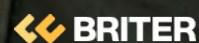
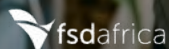


# The State of ClimateTech in Africa 2.0: Moving Beyond the Headline Numbers



Africa: The Big Deal

This study was developed by Briter in partnership with Catalyst Fund, FSD Africa, and BFA Global, with funding and data support from Africa: The Big Deal.

# Authors and partners →

## **Catalyst Fund**

Catalyst Fund is a pre-seed venture capital fund and accelerator that backs high-impact technology startups improving the resilience of underserved, climate-vulnerable communities. The fund partners with mission-driven founders building solutions for climate adaptation and resilience across Africa.

## **Briter**

Briter is a research and market intelligence firm delivering insights into emerging markets across Africa, Latin America, and Asia. Its core product, Briter Intelligence, provides access to company, investor, and funding data through interactive dashboards and customisable insights. Briter led the research, stakeholder engagement, data analysis, and report development for this study, drawing on Briter Intelligence data and qualitative inputs from ecosystem actors.

## **FSD Africa**

FSD Africa is a specialist development agency working to make finance work for Africa's future. Based in Nairobi, FSD Africa works with governments, regulators, policymakers, and market actors to strengthen financial markets, mobilise capital, and support long-term financing for Africa's development needs. Its work spans areas including adaptation and resilience, early-stage finance, financial markets, and investments.

## **BFA Global**

BFA Global is an impact innovation firm that combines research, advisory, venture building, and investment expertise to build a more inclusive, equitable, and resilient future for underserved people and the planet. BFA Global partners with public, private, philanthropic, global, and local organisations to catalyse innovation ecosystems for impact across emerging markets.

## **Africa: The Big Deal**

Africa: The Big Deal is a data and insights platform tracking startup funding activity across Africa. Its database lists funding deals of \$100k or more secured by startups on the continent, supported by analysis and insights into African venture funding trends. Africa: The Big Deal contributed funding data used alongside Briter Intelligence for this study.

## **Contributors**

We thank all stakeholders who contributed their time and insights to this research through interviews, workshop participation, data validation, and expert feedback. Their input helped test the taxonomy, interpret financing patterns, identify market gaps, and refine the application of the Perez framework to Africa's ecosystem. Contributing organisations include Africa Climate Ventures, ARAF, AfricInvest, BFA Global, Camco Energy, CRA Fund, DOB Equity, EchoVC, Equator VC, FSD Africa, Global Innovation Fund, Holocene Africa, iHub, Ignitia, KawiSafi Ventures, Kinome, Kubik, Mazao Hub, Mirakap, Nithio, Novastar, Octavia Carbon, OMSIM, Persistent Energy, Pula, Rift Partners, Shortlist, and Triple Jump.

Individual workshop participants and interviewees are listed in full in **Annex B2**.

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## QUICK TIP

# TL;DR: Use AI to interrogate the report



Use AI to interrogate this report, not just summarise it. The strongest prompts help you understand what is changing, why it matters, and what different ecosystem actors should do next.

This report is built around two lenses: the ClimateTech taxonomy of clusters, applications, and solutions, and the adapted Carlota Perez framework of Irruption, Frenzy, Turning Point, Synergy, and Maturity. Together, they show that African ClimateTech is not a single market but a set of applications maturing at different rates.

### Best questions to ask

- **What is changing?** “What are the five most important shifts in African ClimateTech between 2016 and 2025?”
- **What does the framework reveal?** “How does the adapted Carlota Perez framework change how we understand ClimateTech maturity in Africa?”
- **Which markets are maturing?** “Compare Energy, Mobility & Transport, Agriculture & Land Use, Water Access & Management, Carbon & Nature-Based Solutions, and

Circular Economy & Waste. Which are closest to maturity, which remain early-stage, and why?”

- **Where is capital flowing and where is it missing?** “Where is ClimateTech capital most concentrated in Africa, where are the biggest gaps, and what does this reveal about market readiness?”
- **What should we stop assuming?** “What does this report suggest we may be getting wrong about African ClimateTech funding, risk, and scale?”
- **What does this mean for my role?** “If I am a [VC / DFI / donor / founder / policymaker], what are the three most important actions I should take based on this report?”

### Best all-purpose prompt

“Act as a ClimateTech market analyst. Using this report, explain what [cluster/application] reveals about the maturity of African ClimateTech, where capital is flowing, where gaps remain, and what this means for [actor type]. Keep it under 250 words.”

# Foreword →

We produced *ClimateTech in Africa 2.0* because the conversation about climate finance too often starts and ends with the size of the gap. That gap is real and urgent. But more money alone will not be enough.

Capital also needs to be better coordinated, better matched to the companies and sectors it is intended to support, and better timed to the stage of development of each market. What this report makes clear is that African ClimateTech is not one market; it is many. Clusters and business models are maturing at very different speeds, under very different conditions. A solar company scaling proven assets across borders, a founder testing an adaptation solution at pre-seed, a carbon venture building its market and its regulation at the same time: each needs a different kind of capital, at a different moment. The wrong capital can be as limiting as too little of it.

The evidence base has been growing. FSD Africa's work with the Climate Policy Initiative (CPI) on the Landscape of Climate Finance in Africa series has helped show where climate finance is flowing, where it is not, and how heavily the continent still depends on international sources of capital. Catalyst Fund's flagship research, *Investing in Climate Tech Innovation in Africa*, together with its experience backing early-stage founders, has highlighted the depth of innovation already underway and the persistent scarcity of capital at the earliest stages. Briter has helped map the companies, investors, and funding activity driving climate innovation across emerging markets, while AgBase brings a sharper focus to agriculture and food systems, where climate adaptation and resilience are becoming ever more central.

The next question is therefore not how much capital Africa needs, but what kind, where, when, and under what conditions, from policy to infrastructure to a buyer willing to pay, that let companies move forward at all. Read at that level, the picture is more uneven

than the totals suggest. Capital is pooling at a few well-proven companies and a few mature segments, while the stage in between – where promising companies must prove their economics – is where financing thins and viable ventures stall. Aggregate growth can make parts of the ecosystem look more mature than they are and can hide opportunities in sectors investors see least.

That is the contribution we hope this report makes: to support better decisions, not only bigger commitments - a shared basis for seeing where each part of the ecosystem actually sits, and how early-stage equity, concessional finance, flexible debt, guarantees, institutional investment, and enabling policy can reinforce one another rather than work in isolation.

Much remains unresolved: pre-seed capital is scarce, official development assistance is under pressure, women-only founding teams still receive less than 1% of funding, and resilience itself is hard to measure. But the opportunity is already visible. The task now is to make the financing system as responsive and differentiated as the founders building it.

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# Executive Summary →

**ClimateTech has become a defining theme of Africa's innovation landscape, but it is not maturing as a single market.** Between 2016 and 2025, funding to ClimateTech in Africa grew from \$206 million across 28 companies to more than \$1.5 billion across 223 companies. In 2025, ClimateTech accounted for nearly 40% of all disclosed venture funding in Africa, while African companies captured an estimated 3-4% of global ClimateTech funding. Yet these headline numbers can obscure how the ecosystem is evolving. Funding remains concentrated in a few companies, clusters and geographies, even as activity is broadening.

**To interpret how the ecosystem is evolving, the report applies two complementary frameworks.** The first is an Application-led ClimateTech taxonomy that distinguishes between Clusters, Applications and Solutions. Clusters capture broad sectors such as Energy and Agriculture & Land Use. Applications capture specific use cases such as Energy Generation or Regenerative Agriculture. Solutions refer to the underlying products and technologies. The second is an adapted version of **Carlota Perez's techno-economic cycle**<sup>1</sup>. The adapted framework shows how different ClimateTech Clusters and Applications progress across five stages. In **Irruption**, new ideas and business models are being tested. In **Frenzy**, investment accelerates and some companies grow quickly. At the **Turning Point**, funders become more selective and business models face deeper scrutiny. In **Synergy**, proven models begin to attract larger and more suitable forms of finance. In **Maturity**, markets consolidate around established companies and business models.

**Most Applications are progressing, but at very different speeds.** Between 2022 and 2025, 13 of the 18 Applications tracked moved to a more developed

stage. Yet progress is uneven. Energy Generation has reached Early Maturity and Light Electric Mobility has moved to Late Frenzy, while Recycling & Alternative Materials and Water Access remained in Irruption. Looking at how Applications are progressing provides deeper insight than their current stage alone. It shows where momentum is building, where markets are stalling, and what kind of capital, policy or ecosystem support may be needed next.

**Headline figures mask deep concentration in Clusters, companies and geographies.** African ClimateTech companies raised \$6.35 billion across 779 companies between 2016 and 2025, but the 20 top-funded companies captured 60% of total funding, while the top 10 raised as much as all other companies combined. Energy accounted for roughly 65% of total ClimateTech funding between 2019 and 2025, while Mobility & Transport emerged as the second-largest destination at around 11%. Kenya remains the centre of African ClimateTech funding, with Nigeria and South Africa bringing the top three markets to roughly 76% of total funding volume.

**ClimateTech does not mature towards a single financing model.** Companies do not simply move from grants to venture capital to debt as they grow. Instead, they build capital stacks that evolve with their needs as they move through the maturity curve. For companies in some Applications, grants become less important as commercial finance becomes available. For others, grants, concessional finance, subsidies, guarantees, procurement and public support remain core parts of the financing mix because they fund activities that commercial capital is unlikely to finance on its own. This matters especially in ClimateTech because many solutions target critical infrastructure and essential services, such as clean water, reliable energy, food production, and waste management,

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<sup>1</sup> Perez, Carlota (2002). Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages. Edward Elgar Publishing.

among others. Governments around the world typically support these areas through subsidies, procurement, guarantees, tax incentives and public investment. In many African markets, governments have more limited fiscal capacity, meaning that concessional and development capital often play a larger role in funding these services. This is why mature Energy solutions may still combine equity, debt, guarantees, concessional finance and subsidies, while Water Access & Management may continue to depend more heavily on grants, concessional finance, subsidies and procurement.

**The biggest constraint is often financial maturity, not technological maturity.** Some Applications still face real technology risk. Carbon removal is a clear example, where the technology itself remains pioneering and companies need to generate operational data in real-world conditions to prove scalability. Across much of African ClimateTech, however, the underlying technologies are already well understood and have been proven in global markets. The harder challenge is often whether the financing environment is mature enough to support them. This means asking whether companies have access to working capital, procurement pathways, clear regulation, customers willing to pay, investors who understand the risk profile, and instruments such as debt, guarantees, or subsidies that can support scale.

**Financing gaps appear at multiple points, not just in one “missing middle”.** The adapted Perez framework shows that Applications face different financing needs as they progress. Companies may need small amounts of flexible capital to move from prototype to pilot in **Irruption**, support to establish commercial traction as they enter **Frenzy**, or working capital, bridge finance and risk-sharing instruments around the **Turning Point**, where venture capital begins to thin before companies are ready for debt or institutional finance. Many companies stall not because the business model has failed, but because the next appropriate financing instrument is too slow, too large, too rigid, or unavailable at the ticket size they need. This challenge is particularly acute for asset-heavy Applications, including Agriculture & Land Use, Circular Economy & Waste, Mobility & Transport, and many adaptation-focused businesses.

**The funder base has broadened, but local commercial and institutional capital remains limited.** African ClimateTech remains heavily reliant on foreign, concessional, and development-oriented capital. DFIs, donors, VCs, and specialised climate investors remain essential, particularly for earlier and riskier Applications, but they cannot finance the full path to maturity alone. As more companies progress, local

banks, corporates, pension funds, insurers, and other institutional investors will need clearer pathways to participate, supported by guarantees, local-currency facilities, co-lending structures, stronger evidence of repeatable business models, and better risk-sharing mechanisms.

**Not all financing challenges are explained by stage of maturity.** Some reflect structural characteristics of different business models, climate outcomes and founder ecosystems. Asset-heavy businesses continue to struggle to access debt and working capital. Adaptation solutions remain harder to finance because many of their benefits are difficult to monetise directly, resulting in just 16% of ClimateTech funding. Women-only founding teams receive less than 1% of funding, reflecting both founder demographics and where capital concentrates across Clusters and Applications.

**Liquidity is beginning to emerge, but remains underreported and uneven.** Exit activity is most visible where Applications are closest to maturity, especially in Energy. Acquisitions and consolidation matter because they show that strategic buyers are beginning to value scale, infrastructure, distribution, and customer relationships, and signal that pathways to investor returns are emerging. But liquidity is broader than acquisitions alone. It can happen through secondaries, partial investor exits, and other ways of returning capital, even when these are not captured in the data. Looking only at headline exits may miss other ways that capital is already being returned and recycled through the ecosystem.

**Policy and market conditions shape how quickly Applications progress.** ClimateTech companies in Africa often face currency swings, infrastructure gaps, regulatory uncertainty, customs delays, slow procurement, and expensive working capital. These conditions can make every stage take longer than investors expect. Policy can accelerate markets through tax treatment, procurement, infrastructure, subsidies, regulation, and market rules, but it can also slow them where regulation is uncertain or implementation is delayed. Investors therefore need to treat policy, infrastructure, and market conditions as part of the business case, not background context.

**Taken together, these findings show that African ClimateTech is becoming more mature, but not uniformly.** The priority is not simply to increase total funding, but to understand what each Application needs to progress, what capital stack is most appropriate, where financial maturity is lagging, and how liquidity can begin to recycle capital across the ecosystem. Five implications are coming into view.

- **First, tailor capital stacks to what each Application needs to progress.** The aim should not be to replace grants with commercial capital, but to build financing systems in which grants, equity, debt, guarantees, subsidies, procurement, concessional finance, and other instruments each play the roles for which they are best suited.
- **Second, use catalytic capital where Applications are most likely to stall.** Applications do not face one “missing middle”. They face different financing gaps as they move through the adapted Perez stages. Between Irruption and Frenzy, they need flexible finance to move from prototype to pilot and prove demand. Around the Turning Point, they need working capital, bridge finance, guarantees and other risk-sharing instruments before larger debt or institutional capital becomes available. Catalytic capital is most useful when it helps companies move through these gaps and reach the next stage of maturity.
- **Third, create clearer pathways for local and institutional capital.** DFIs, donors, VCs, and ClimateTech funds remain essential, but they cannot finance the full path to scale alone. Local banks, corporates, pension funds, insurers, and other institutional investors will need clearer evidence of repeatable revenues, stronger governance, local-currency structures, guarantees,

risk-sharing mechanisms, co-lending models, and credible pathways to liquidity.

