile funding among African firms, independent of business-model quality, reflecting investor homophily rooted partly in colonial-era power structures. Mercy Corps Ventures' deliberate preference for "proximate founders," paired with an investment team distributed across the countries it invests in rather than centralised in a global-north office, is a concrete example of an ESO restructuring itself, not just its criteria, to counter this pattern; other ESOs should examine their own staffing and decision-making geography with the same scrutiny. *(See Chapter 6.2.)*

Ticket sizes and financial instruments are frequently designed around imported fund conventions rather than actual local SME demand. SMEs in the contexts studied typically sought USD 100,000–500,000, while impact fund ticket sizes commonly ran USD 1–2 million — a mismatch that excludes otherwise-eligible local businesses by construction, not merit, and systema- ti- cally skews pipelines toward already well-resourced, better-connected founders. *(See Chapter 5.3.)*

Independent local verification capacity is chronically underfunded relative to technical assistance and capital, despite being what allows the other two to be trusted. Donors are often more willing to pay for TA and concessional capital than for the verification services that let reported outcomes be believed by investors. Funders and ESOs should treat verification — including training local verifiers directly, as in Roots of Impact's Bangladesh program — as core infrastructure to invest in deliberately, not an optional add-on assumed to follow automatically from capital and TA. *(See Chapter 5, Box 6.)*

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Annexure 1: Interview Schedule

S. No.	Interviewee	Organization
General Interviews		
1	Amy Jones	MAR Fund
2	Belynda Petrie	OneWorld Sustainable Investments
3	Carolina Kitchen	South Pole
4	Christine Mbaabu	Kenya CIC
5	Corina Angeloiu	Global Resilience Partnership
6	Hauke Dahl	CGIAR Food Systems Accelerator
7	Jamil Wyne	Adaptation Innovation Lab
8	Jordan Wolken	Roots of Impact
9	Karla Gallardo	Viwala
10	Maria Gomez	Prosper Global Ventures (formerly known as Mercy Corps Ventures)
11	Sofia Velasquez and Lucia Perez	Instiglio
12	Victor Ndiege	Kenya Climate Ventures
13	Vincent Sindikubwabo	Vermifarm
14	WaIn Collen	ALIADOS
Case Study Interviews		
15	Kenneth Barigye	Mountain Harvest Coffee
16	Ignacio Martinez	Satellites on Fire
17	Lavine Irvine	Coastal Biotech
18	Suryanarayan Balasubramanian	Acres of Ice

Annexure 2: Spectrum of A&R ES Programs

Spectrum of Adaptation & Resilience Entrepreneurship Support Programmes

An overview of programme types ranging from early-stage venture formation to market creation, resilience support and ecosystem development.

	Programme type	Primary purpose	Typical support instruments	Main target group	Typical output
1.	**Adaptation awareness and ideation**	Identify climate problems and generate business ideas	Climate-risk workshops; challenge competitions; hackathons; design thinking	Aspiring entrepreneurs; students; researchers; community innovators	Initial adaptation business concepts
2.	**Pre-incubation and venture formation**	Turn ideas or informal activities into structured enterprises	Customer discovery; team formation; prototype grants; business-model development	Very early-stage founders and informal innovators	Validated concept and initial enterprise
3.	**Adaptation-focused incubation**	Develop and test early-stage solutions	Technical mentoring; climate data; workspace; prototyping; field testing; seed grants	Early-stage adaptation SMEs	Tested product and functioning business model
4.	**Cohort-based acceleration**	Prepare established ventures for growth and investment	Intensive coaching; financial modelling; impact measurement; investor readiness	SMEs with products and some market evidence	Growth strategy and investment-ready venture
5.	**Sector-specific or value-chain support**	Address adaptation challenges in a particular economic system	Specialized expertise; buyer links; technical certification; sector networks	Agriculture, water, infrastructure, health or other sector-specific SMEs	Solutions integrated into sectoral value chains
6.	**Place-based innovation clusters**	Build innovation around the climate risks of a specific geography	Co-creation; local partnerships; demonstration sites; ecosystem coordination	Local SMEs; researchers; governments; communities	Locally rooted portfolio of adaptation solutions
7.	**Market access and demand creation**	Create customers and deployment opportunities	Procurement; buyer matchmaking; challenge funds; demonstration contracts; demand aggregation	Market-ready adaptation SMEs	Sales, contracts and solution deployment
8.	**Finance-linked acceleration**	Connect enterprise development directly with suitable capital	Grants; concessional loans; guarantees; equity; blended finance; technical assistance	Investment-ready or growth-stage SMEs	Capital raised and commercial expansion
9.	**Technology validation and demonstration**	Prove that solutions work under real climate and market conditions	Test sites; living labs; demonstration farms; municipal pilots; regulatory sandboxes	Technology and product-oriented SMEs	Technical evidence and reduced adoption risk
10.	**SME business-resilience support**	Make ordinary SMEs more resilient to climate shocks	Risk assessments; continuity planning; insurance; resilient infrastructure; supplier diversification	Mainstream SMEs exposed to climate risks	More resilient enterprise operations
11.	**Inclusive and community-enterprise support**	Reach entrepreneurs excluded from conventional accelerators	Local-language coaching; small grants; decentralized support; peer learning	Women; youth; rural and informal enterprises; cooperatives	Locally accessible and inclusive enterprises
12.	**Ecosystem-intermediary development**	Strengthen organizations that support adaptation entrepreneurs	Training incubators; curriculum development; mentor networks; tools; knowledge exchange	Accelerators; hubs; universities; business associations	Stronger local entrepreneurship-support capacity

The programme types are not mutually exclusive: integrated A&R entrepeneurship support initiatives may combine several of these functions.



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