- **Fourth, treat liquidity as part of ecosystem maturity, not an afterthought.** African ClimateTech cannot mature only through new funding rounds. It also needs credible ways for capital to be returned and recycled, including acquisitions, secondaries, investor buyouts, partial investor exits, structured liquidity events, shutdowns, and other forms of capital recycling. Future ecosystem analysis should track these pathways more systematically, not just headline exits.
- **Finally, use policy to help Applications progress.** In many ClimateTech Applications, especially those linked to clean water, reliable energy, food production, public health, and resilience, public support is not a distortion. It is part of the capital stack that allows markets to form. Regulation, procurement, tax treatment, subsidies, guarantees, infrastructure, and market rules can determine whether promising Applications move forward or lose momentum.

Ultimately, African ClimateTech will not mature by converging on a single financing model, but by developing the right capital stacks, policy environment and market conditions for each Application to progress.



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**ClimateTech has become one of the defining themes of Africa’s innovation landscape.** For the purposes of this study, ClimateTech companies are ventures that apply technological innovation, spanning asset-heavy, science-based, and digital business models, to climate mitigation and adaptation. By 2025, the sector accounted for roughly 40% of disclosed venture funding on the continent, reaching an estimated \$1.5 billion in annual investment and surpassing FinTech as a share of total venture capital. Globally, African ClimateTech startups now capture an estimated 3-4% of global ClimateTech funding, compared to roughly 1% of global FinTech investment, signalling that international investor attention to the sector is growing faster than to Africa’s more established technology categories<sup>2</sup>.

**But aggregate growth hides differences in how markets are developing.** African ClimateTech is not developing as a single market. It is growing asynchronously, rapidly in some clusters, unevenly in others, and barely at all in several areas where the need is most acute. Energy and Mobility & Transport continue to absorb the majority of capital, supported by asset-backed financing structures and improving

commercial models. Across Food Systems & Value Chains, Circular Economy & Waste, Water Access & Management, Carbon & Nature-Based Solutions, and Built Materials, venture formation is active, but capital remains scarce, inconsistent, and heavily dependent on grants and concessional support. The problem is not simply that the ecosystem is underfunded overall; it is that the capital available is poorly matched to the stage and structure of many of the companies that need it most.

**Africa’s ClimateTech funding gap is not simply a venture-capital problem.** The Climate Policy Initiative estimates that Africa will need \$250-277 billion in climate finance each year through 2030. By contrast, disclosed ClimateTech startup funding has averaged around \$1 billion annually over the past three years, a small fraction of the overall need. This comparison is not meant to suggest that venture capital or startups can close the gap on their own. Instead, it shows why innovation funding has to connect to a much larger financial system. Grants, equity, concessional capital, guarantees, asset finance, project finance, commercial debt, and enabling policy all play different roles as markets mature. The challenge is not only to mobilise

<sup>2</sup> PitchBook, Climate Tech VC Report (Q4 2025) (Seattle: PitchBook Data, Inc., January 2026), <https://pitchbook.com>.

more capital, but to ensure that financing structures evolve alongside the companies, applications, and markets they are intended to support.

**This report is designed to support that coordination.**

It examines Africa's ClimateTech ecosystem between 2016 and 2025, drawing on funding data covering over 700 companies and more than 1,000 deals, alongside qualitative insights from founders, investors, and ecosystem stakeholders. Rather than reporting on the sector in aggregate, it examines how different applications and business models are progressing under different structural conditions, and what that means for investors, founders, policymakers, and ecosystem builders.

**The analysis is built on two complementary frameworks.** The first is a new ClimateTech taxonomy that organises the African ClimateTech ecosystem into clusters, applications, and solutions, making it possible to distinguish between segments that appear similar at a headline level but are operating under fundamentally different conditions. The second is an adapted version of Carlota Perez's techno-economic cycle framework<sup>3</sup>, which maps how technologies move through stages of experimentation, rapid investment, correction, and eventual consolidation as markets, financing structures, and institutions develop around them. Applied to African ClimateTech, the framework shows why broad sector categories can obscure important differences. Even within the same cluster, applications may occupy entirely different stages of maturity. Light Electric Mobility is scaling rapidly through fleet-based commercial models, while electric road vehicles and buses are progressing more slowly due to infrastructure and policy constraints. Understanding these differences is critical because they determine which forms of capital, support, and policy intervention are likely to be useful, and when.

The report is organised into five sections.

- **Section one** provides an overview of Africa's ClimateTech landscape, examining capital flows by instrument and ticket size, the composition of the funder base, geographic distribution, gender dynamics in founding teams, and exit activity.
- **Section two** introduces the ClimateTech taxonomy and the adapted Perez framework, calibrated to the African context, organized into five stages from Irruption to Maturity.

- **Section three** applies these frameworks at the cluster and application levels, tracing where capital is flowing, how financing structures are evolving, and where gaps remain.
- **Section four** draws out the key findings, identifying where the ecosystem is advancing, where it is becoming stuck, and what patterns of capital concentration reveal about market maturity.
- **Section five** sets out practical implications for venture capital and equity providers, DFIs, foundations and donors, impact investors, specialised debt providers, commercial banks, founders, and policymakers.

By applying these lenses, the report moves beyond headline funding totals to examine how different ClimateTech applications are progressing, where they are stalling, where financing structures are beginning to align with market needs, and where gaps continue to constrain growth. The goal is not simply to describe the ecosystem but to provide a clearer view of how different actors can support progress along the maturity curve.



<sup>3</sup> Perez, Carlota (2002). Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages. Edward Elgar Publishing.



BOX 1

## Methodology



This report analyses Africa's ClimateTech venture ecosystem between 2016 and 2025. It draws on a combined dataset from Briter Intelligence and Africa: The Big Deal, covering more than 700 companies and over 1,400 disclosed deals. The dataset includes equity, debt, grants, convertibles, hybrid finance, awards, and other non-dilutive funding where publicly disclosed or reliably tracked.

**Definition of ClimateTech.** ClimateTech companies are technology-enabled ventures whose products or services contribute to mitigation, adaptation, or both. Mitigation solutions reduce, avoid, or remove greenhouse gas emissions. Adaptation and resilience solutions help people, businesses, infrastructure, and ecosystems anticipate, withstand, or recover from climate-related shocks.

**Classification.** Companies are classified using the taxonomy developed for this report, which organises the ecosystem into clusters, applications, and solutions. Each company is assigned one primary cluster and application based on its main product, revenue model, and market activity. Where companies operate across multiple areas, classification reflects their core commercial model. The full taxonomy is presented in "A new ClimateTech taxonomy."

**Mitigation and adaptation tagging.** Companies are tagged as mitigation, adaptation, or dual-benefit based on the primary climate outcome of their solution. Where a company generates multiple benefits, classification reflects the

outcome most closely linked to its core product or service.

**Funding analysis.** Funding values refer to disclosed or reliably estimated transactions. Where rounds involve multiple instruments, they are classified by the primary instrument where identifiable. As many deals remain undisclosed, the figures should be read as a directional view of market structure rather than a complete measure of capital deployed.

**Geographic analysis.** Companies are assigned to countries based on their headquarters or primary operating market. For multi-country companies, funding is attributed to the main recorded market unless otherwise specified.

**Qualitative inputs.** The analysis is supplemented by interviews, stakeholder engagement, and insights from a ClimateTech workshop at FSD Africa's ESF Conference in Nairobi. These inputs were used to interpret funding patterns, identify gaps, and test the taxonomy and market-maturity framework. Interviewees, participants, and supporting materials are listed in Annex B and C.

**Limitations.** The analysis is constrained by the availability of disclosed funding data. Grants, local debt, working-capital facilities, and undisclosed angel or informal investment may be underrepresented. Classification also involves judgement, particularly for companies operating across multiple climate outcomes or business models.

# A new ClimateTech taxonomy



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For the purposes of this study, ClimateTech companies are ventures that apply technological innovation, spanning asset-heavy, science-based, and digital business models, to climate mitigation and adaptation.

The emphasis is on the application of the innovation. ClimateTech is not defined solely by the sector in which a company operates, but by how technology, business models, and delivery structures are used to address climate-related challenges. In the African context, innovation may lie as much in the financing and delivery model as in the underlying technology.

This makes it possible to move beyond broad categories. Clusters such as Energy, Mobility & Transport, or Agriculture & Land Use provide a useful overview, but can mask important differences in how markets are developing. Individual solutions provide greater detail, but are often too specific to support meaningful comparison across the ecosystem. Applications sit between the two. They capture how innovation is being used to address a particular challenge, making it possible to observe differences in funding, business models, and market maturity.

Companies are therefore classified using a three-level taxonomy.

- **Cluster** refers to the broad sector in which a company operates, such as Mobility & Transport, Water Access & Management, or Circular Economy & Waste.
- **Application** refers to the approach through which a venture addresses a climate-related challenge within a cluster, such as charging infrastructure, regenerative agriculture, or climate-risk analytics.
- **Solution** refers to the underlying product, technology, or service, such as batteries, irrigation systems, or digital forecasting platforms.

Each company is assigned one primary cluster and one primary application based on its dominant business activity. Where companies operate across multiple areas, classification is based on the activity that best represents the company's core commercial model.

The full taxonomy is presented on the next page.

Cluster	Applications	Solutions
Energy	Energy Generation	Solar energy, Solar home systems, Mini-grids, Wind Turbines, Biofuels, Hydropower
	Storage	Batteries, Energy storage units
	Energy Efficiency & Management	PAYGo software, Smart metering, Mini-grid/Weak-grid platforms, Energy analytics, Demand response, Virtual power plants, Smart grid platforms
	Clean Cooking	eCooking appliances, Biogas digesters & stoves, Bioethanol cookstoves, Pellet & Briquette stoves, LPG stoves, Improved biomass stoves
Agriculture and Land Use	Sustainable Production Systems	Fish & Algae farming kits, Sustainable aquaculture feed, Climate-resilient seeds, Climate-smart livestock, Animal feed, Hydroponics / Vertical farming kits.
	Climate-Smart Inputs & Technologies	Precision ag tools, Farm management platforms, Remote sensing, Drone & AI-based analytics, Biofertilisers & Low-carbon fertilisers, Water-efficient irrigation systems
	Regenerative Agriculture & Systems	Soil carbon monitoring, Soil testing kits, Substrate & Soil health solutions, Reforestation, Desert-to-Farm solutions.
Food Systems and Value Chains	Post-harvest, Processing & Cooling	Agro-Processing equipment, Cold chain, Cold storage
	Supply Chains, Markets & Traceability	Digital market & Logistics platforms, Market information & Access tools, Food safety & Traceability platforms
	Alternative Proteins & Novel Foods	Insect protein, Plant-Based protein, Mycoprotein, Cultured meat, Precision fermentation
Mobility & Transport	Light Electric Mobility	Electric bikes, Electric scooters
	Road EVs & Buses	Electric vehicles
	Charging & Battery Infrastructure	EV charging systems, Battery swapping stations
	Smart & Shared Mobility	Smart mobility platforms, Transport management, Mobility-as-a-Service (MaaS) platforms
	Maritime & Inland Water Mobility	EV water transport
Built Materials	Building Efficiency & Controls	Smart sensors, Energy management systems, Efficient HVAC
	Green & Low-Carbon Construction	PropTech platforms, Low-carbon construction
	Cooling	Solar-Powered fans, Solar-Powered room coolers, Solar ACs

Circular Economy & Waste	Waste-to-Value	Waste-to-Feed, Compost / Organic fertilizer kits, Ingredient recovery systems, Fecal sludge collection units, Modular treatment plants, Methane capture systems, Plastic recycling machines, E-Waste processing units, Anaerobic digesters, Small-Scale waste incinerators, Landfill gas capture units
	Waste Logistics & Collection	Smart bin sensors, Optimized routing software, Electric collection fleets, Sanitary landfill systems, Waste monitoring sensors
	Alternative Material	Sustainable materials
Carbon & Nature-Based Solutions	Carbon	Carbon capture & Storage or Utilization (CCS / CCU) systems, Carbon-Cured concrete, CO <sub>2</sub> -to-Fuel platforms, Carbon-Based polymers, Direct air capture (DAC) systems, Enhanced weathering / Mineralization platforms, Soil carbon sequestration tools, Carbon credit marketplaces, Carbon accounting platforms
	Ecosystem Restoration & Reforestation	Drone seeding systems, Tree nursery kits, Managed reforestation services, Reforestation monitoring platforms
	Blue Carbon & Coastal Protection	Ocean / Coastal monitoring platforms, Mangrove restoration, Seagrass mapping tools, Coastal barrier systems
Water Access & Management	Water Access	Water access solutions
	Sanitation and Hygiene	Sanitation infrastructure, Fecal sludge management units (Cross-Listed to Circular Economy)
	Water Treatment & Reuse	Wastewater treatment systems, Water purification units, Filtration technologies
	Water Efficiency & Management	Leak detection & Water flow monitoring
	Pollution & Waste Mitigation	Water / Soil remediation systems, Industrial emissions monitoring platforms, Ocean / Plastic Cleanup Technologies
	Atmospheric & Alternative Water	Atmospheric Water Generators (AWGs)
Data & Finance	Climate Data & Forecasting	Climate data platforms, Remote sensing / Satellite analytics tools, Climate risk modeling platforms (AI/ML-Powered)
	Conservation Monitoring & Enforcement	Satellite deforestation alerts, Ranger support devices, Acoustic monitoring sensors
	ESG & Sustainability Platforms	ESG reporting software, Automated climate disclosure platforms, Digital impact measurement platforms, Decision support dashboards
	Insurance & Risk Transfer	Crop insurance platforms, Parametric insurance products (Drought, Flood, Livestock), Asset finance

Health & Human Resilience	Climate-Health Surveillance & Forecasting	Disease surveillance platforms, Vector control technologies, Epidemic forecasting tools
	Rapid Response & Remote Care	Mobile clinics, Drone delivery for medical supplies, Emergency coordination, Telemedicine & Remote consultation platforms, AI-Driven point-of-care diagnostics
	Health Infrastructure Resilience	Solar-Powered health clinics, Off-Grid vaccine & Blood cold chains, Low-Carbon health supply chain solutions, Portable solar-powered medical equipment, Solar-Powered on-site cooling & Rehydration units
	WASH-Health Interface	Wastewater pathogen monitoring systems (Cholera, COVID), Rapid low-cost diagnostic Kits for waterborne pathogens
	Thermal & Air Quality Management	Air quality monitoring devices, Heat stress monitoring platforms, Solar-Powered cooling/ Rehydration units
	Climate-Risk Health Financing	Parametric health insurance products, Climate-Linked health financing platforms, Digital claims processing



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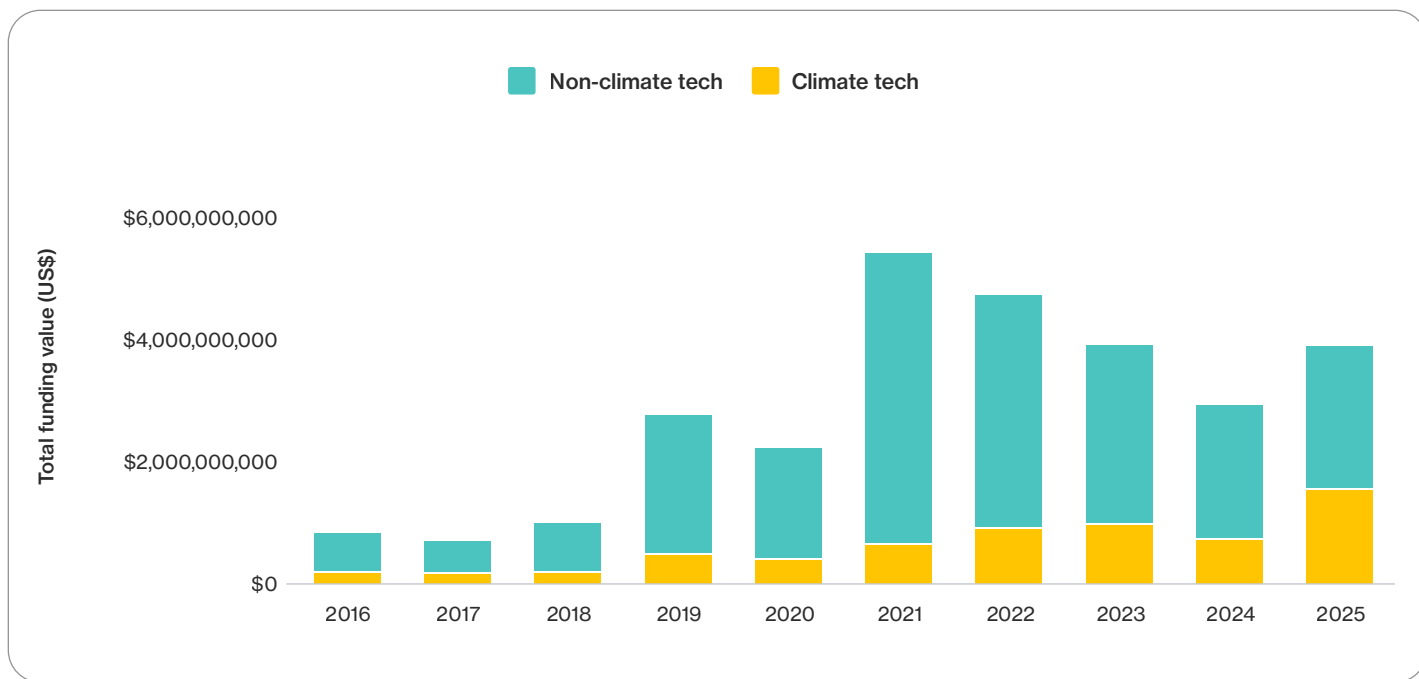
This section examines the overall structure of Africa's ClimateTech ecosystem, including how capital is flowing, who is funding it, which instruments are being used, where gaps remain, and how funding is distributed across clusters, geographies, founder demographics, and exit pathways.

**ClimateTech now accounts for the largest share of venture funding in Africa.** Between 2016 and 2025, the sector represented roughly 22% of total venture funding on the continent, with its share of annual investment rising from 13% in 2016 to nearly 40% in 2025. By 2025, ClimateTech had surpassed FinTech in terms of share of annual venture funding, signalling its transition from an emerging thematic category to a central part of Africa's venture ecosystem.

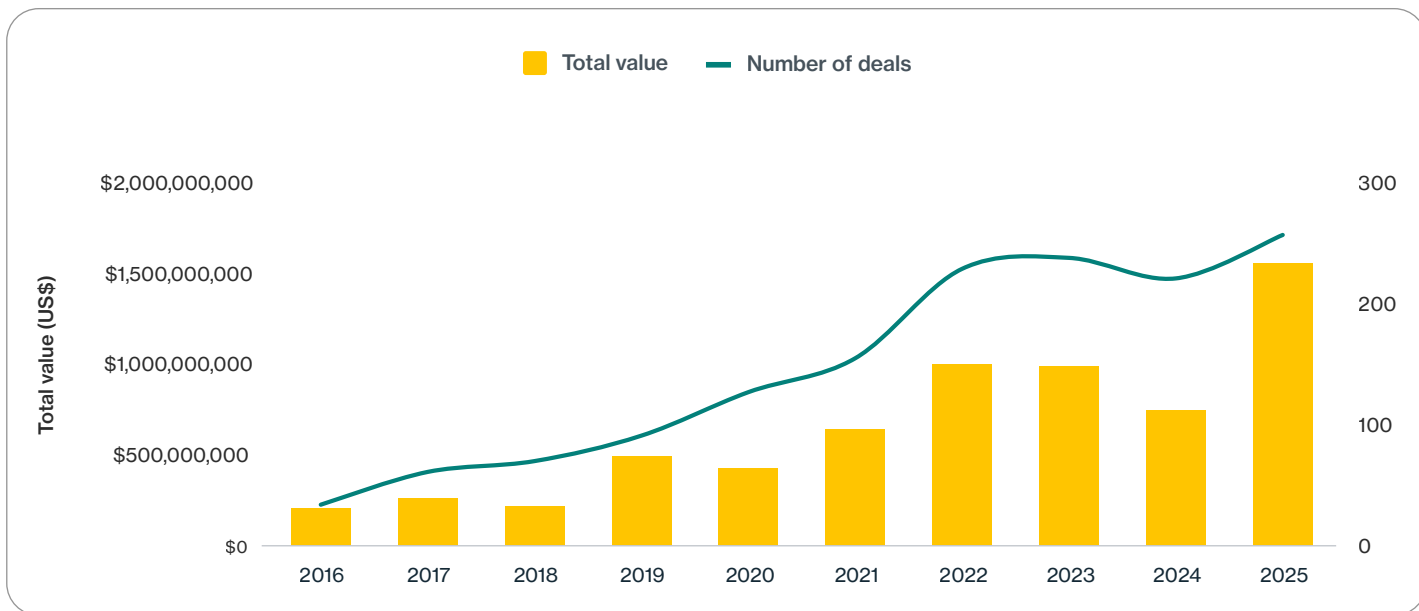
This growth has been accompanied by a rapid expansion in the number of funded companies and deals. Between 2016 and 2025, ClimateTech companies raised approximately \$6.35 billion across 779 companies. Annual funding increased from \$206 million across 28 companies in 2016 to more than \$1.5 billion across 223 companies in 2025. Over the same period, both deal activity and the number of funded companies increased significantly, indicating a broader and more active ecosystem.



➔ Figure 1: Total Africa ClimateTech Funding vs Non-ClimateTech Funding (2016–2025)

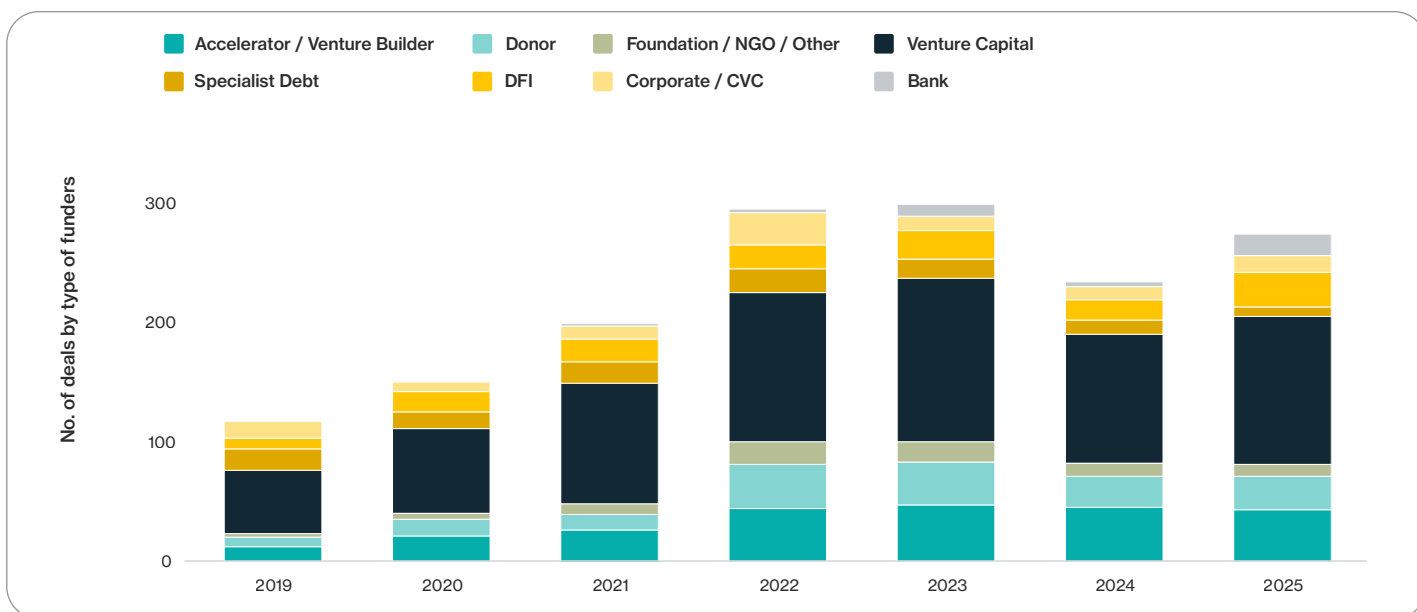


➔ Figure 2: ClimateTech companies in Africa by total volume of funding and number of deals (2016–2025)



**The funder landscape has diversified, with venture, institutional, and ecosystem-oriented funders all playing distinct roles.** Venture capital remains the most active funder category by deal count, now encompassing both generalist and specialist climate-focused VC funds. Accelerators, venture studios, venture builders, and prize programmes continue to play an important role in early-stage support, particularly where companies are still developing their business models, technologies, or routes to market. At the same time, specialist debt and structured finance providers, DFIs, banks, and other institutional funders are participating in more deals than they were in 2019, indicating a broader capital base for African ClimateTech. Donors, grantmakers, foundations, and NGOs continue to play a catalytic role, particularly for earlier-stage, adaptation-oriented, or less commercially mature companies. Overall, the number of deals involving these funder categories rose from just over 100 in 2019 to around 300 at the 2022–2023 peak, before moderating and then rising again in 2025.

→ Figure 3: Breakdown of ClimateTech funders by type and number of deals in Africa (2019-2025)<sup>4</sup>



**Venture funders now invest alongside specialist finance providers and institutional capital.** Venture capital funds, including Catalyst Fund, E3 Capital, ARAF, Acumen, Mercy Corps Ventures, Launch Africa, Novastar, and Kepple Africa, now sit alongside specialist debt and structured finance providers such as Mirova / SunFunder, Triodos Investment Management, Oikocredit, Trine, Ceniarth, and ElectriFI. Development finance institutions such as DFC, FMO, BII, Norfund, Proparco, IFC, and AfDB remain important institutional participants, while corporate

and strategic investors such as Total Carbon Neutrality Ventures add another layer of market participation. This breadth of funder types, mandates, geographies, and capital models reflects a market that has moved beyond reliance on a narrow group of development-oriented actors. Yet fully commercial and scalable institutional participation remains underdeveloped relative to the size of the opportunity, making the translation of growing investor interest into deeper, more consistent ClimateTech funding a key next frontier<sup>5</sup>.

→ Figure 4: Top 40 funders by number of ClimateTech companies invested (2019-2025)

Investor Name	Type	Companies
Catalyst Fund	Venture Capital	26
EDFI MC / ElectriFI	Specialist Debt / Structured Finance Provider	26
EchoVC	Venture Capital	22
FMO	DFI	21
All On	Venture Capital	18
Mirova / SunFunder	Specialist Debt / Structured Finance Provider	17
E3 Capital (formerly Energy Access Ventures)	Venture Capital	16
Acumen	Venture Capital	16
Techstars	Venture Capital	16
U.S. International Development Finance Corporation (DFC)	DFI	15

<sup>4</sup>A full breakdown of the ClimateTech funder categories and definitions can be found in Annex A

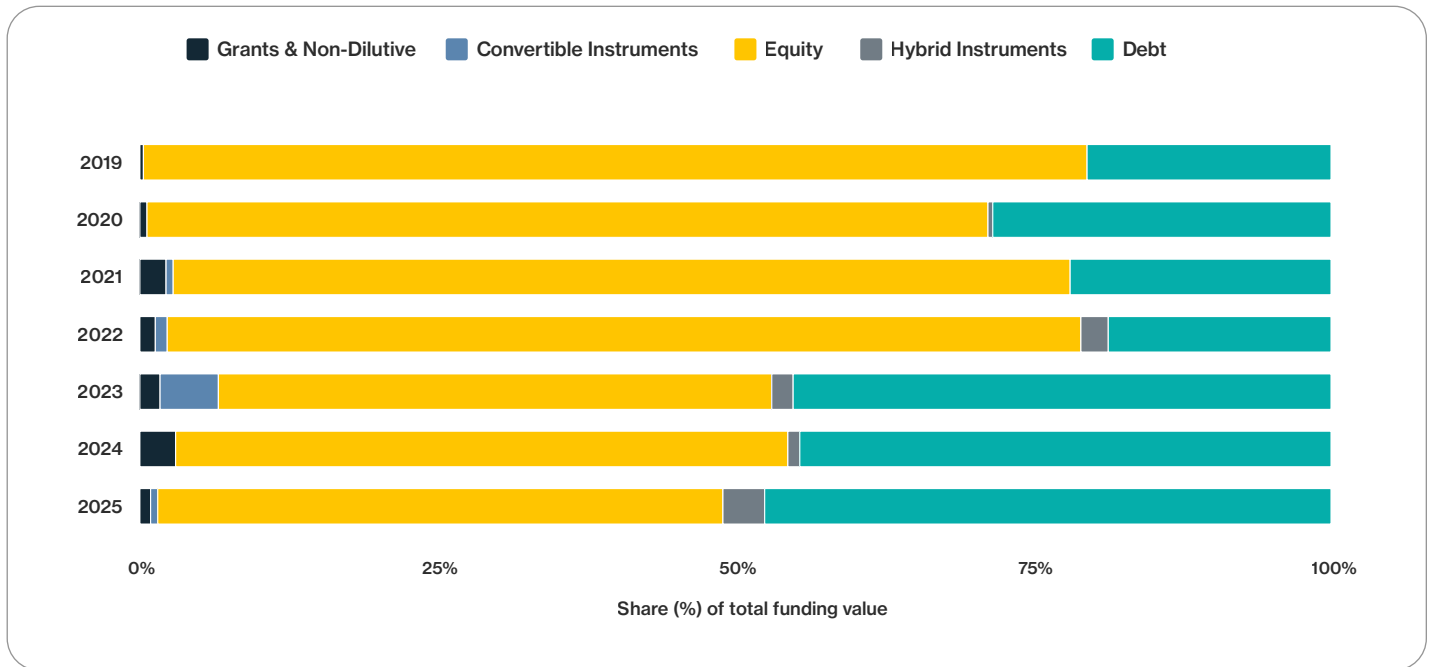
<sup>5</sup>AVCA, Venture Capital in Africa Report 2025

British International Investment (BII)	DFI	15
Launch Africa	Venture Capital	13
Katapult Africa	Venture Capital	13
Proparco	DFI	11
DOB Equity	Venture Capital	11
Kepple Africa Ventures (by Kepple Group)	Venture Capital	11
Novastar Ventures	Venture Capital	10
Norfund	DFI	10
FINCA Ventures	Venture Capital	10
Mercy Corps Ventures	Venture Capital	10
Renew Capital	Venture Capital	10
African Development Bank (AfDB)	DFI	10
Oikocredit	Specialist Debt / Structured Finance Provider	9
Gaia Impact Fund	Venture Capital	9
Persistent	Accelerator / Venture Studio / Venture Builder	9
Equator VC	Venture Capital	9
Delta40	Accelerator / Venture Studio / Venture Builder	8
Digital Africa	Donor / Grantmaker	8
KawiSafi Ventures	Venture Capital	7
Savant	Venture Capital	7
International Finance Corporation (IFC)	DFI	7
Total Carbon Neutrality Ventures (formerly Total Ventures)	Corporate / CVC	6
Holocene	Venture Capital	6
Factor[e] Ventures	Venture Capital	6
Ceniarth	Specialist Debt / Structured Finance Provider	6
Acumen Resilient Agriculture Fund (ARAF)	Venture Capital	6
Village Capital	Accelerator / Venture Studio / Venture Builder	5
Triodos Investment Management	Specialist Debt / Structured Finance Provider	5
Trine	Specialist Debt / Structured Finance Provider	5
Satgana	Venture Capital	5

**ClimateTech funding is diversifying beyond equity.** By deal count, equity and grants still account for most ClimateTech transactions. However, the funding picture looks different. Debt and hybrid instruments appear less frequently but are typically associated with much larger rounds. Since 2019, these instruments have become a more important

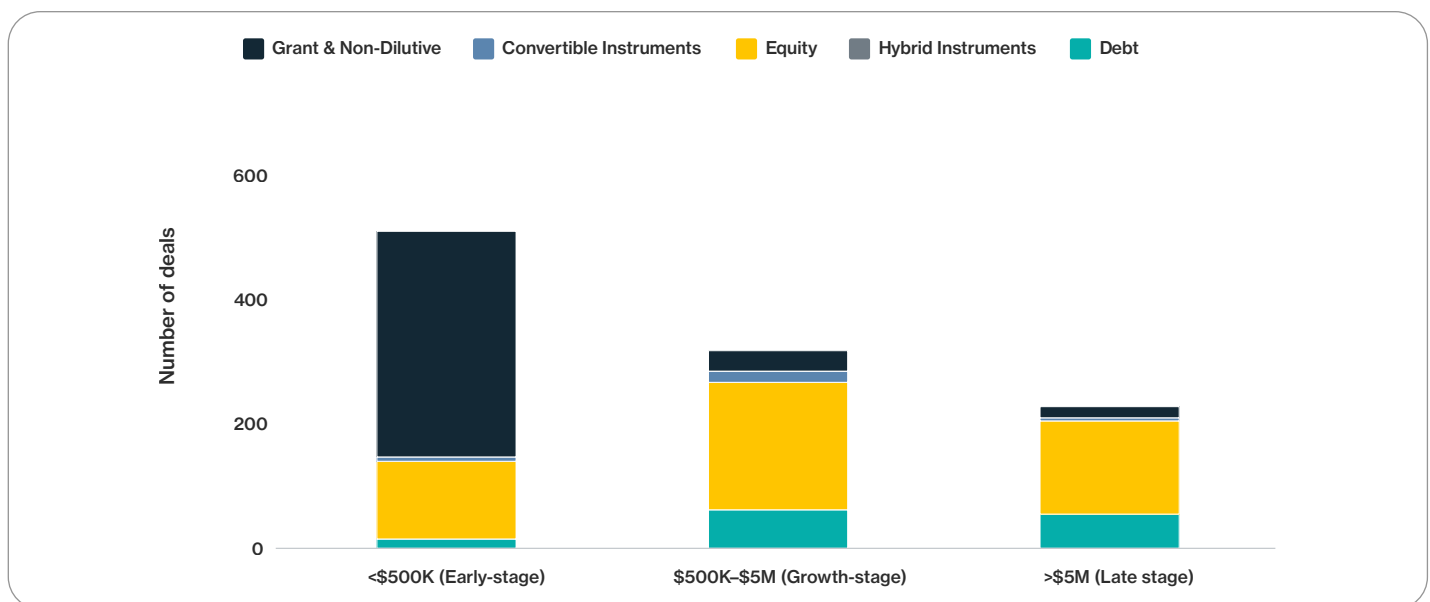
part of the ClimateTech capital stack. By 2025, debt and hybrid instruments together accounted for nearly half of the total value of ClimateTech funding, reflecting the growing participation of DFIs, banks, and institutional funders deploying more structured capital into mature companies.

→ Figure 5: Share of total ClimateTech funding by instrument in Africa (2019-2025)



**Grants dominate early-stage deals, while debt becomes more important in larger rounds.** Different instruments are supporting companies at different stages of development. Among deals below \$500k, grants are the primary source of funding. In larger rounds above \$5 million, debt becomes increasingly prominent, reflecting the participation of DFIs, banks, and institutional investors providing structured capital to more mature companies.

→ Figure 6: Number of ClimateTech deals by ticket size and instrument in Africa (2019–2025)

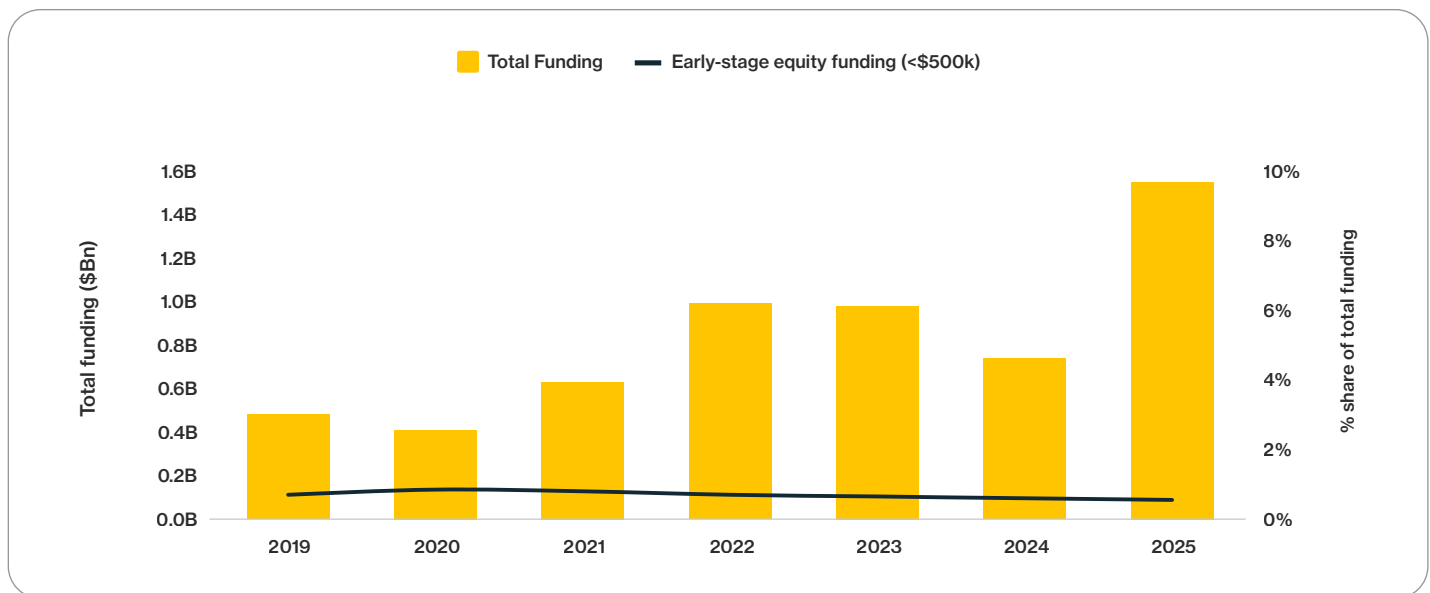


**Early-stage equity remains a small component of ClimateTech funding.** Between 2019 and 2025, total ClimateTech funding more than tripled, increasing from \$493 million to \$1.55 billion. Over the same period, funding from equity rounds below \$500k increased from \$1.4 million to \$4.0 million, but remained below 0.5% of total ClimateTech funding. Without a stronger base of early-stage equity, the pipeline of companies capable of absorbing larger pools of growth capital will remain constrained.

“

*There’s a gap in pre-seed and seed. \$250k to \$1 million tickets, with the ability to lead rounds and follow-on. Not many funds provide that.*  
—Eva Stolz, Persistent Energy

→ Figure 7: Early-stage equity funding as a share of total African ClimateTech funding (2019–2025)



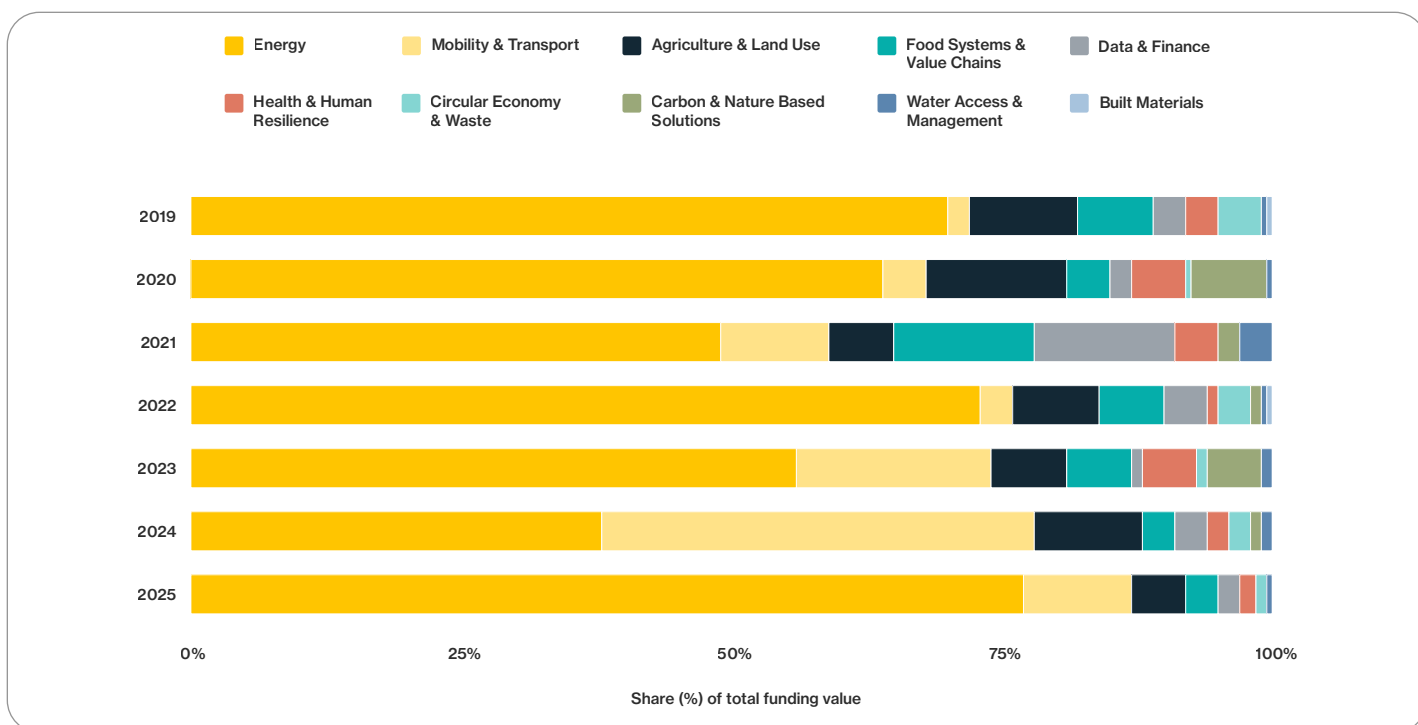
**The financing gap is not limited to the earliest stages.** Companies moving beyond Series A, particularly asset-heavy ClimateTech businesses, often need more structured capital than equity alone can provide. Debt is becoming more visible in larger rounds, but it remains difficult to access for companies that have not yet built the asset base, repayment profile, or receivables needed to support it. As a result, many businesses continue relying on equity for longer than is appropriate for their models.

“

*There is a shortage of capital (especially equity) at later stages, particularly with tickets large enough to lead a Series B or Series C, where fewer funds are active.*  
—Marcus Watson, Investment Director KarwiSafi, Ventures

**ClimateTech funding remains concentrated in a small number of clusters and companies, even as the ecosystem has expanded significantly in breadth.** Energy accounts for roughly 65% of total ClimateTech funding between 2019 and 2025, with Generation alone representing nearly 60% of all capital deployed. Mobility & Transport has emerged as the second largest funding destination, accounting for approximately 11% of total funding. Beyond these two clusters, capital is distributed across a long tail of sectors each attracting meaningful venture activity but a comparatively modest share of total capital.

→ Figure 8: Share of ClimateTech funding volume by cluster in Africa (2019-2025)



**Capital concentration at company level is as pronounced as it is at cluster level.** The top twenty ClimateTech companies by total funding account for 60% of all funding deployed to ClimateTech companies since 2016. The top ten alone have raised as much as all other ClimateTech companies combined. Energy companies dominate this list, with Sun King, d.light, CrossBoundary Energy, Zola Electric, Bboxx, SolarAfrica, BURN Manufacturing, Lumos, and Husk Power Systems all appearing in

the top twenty. Beyond energy, Spiro in Mobility and Twiga Foods in Food Systems represent the clearest examples of companies outside the energy cluster that have reached significant scale, while M-KOPA's presence under Data & Finance reflects its evolution from an energy access model toward a broader digital financial services platform. The presence of Gro Intelligence, which shut down in 2024 after raising \$85 million, is also a reminder that large funding rounds do not guarantee commercial viability.

→ Figure 9: Top funded ClimateTech companies in Africa (2019-2025)

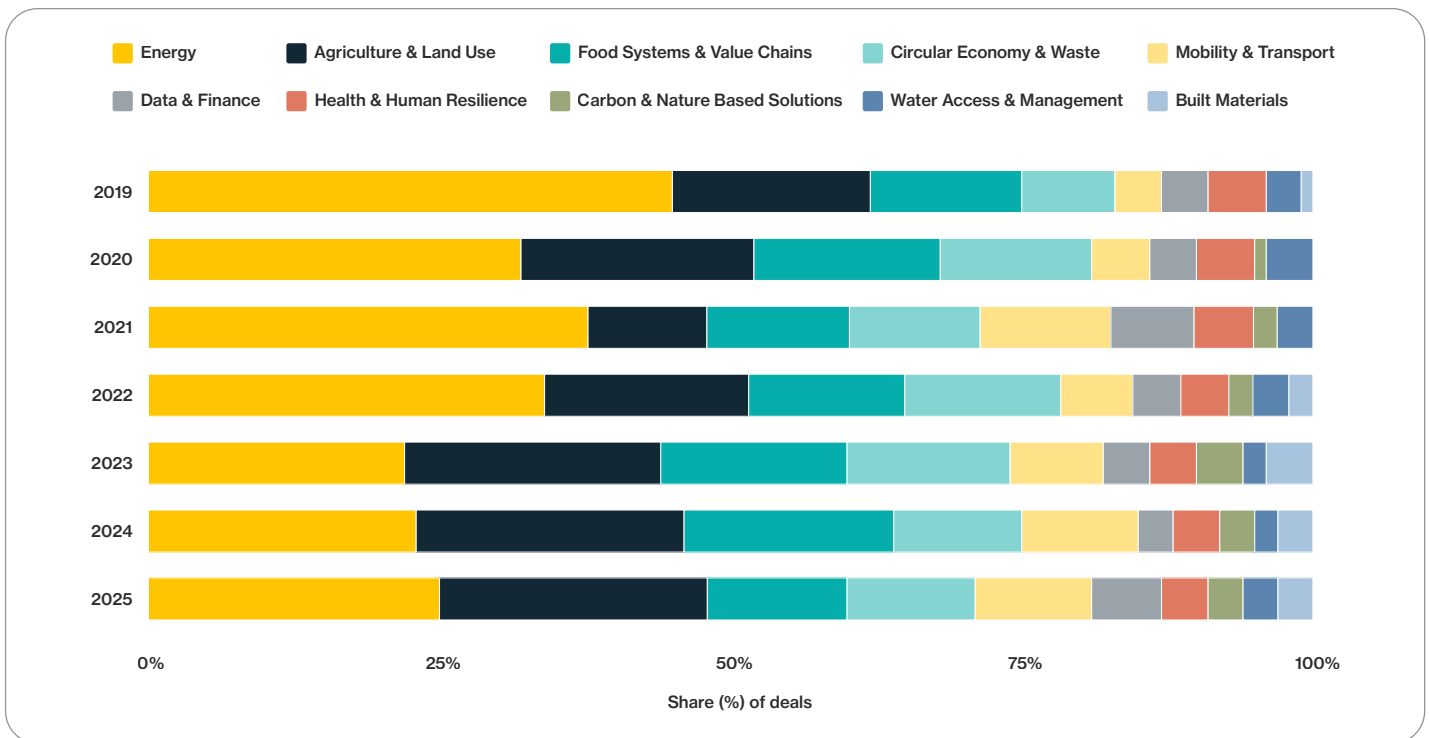
Company	Cluster	Operating status	Total Funding
Sun King (formerly Greenlight Planet)	Energy	Operational	\$992m
d.light	Energy	Operational	\$489.7m
CrossBoundary Energy	Energy	Operational	\$351.5m
Spiro (formerly Mauto)	Mobility & Transport	Operational	\$278m
M-KOPA	Data & Finance	Operational	\$165.3m
OX Delivers	Mobility & Transport	Operational	\$164.5m
Twiga Foods	Food Systems & Value Chains	Operational	\$147.3m
Zola Electric (formerly Off Grid Electric)	Energy	Operational	\$145m
Bboxx	Energy	Operational	\$139.5m
SolarAfrica	Energy	Operational	\$134.2m
BURN Manufacturing	Energy	Operational	\$131.7m

Lumos	Energy	Operational	\$125m
Husk Power Systems	Energy	Operational	\$108m
RapidDeploy	Health & Human Resilience	Operational	\$93.7m
Daystar Power	Energy	Acquired	\$88.6m
Candi Solar	Energy	Operational	\$86m
Gro Intelligence	Data & Finance	Shut Down	\$85m
Apollo Agriculture	Data & Finance	Operational	\$78m
Wetility	Energy	Operational	\$76.8m
SunCulture	Agriculture & Land Use	Operational	\$76.5m

**While funding is heavily skewed toward energy and mobility, deals are distributed far more evenly across the ecosystem.** Energy accounts for around 30% of total deals, but Agriculture & Land Use, Food Systems & Value Chains, and Circular Economy & Waste together account for a further 46%, reflecting the scale of early-stage venture formation taking

place well beyond the most capitalised clusters. This divergence between funding and deals highlights that there is a large and active base of companies forming across the ecosystem, but funding is flowing heavily toward the clusters that have already demonstrated the ability to absorb it at scale.

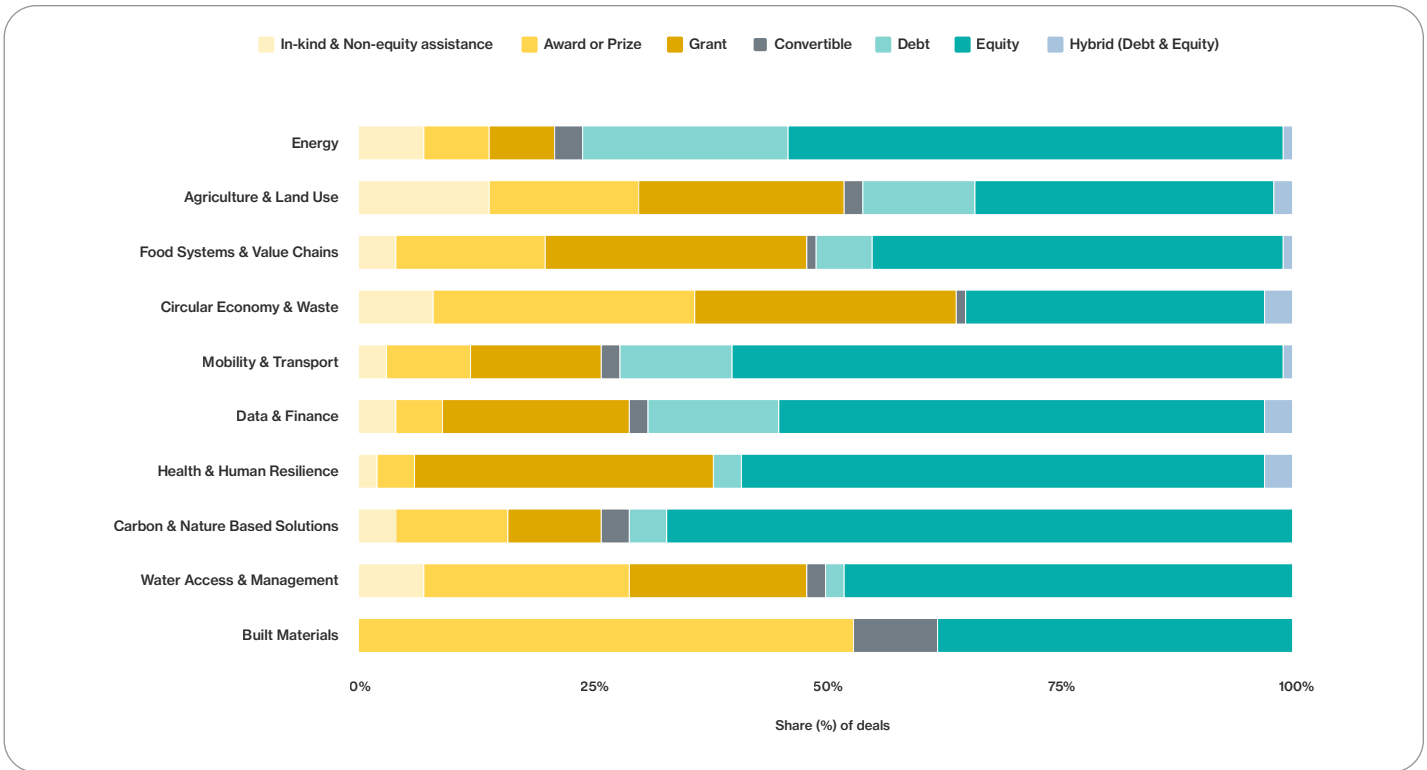
→ Figure 10: Share of ClimateTech deals by cluster (2019-2025)



**Funding type also varies significantly across clusters.** More mature and asset-heavy clusters, such as Energy and Mobility & Transport, attract a larger share of debt, equity, and hybrid finance, as companies in these sectors can often support asset-backed or revenue-based financing. By contrast,

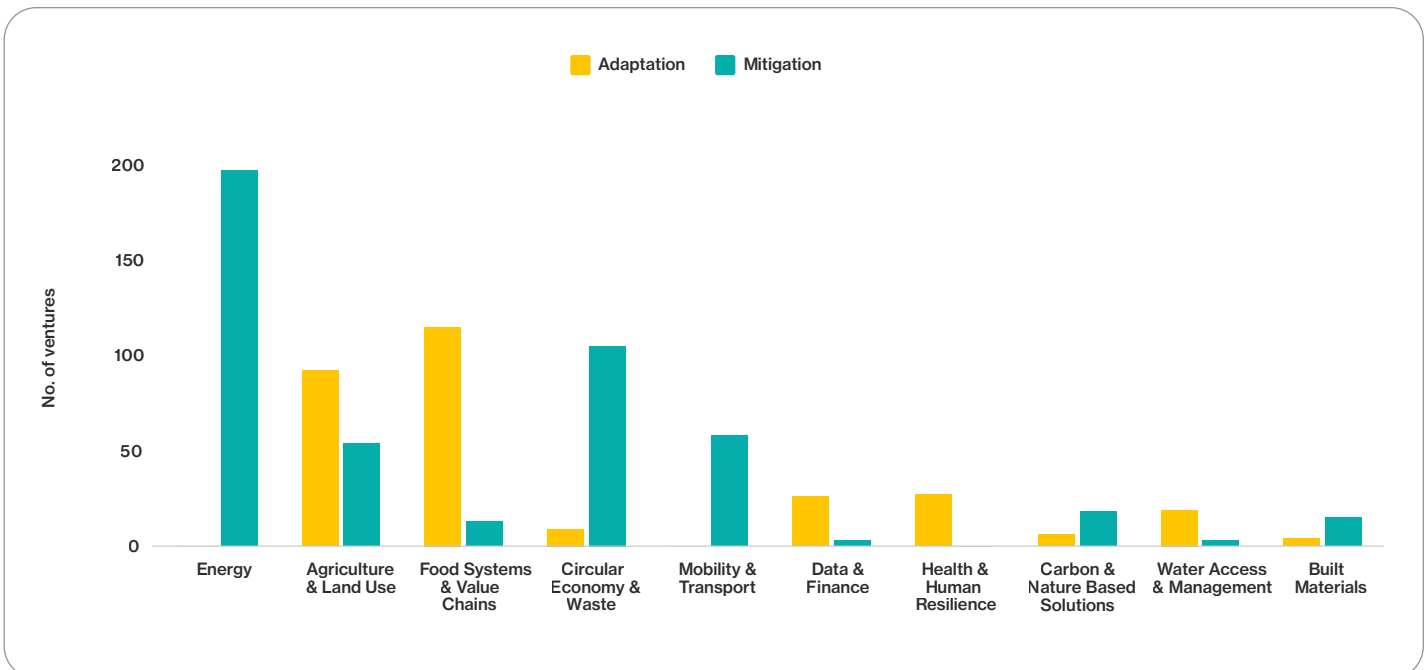
clusters such as Agriculture & Land Use, Food Systems & Value Chains, Health & Human Resilience, Water Access & Management, and Built Materials rely more heavily on grants, awards, and non-equity support.

→ Figure 11: Share of ClimateTech deals by cluster (2016-2025)



**Mitigation accounts for the majority of ClimateTech companies, particularly in sectors such as Energy, Mobility & Transport, and Circular Economy & Waste.** Adaptation activity is more concentrated in sectors including agriculture, health, and water. Overall, mitigation solutions account for roughly 84% of total ClimateTech funding, compared to 16% for adaptation. Around 92% of debt and 82% of equity flows are directed toward mitigation, particularly toward more asset-heavy and commercially scalable models in sectors such as energy and mobility.

→ Figure 12: Distribution of ClimateTech companies by mitigation and adaptation across clusters (2016-2025)

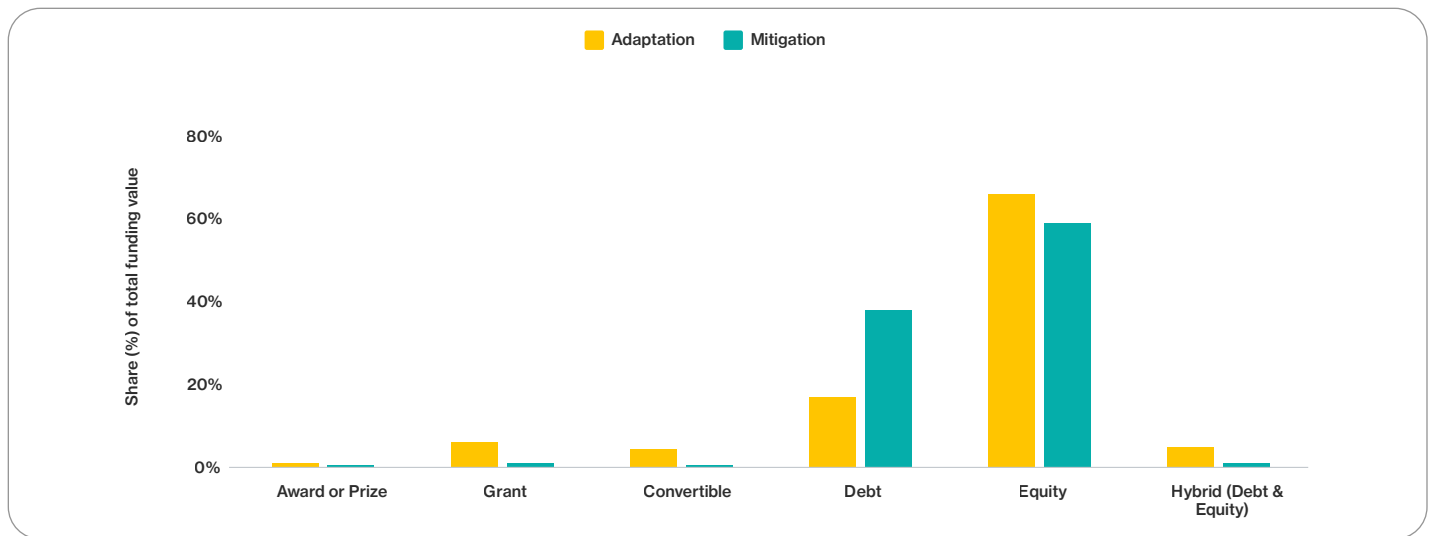


**Adaptation solutions rely more heavily on grants and concessional capital, and remain concentrated at earlier stages of growth.**

While adaptation solutions account for a smaller share of overall funding, they represent a relatively larger share of grant and non-dilutive flows (~39%), indicating their dependence on risk-tolerant capital to support less-proven, more context-specific solutions. This is less a reflection of the riskiness of the solutions set in adaptation and more a reflection of a less mature

innovation ecosystem. Where adaptation solutions have begun to scale, this has often occurred through hybrid financing structures (~48% of hybrid capital), combining concessional and commercial funding to bridge financing gaps. These blended structures are particularly important in models with high upfront costs, longer adoption cycles, or outcomes that are more difficult to finance through purely commercial capital.

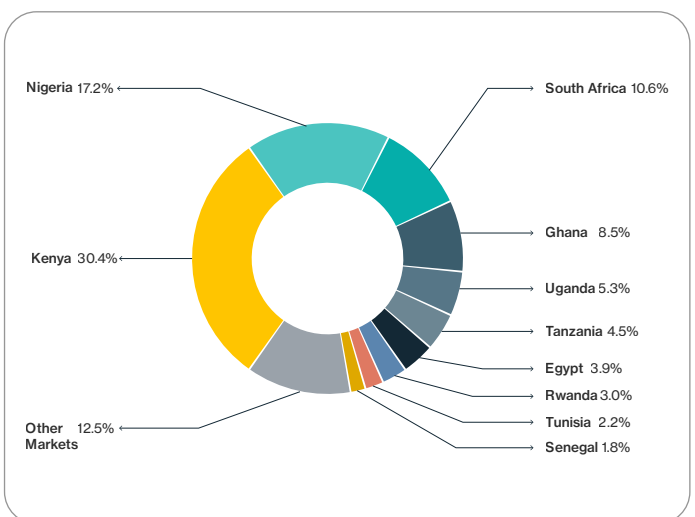
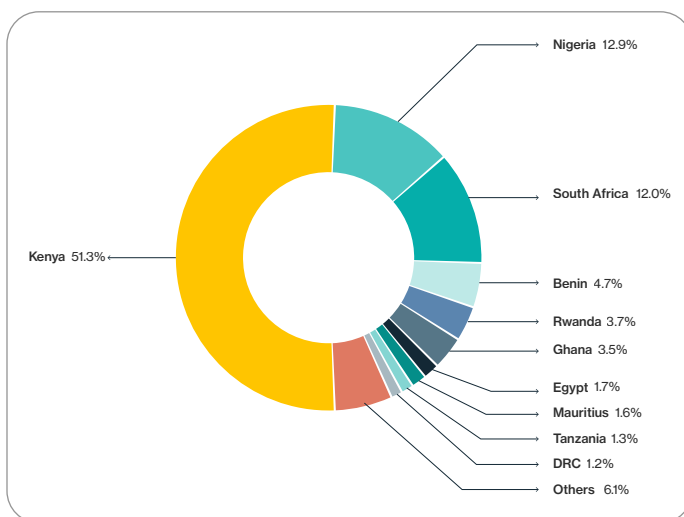
→ Figure 13: Share of total funding value by mitigation and adaptation across instruments (2016-2025)



**ClimateTech funding in Africa remains highly concentrated in a small number of markets.** Kenya dominates ClimateTech funding, accounting for just over half of total funding captured, followed by Nigeria and South Africa. Together, the three markets account for approximately 76% of total funding volume over the period, and an average of 77% of annual funding volume between 2016 and 2025. Other markets including Benin, Rwanda, Ghana, Egypt, Mauritius,

and Tanzania also appear among the top funding destinations driven more by a smaller number of large deals than by consistently high deal activity across a broad base of companies. Examples include Spiro in Benin, Ampersand and OX Delivers in Rwanda, PEG Africa in Ghana, and SolarX in Mauritius.

→ Figure 14: Top 10 African ClimateTech markets by funding volume (left) and deals (right) (2016-2025)



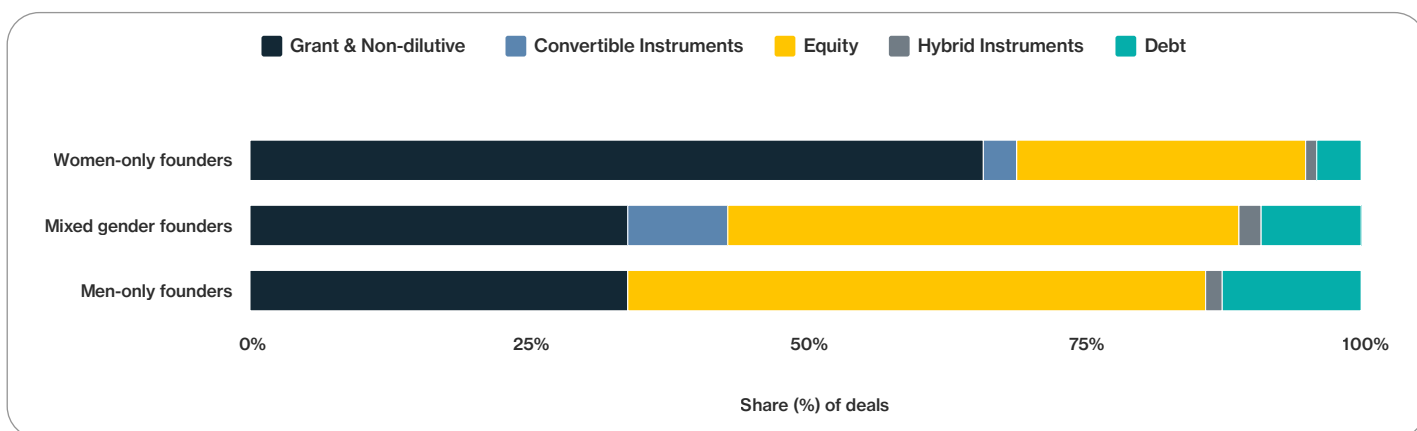
**By contrast, deal activity is distributed more broadly across African ecosystems than funding volume.**

Kenya, Nigeria, and South Africa remain the leading markets by deal count, accounting for approximately 58% of total deals and an average of 59% of annual deals between 2016 and 2025, compared to 76% and 77%, respectively, for funding volume. The gap between deal share and funding share has remained broadly consistent over the past decade, suggesting that although ClimateTech transaction activity is spread across a wider range of African markets, large-scale funding continues to cluster in a small number of dominant ecosystems. Countries including Ghana, Uganda, Tanzania, Egypt, Rwanda, Tunisia, and Senegal account for increasingly visible shares of transaction activity, although many continue to attract smaller average deal sizes than Kenya, Nigeria, and South Africa.

**Women-only founding teams account for less than 1% of ClimateTech funding.**

Most funding linked to women founders flows to mixed-gender teams, while men-only teams continue to dominate overall capital allocation. These disparities are closely connected to how financing is structured across the ecosystem. As outlined in the previous section, large-scale ClimateTech funding is concentrated in capital-intensive sectors such as energy and mobility, which are better positioned to absorb debt, equity, and hybrid financing. Women-led companies are underrepresented in these sectors and more concentrated in parts of the ecosystem that rely heavily on grants and non-dilutive funding, with fewer pathways into the financing structures that support larger, more repeatable transactions.

→ Figure 15: Breakdown of funding instruments by gender of founders (2016-2025)



**Exit activity in African ClimateTech remains limited relative to the scale of the ecosystem, but the pace and diversity of exits is clearly accelerating.**

Between 2018 and 2026, 20<sup>6</sup> disclosed exits have occurred across the ecosystem, with 4 taking place in 2025 and 1 in 2026. This reflects growing M&A activity as more mature segments attract strategic acquirers and platform consolidators. Where exits do occur, they remain heavily concentrated in Energy, which accounts for 15 of the 20 disclosed exits. Acquisitions in this segment have followed two distinct patterns. The first is global corporate consolidation, where multinational energy companies have acquired proven companies as part of broader portfolio strategies. These include Shell’s acquisition of Daystar Power, ENGIE’s acquisitions of Fenix International and Mobisol, and Motorola Solutions’ acquisition of RapidDeploy. The second is pan-African platform consolidation, in which established regional companies have acquired other companies to expand their reach or product breadth. Sun King’s acquisition

of PayGo Energy, Bboxx’s acquisition of PEG Africa, BioLite’s acquisition of Baobab+ and Qotto, and Solar Panda’s acquisition of VITALITE are all examples of this pattern, and together they signal a market beginning to rationalise around a smaller number of better-capitalised platforms.

**Beyond energy, exit activity remains limited but is beginning to diversify.**

Sanlam Private Equity’s acquisition of Skipwaste represents one of the few private equity-led exits in Circular Economy & Waste. The acquisition of Tareeqi by eMushrif in Mobility & Transport, Green Resources in Carbon & Nature-based Solutions, and Motorola Solutions’ acquisition of RapidDeploy in Health & Human Resilience, all point to emerging acquirer appetite outside the Energy cluster. While transaction values are rarely disclosed, reported deals such as Circle Gas’ US\$25 million acquisition of KopaGas and Silvertree Holdings’ acquisition of UCOOK for ZAR187 million (approximately US\$12.3 million) suggest that

<sup>6</sup> Includes Qotto’s acquisition by Izili Group, announced in January 2026

meaningful liquidity events are beginning to emerge across the ecosystem. Financial investors are also appearing more frequently in exit transactions, with African Rainbow Capital's acquisition of GoSolr and a consortium including New Forests, BII, Norfund, and Finnfund acquiring Green Resources indicating that institutional capital is beginning to find routes to liquidity.

→ Figure 16: Breakdown of exits by year, company, acquirer, type and cluster (2019-2026)

Year	Company	Acquirer	Cluster	Type
2026	Qotto	Izili Group	Energy	Acquisition
2025	Acacia Innovations	Mashariki Utilities	Energy	Acquisition
2025	Baobab+	BioLite	Energy	Acquisition
2025	RapidDeploy	Motorola Solutions	Health & Human Resilience	Acquisition
2025	Vitalite	Solar Panda	Energy	Acquisition
2024	Inclusive Energy (IE)	Sistema.bio	Energy	Acquisition
2024	SHYFT Power Solutions	Steamaco	Energy	Merger
2024	Yebo Fresh	Smollan	Food Systems & Value Chains	Acquisition
2023	GoSolr	African Rainbow Capital (ARC)	Energy	Acquisition
2023	Pawame	Ignite Power	Energy	Acquisition
2023	PayGo Energy	Sun King	Energy	Acquisition
2023	Skipwaste	Sanlam Private Equity (SPE)	Circular Economy & Waste	Acquisition
2022	Daystar Power	Shell	Energy	Acquisition
2022	Green Resources	New Forests, British International Investment (formerly CDC Group), Norfund, Finnfund	Carbon & Nature Based Solutions	Acquisition
2022	PEG Africa	Bboxx	Energy	Acquisition
2022	UCOOK	Silvertree Holdings	Food Systems & Value Chains	Acquisition
2021	Kudura by RVE.SOL	InfraCo Africa	Energy	Acquisition
2021	Tareeqi	eMushrif	Mobility & Transport	Acquisition
2020	KopaGas	Circle Gas	Energy	Acquisition
2019	Mobisol (now ENGIE Mobisol)	Engie RDE Fund	Energy	Acquisition
2018	Fenix International (now ENGIE Energy Access)	Engie RDE Fund	Energy	Acquisition

# The Carlota Perez Framework: A new lens for analysing ClimateTech in Africa

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Making sense of ClimateTech in Africa requires understanding not only where capital is flowing, but how different parts of the ecosystem are progressing. Funding volumes alone cannot explain why some applications attract commercial capital, others remain dependent on grants, or why some scale rapidly while others struggle despite strong demand. Different applications are not just at different stages of scale; they are progressing under different conditions, with different funding needs, business models, and market dynamics.

To interpret these differences, the analysis applies two analytical lenses. The first is the ClimateTech taxonomy identified above, which distinguishes among clusters, applications, and solutions. The second is an adapted version of Carlota Perez's techno-economic framework<sup>7</sup>, used to assess how different parts of the ecosystem evolve over time.

In simple terms, the framework helps show how emerging solutions move from early experimentation to rapid investment, then through a period of adjustment, and eventually toward broader adoption as markets, institutions, and financing models mature. Applied to African ClimateTech, it helps identify where different clusters, applications, and solutions sit along the maturity curve, which are ready for commercial capital, which still need catalytic support, and where financing structures are not yet aligned with market needs.

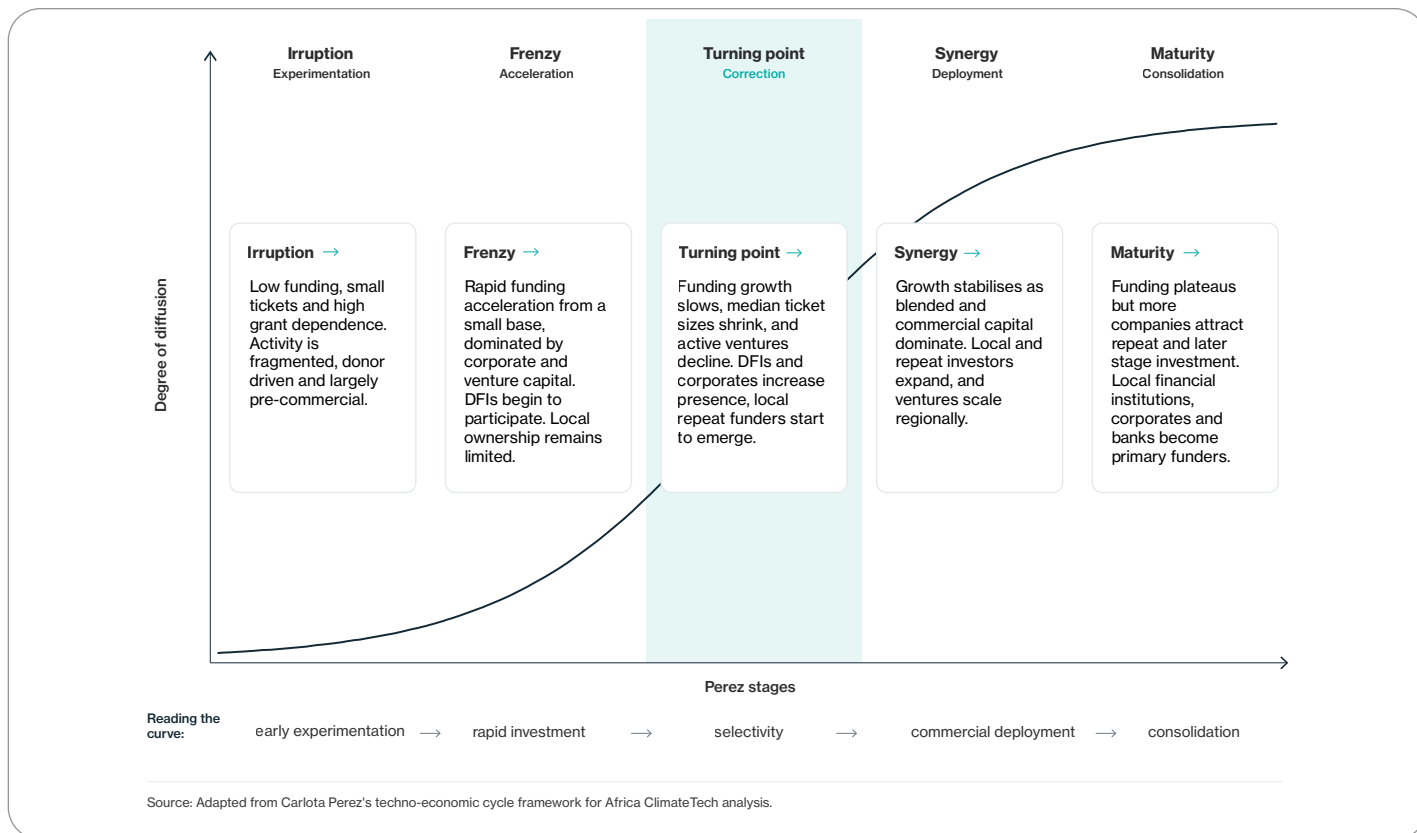
The framework is adapted to the ClimateTech context in Africa across five stages:

- **Irruption:** Early experimentation and fragmented, largely donor-driven activity. Business models remain unproven, and funding is concentrated in grants and small early-stage rounds.
- **Frenzy:** Capital accelerates rapidly, often ahead of proven demand. Venture and corporate investors become more active, geographic expansion increases, and institutional participation begins to emerge.
- **Turning Point:** The cycle corrects. Capital allocators become more selective, weaker models fall away, and the ecosystem shifts from expansion to viability. Median ticket sizes may shrink, active venture counts may decline, and investor selectivity may increase.
- **Synergy:** Infrastructure, policy, and financing structures become more aligned. Solutions with proven unit economics scale more consistently across markets.
- **Maturity:** Growth stabilises, markets consolidate, and local financial institutions and commercial banks become more active participants.

<sup>7</sup> Perez, Carlota (2002). Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages. Edward Elgar Publishing.

The framework is used not to assess individual companies, but to interpret how different clusters and applications evolve, why some progress faster than others, and what conditions shape their progression over time.

→ Figure 17: Carlota Perez stages adapted to ClimateTech in Africa



## Adapting the Perez framework to ClimateTech in Africa

To apply this framework, the analysis compares two cumulative periods, 2016–2022 and 2016–2025. These periods were chosen to capture the ecosystem before and after a critical three-year window. The first period reflects the market captured in Catalyst Fund's 2023 report, when many ClimateTech applications were still relatively early in their development. The second extends the view to 2025, after African ClimateTech had grown significantly and the broader venture market had undergone a major correction.

The value of this comparison lies not in the updated totals alone, but in the trajectory. It shows which applications advanced along the Perez curve between 2022 and 2025, which stalled, and which moved in ways that headline funding numbers alone would not reveal. This makes it possible to observe changes in cluster and application positioning over time, rather than relying on a static snapshot.

Four categories of indicators are used to translate the framework into measurable dimensions, capturing

how capital flows, how ecosystems are structured, and how solutions scale and diffuse:

- **Funding volume and growth.** Indicates overall activity and investor confidence, but not market maturity. In the Perez framework, rapid funding growth more often signals Frenzy, speculative capital entering ahead of proven demand, than institutional readiness. High funding volume and maturity can coincide, but they are not the same thing. In the figures that follow, bubble size reflects capital attracted, not stage progression.
- **Funding structure.** Captures how capital is deployed. Shifts from grants and venture equity toward debt, blended finance, and institutional capital signal movement toward deployment.
- **Ecosystem development.** Assesses investor stickiness, localisation, and institutional alignment.
- **Solution scaling and diffusion.** Measures how applications and their underlying solutions replicate across markets.

The full list of metrics can be found in **Annex B1**.

These indicators are assessed together rather than independently. Stage placement reflects the interaction of funding patterns, financing structures, ecosystem development, and solution diffusion, capturing the dominant dynamics shaping each segment rather than any single metric.

### Applying the Perez framework to ClimateTech in Africa

The analysis is applied at two levels:

- **Cluster level**, capturing broad ecosystem dynamics across sectors such as Energy, Mobility & Transport, Agriculture & Land Use, Data & Finance, and Circular Economy & Waste.
- **Application level**, capturing the specific business models operating within those clusters, such as Energy Generation, Clean Cooking, Light Electric Mobility, Climate-Smart Inputs, or Insurance & Risk Transfer. The mapping does not include every application in the full ClimateTech taxonomy.

This distinction is important because applications within the same cluster often evolve under very different conditions. Within Mobility & Transport, Light Electric Mobility is scaling rapidly through fleet-based and asset-backed financing models, while Road EVs & Buses remain more dependent on government coordination and enabling infrastructure.

The framework, therefore, shifts the focus from funding volumes alone to patterns of progression. It reveals not only where capital is flowing but also how different applications are maturing, attracting repeat

investors and more sophisticated financing structures, and where capital remains misaligned with market needs.

The figures below apply the Perez lens first to clusters and then to applications, comparing ecosystem positioning across two periods, 2016-2022 and 2016-2025. This allows shifts in acceleration, consolidation, and capital selectivity to be observed over time.

### Cluster-level positioning

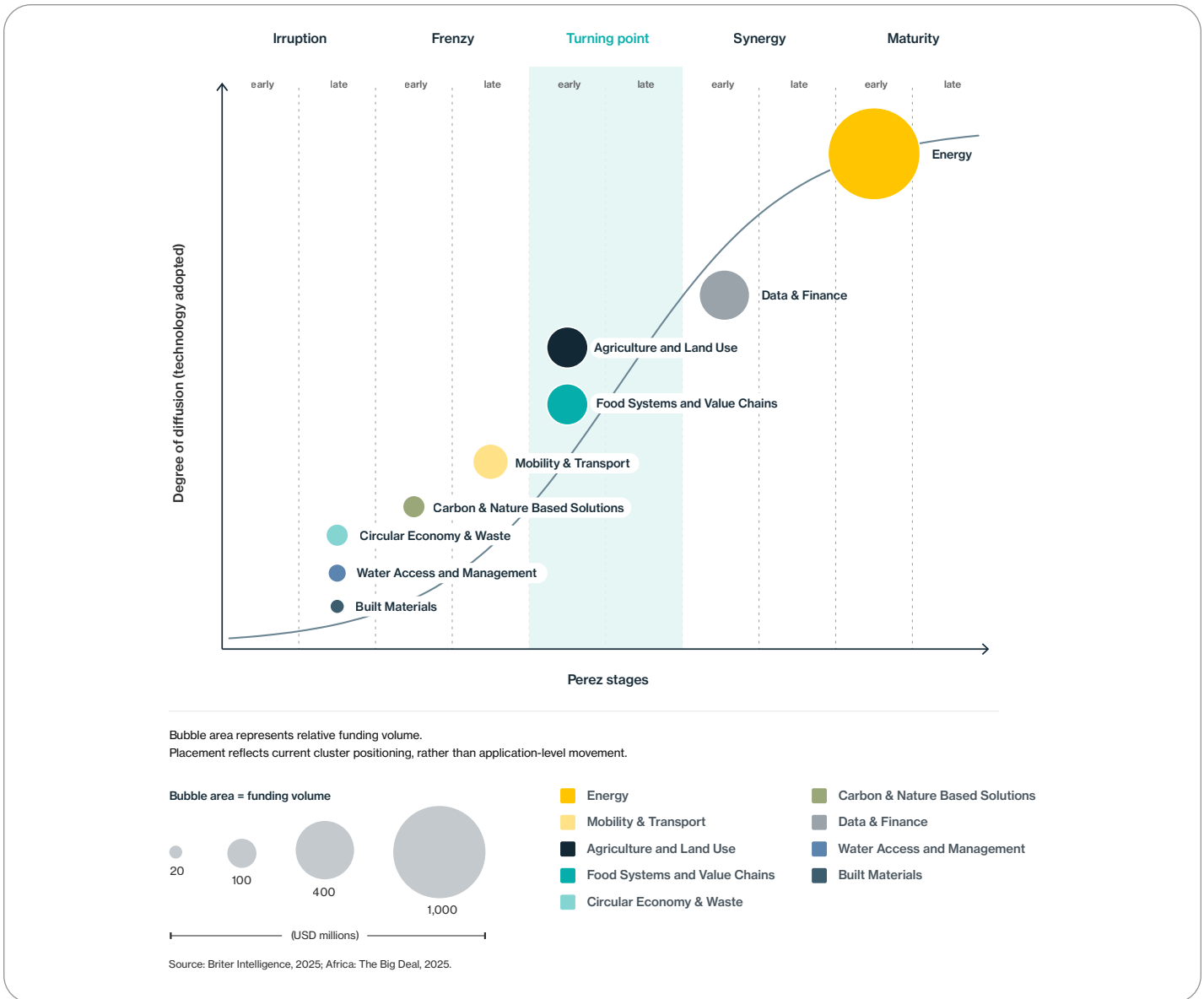
Figure 18 maps the major ClimateTech clusters across the Perez curve using the four dimensions introduced above:

- funding growth and scale
- financing structure
- ecosystem and institutional development, and
- geographic deployment and diffusion.

The results show that energy has moved furthest toward maturity, that Mobility & Transport is advancing rapidly through a late-Frenzy and early-Turning Point. Agriculture & Land Use, Circular Economy & Waste, and Data & Finance occupy more transitional positions, where deals remain active but funding is becoming more selective. Built Materials and Water Access & Management remain in Irruption.



→ Figure 18: Cluster-level placement on the curve (2016–2025)



## Application-level positioning

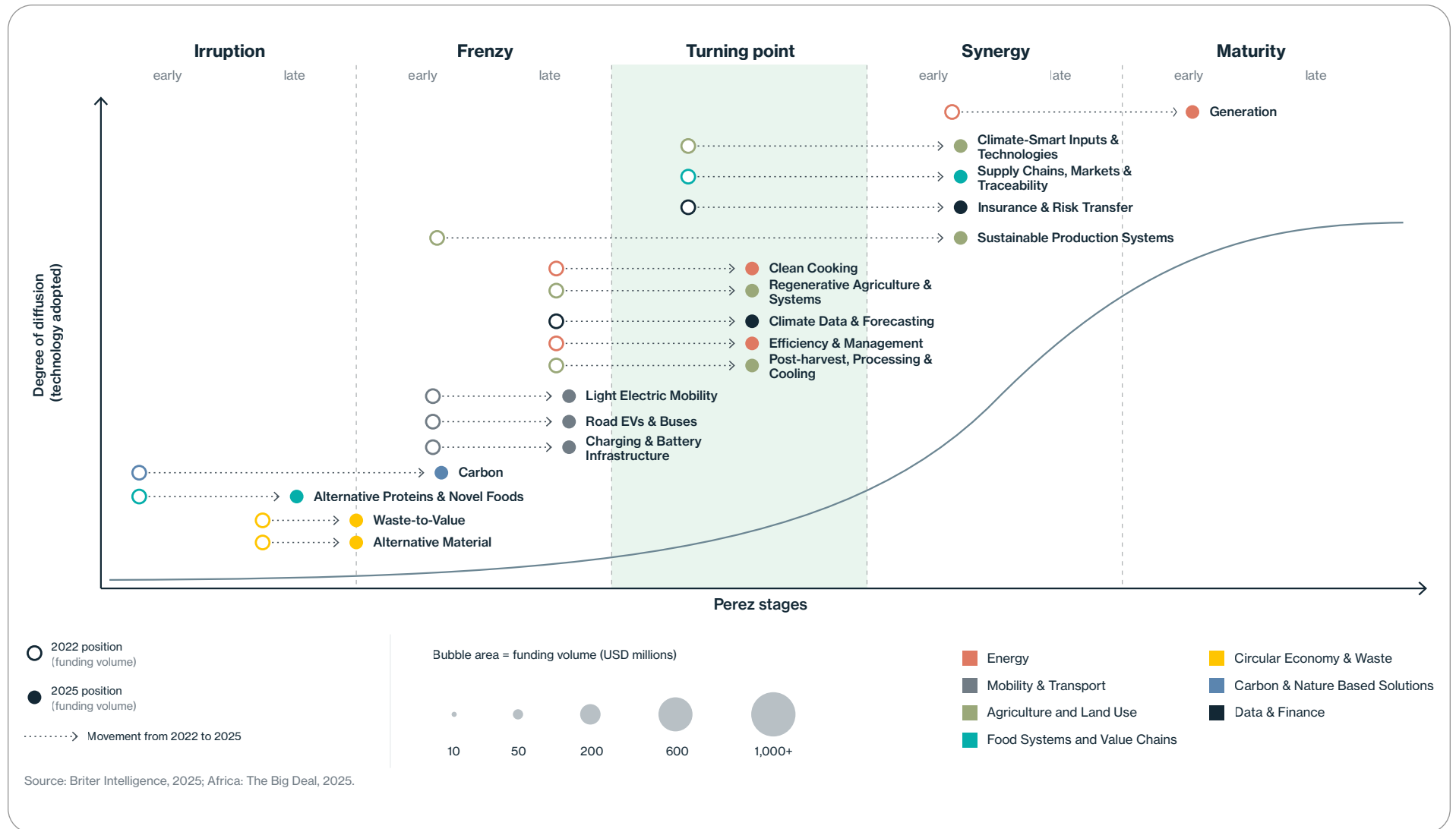
Application-level analysis provides a more precise view of ecosystem maturity by distinguishing between broad cluster narratives and the specific applications driving or lagging progress.

Comparing the periods 2016-2022 and 2016-2025 also reveals movement along the curve over time. Some applications are progressing from experimentation toward broader deployment and institutional participation, while others are entering more selective phases as weaker business models fall away and financing conditions tighten.

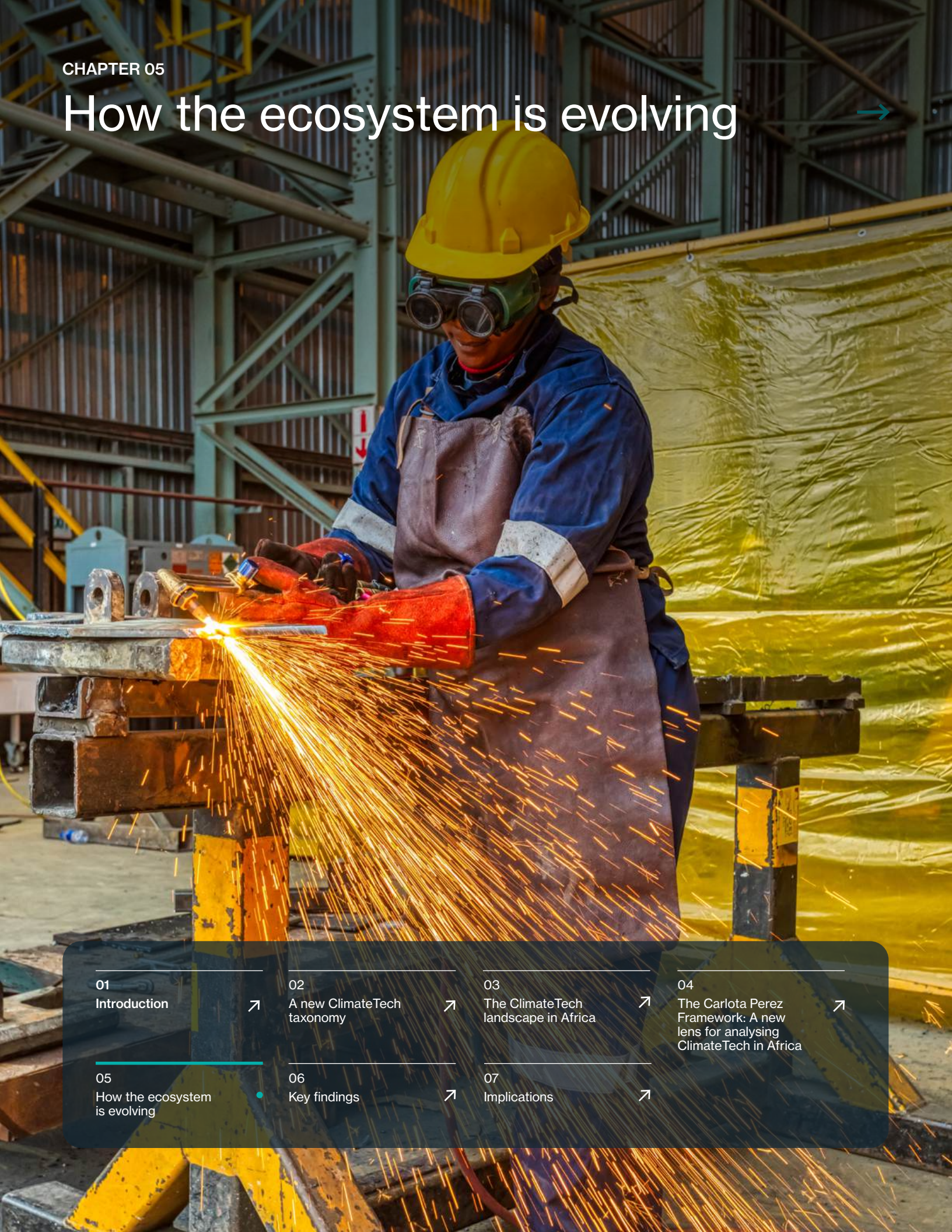
The Perez application analysis focuses on a sample of 18 ClimateTech applications with sufficient comparable data across funding volume, company

count, deal activity, funding structure, ecosystem development, and geographic deployment. Together, these applications account for 603 companies, representing more than 90% of the companies in scope; \$2.93 billion in funding, representing more than 95% of mapped funding; and 1,161 deals, representing more than 90% of tracked deals. The sample, therefore, captures the largest and most analytically comparable parts of the ecosystem, while excluding applications where activity remains too limited, fragmented, or difficult to compare consistently. Applications included in the map are flagged in the taxonomy and listed in Annex C.

➔ Figure 19: Africa ClimateTech applications movements from 2022 to 2025



# How the ecosystem is evolving



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The most important insight is not where applications sit today, but how they have moved over time.

**Thirteen of the eighteen applications in the Perez sample advanced to a higher Perez stage between 2022 and 2025, revealing an ecosystem that is becoming increasingly differentiated.** No single force drove these transitions. Applications progressed under different combinations of business models, policy conditions, and financing structures. Some secured the commercial capital needed to scale, others advanced through concessional or blended financing, while several remain constrained.

**The most dramatic advance was in Mobility and Transport.** All three mobility applications, Light Electric Mobility, Road EVs & Buses, and Charging & Battery Infrastructure, moved from Early Frenzy to Late Frenzy within the same three-year window. Light Electric Mobility raised \$232 million between 2022 and 2025 compared to \$61 million in the six years prior, driven by fleet-based deployment, asset-backed financing, and policy support in markets such as Kenya, Rwanda, and Ethiopia. Road EVs & Buses raised \$221 million over the same period, nearly an eightfold increase relative to its 2022 base, as corporate fleets and early government procurement moved beyond pilot activity. The simultaneous acceleration across all three mobility applications

represents one of the strongest acceleration patterns in the dataset and suggests that parts of the mobility ecosystem may be approaching a Turning Point.

**Energy Generation has moved to Early Maturity, the only application in the Perez sample positioned at this stage.** Between 2022 and 2025, the application added \$1.64 billion in funding on top of its existing \$1.94 billion base, while venture formation slowed and consolidation increased through acquisitions. Within the framework, this combination of sustained capital inflows, reduced new entry, and consolidation indicates a maturing market.

**Three applications advanced into Synergy** between 2022 and 2025, including Supply Chains, Markets & Traceability, Insurance & Risk Transfer, and Sustainable Production Systems. Across these applications, the share of equity and debt increased, repeat investors became more common, and deployment expanded across multiple markets. These shifts suggest that financing structures are beginning to align more closely with the underlying needs of the market.

**Two applications entered the Turning Point:** Clean Cooking and Post-Harvest, Processing & Cooling, both of which are transitioning from Frenzy. Investor feedback suggests that funding within these

applications has become more selective, particularly as investors place greater emphasis on revenue visibility and deployment economics. This reflects a shift away from experimentation and growth alone toward evidence of commercial viability. A further three applications, Energy Efficiency & Management, Climate-Smart Inputs & Technologies, and Climate Data & Forecasting, remained at Turning Point across both periods, with continued selectivity from funders.

**Two applications showed limited or stalled progression.** Alternative Materials and Waste-to-Value remained at Irruption across both periods.



#### BOX 2

### Reading the findings

The following sections examine the clusters represented in the Perez application sample and explore the applications with sufficient quantitative and qualitative evidence to interpret their movement along the curve. Each deep dive focuses on where the application sits on the Perez curve, what the underlying indicators reveal about market maturity, how financing structures are evolving, where constraints remain, and how investors, founders, and ecosystem stakeholders interpret these dynamics.

Not every application in the full taxonomy is included in the Perez sample. Applications outside the sample remain part of the broader ClimateTech taxonomy but are excluded from the positioning where company count, funding volume, deal activity, or comparable market evidence is too limited to support robust analysis.

## Energy

Energy is the most advanced cluster in Africa's ClimateTech ecosystem. Since 2016, companies in the Energy cluster have raised more than \$4.1 billion, accounting for the majority of ClimateTech funding on the continent, with more than 200 companies active across Africa. DFIs, commercial banks, and corporates now participate alongside venture capital, while repeat funders account for more than 60% of activity. The Energy Generation application operates across more than 40 countries, and financing structures have become increasingly diversified and institutionalised. Despite its overall maturity, the cluster contains applications at very different stages of development,

shaped by distinct commercial models, financing structures, and market conditions.

**Energy Generation is the first ClimateTech application to reach Early Maturity, although interview participants cautioned that maturity should not be confused with the absence of risk or unresolved business model challenges.** Early Generation, including solar home systems, mini-grids, commercial and industrial solar, wind, and distributed energy assets, has raised \$3.76 billion since 2016 and grew by 94% between 2022 and 2025. It is the largest application in the ClimateTech ecosystem, supported by 140 companies operating across more than 40 countries, a broad mix of funding instruments, and participation beyond the Big 4 markets (Egypt, Kenya, Nigeria and South Africa). More than half, or 75, of the companies in the Energy Generation application have raised more than \$1m. However, funding is highly concentrated. Six of the top ten most-funded ClimateTech companies are Generation businesses, including Sun King, d.light, CrossBoundary Energy, Zola Electric, Bboxx, and SolarAfrica and together they account for 60% of all funding raised in the application since 2016, with several having attracted repeated institutional backing across multiple rounds.

Repeat funders account for 22% of all funder activity in Generation, the highest of any application in the ecosystem, and local African funders represent 24% of participants, also the highest across ClimateTech. At the same time, repeat funder rates have declined from 27% in 2022 to 22% by 2025. This is partly explained by a shift in funder composition, with some earlier impact-oriented investors stepping back following write-downs and restructurings across the off-grid solar sector, while commercial funders, DFIs, banks, and corporate investors have entered in greater numbers as the application has matured and financing structures have become more institutionalised. Exits and consolidation are beginning to emerge, providing some of the clearest evidence that parts of the application are moving beyond venture formation and into more mature market dynamics. Corporate acquisitions, including Shell's acquisition of Daystar Power and ENGIE's acquisition of Fenix International and Mobisol, are appearing alongside platform consolidation through transactions such as BioLite's acquisition of Baobab+ and Solar Panda's acquisition of VITALITE.

At the same time, investors pushed back against classifying Generation as fully mature. Many technology and business models are more established, and funding has matured, but questions about long-term business model viability remain, particularly in off-grid energy.

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*The industry has now experienced a number of write-offs, losses, bankruptcies, and investors are looking at this with a sober eye and saying, what do we need to do to make these companies viable, and bottom-line profitable, at scale? Given energy access is akin to a public good, there's also a conversation around what level of subsidy is warranted to make the business models work at scale.*

— *Marcus Watson, Investment Director, Kawisafi Ventures*

**Energy Efficiency & Management is at a Turning Point.** Energy Efficiency & Management, including PAYGo software, smart metering, mini-grid platforms, energy analytics, and demand response systems, sits at a Late Turning Point. Since 2016, the application has raised \$111 million across 26 companies operating in 17 markets. Between 2022 and 2025, the number of companies roughly doubled, while funding increased more gradually, suggesting that company formation continues even as financing becomes more selective. Within the Perez framework, this is consistent with applications moving beyond early expansion and into a more constrained funding environment. Interest in the application remains strong, but investors are becoming increasingly selective about which models can demonstrate a clear path to commercial adoption and scale.

**Clean Cooking is at a Turning Point.** Clean Cooking solutions, including cookstoves, bioethanol, biogas, and electric cooking, raised \$216 million across 28 companies in 10 countries since 2016. Funding grew more than 200% between 2022 and 2025, while the number of companies increased by roughly 40%. However, only 10 of those companies have raised more than \$1m, and solutions have only been rolled out in a handful of markets in East and Southern Africa. Funding is highly concentrated, with much of this growth driven by larger, infrastructure-heavy companies such as BURN Manufacturing, while smaller, more carbon-dependent companies face a more difficult financing environment. Workshop participants noted that funding dynamics within clean cooking are becoming more selective, a signal

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*Right now, cookstove projects tend to be highly reliant on carbon credit revenues, and verifying these credits remains challenging despite the use of recognized certification frameworks.*

— *Luisa Carpenter, AfricInvest*

consistent with the Turning Point placement despite the headline growth rate.

### **Mobility & Transport**

**Mobility & Transport is the fastest-moving cluster in the ClimateTech ecosystem.** Since 2016, mobility solutions have raised more than \$728 million, with funding increasing more than sixfold between 2022 and 2025. The number of active companies has nearly tripled to 59 operating across 25 countries, with 24 of those companies already having raised more than \$1m. Banks, DFIs, and corporates are now participating alongside venture capital in larger asset-backed rounds, reflecting growing institutional confidence in the sector. Investors consistently pointed to the strength of the underlying value proposition in specific mobility segments. Unlike household energy products, electric motorcycles and three-wheelers are income-generating assets, strengthening repayment dynamics and the commercial viability of EV financing and deployment models.

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*I'm more confident on the timeline-to-viability for the EV sector versus household solar systems because the focus is on vehicles for commercial use, which are effectively income-generating assets and can service their own repayment.*

— *Marcus Watson, Investment Director, Kawisafi Ventures*

While the cluster remains positioned in Late Frenzy, investors noted that several applications are beginning to display characteristics associated with a Turning Point. Funding has grown rapidly, institutional participation is increasing, and geographic expansion continues, but capital is also becoming more concentrated around a smaller number of well-capitalised platforms with stronger financing structures and improving, though still unproven, unit economics.

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*E-mobility in East Africa is reaching a turning point. The market is consolidating with a few well-capitalised models pulling away, and the ones that haven't secured the right financing structures won't survive that consolidation.*

— *Abel Boreto, Novastar Ventures*

**Light Electric Mobility and Battery Charging Infrastructure are in Late Frenzy, approaching a Turning Point.** Light Electric Mobility, including two- and three-wheelers, along with charging and battery-swapping infrastructure, has raised \$363 million across 18 companies operating in 12 countries since 2016. Funding growth exceeded 600% between 2022 and 2025, making it the most advanced application group within the cluster. Workshop participants differed on whether the application has already entered Turning Point or remains in Late Frenzy. However, several Turning Point features are becoming visible. Capital is increasingly concentrating around a small number of well-capitalised platforms capable of financing fleet expansion, battery-swapping infrastructure, and regional deployment. Recent industry analysis also points to growing demand for scalable debt and asset-backed financing models to support larger fleet deployment and charging infrastructure, while smaller companies continue facing challenges crossing the gap between early experimentation and commercial scale<sup>8</sup>. These dynamics suggest an application that is moving beyond pure expansion and beginning to face the capital selectivity and consolidation pressures associated with the next stage of the curve.

**Road EVs and Buses are in Frenzy, but with different constraints.** Road EVs & Buses have raised \$259 million across 18 companies operating in 16 countries since 2016, with funding increasing nearly 600% between 2022 and 2025. However, only 7 companies have raised more than \$1m. The underlying vehicle and battery technologies are now proven, but the business model remains more complex. Higher upfront costs, longer payback periods, and reliance on large-scale fleet deployment continue to constrain growth. Investors noted that in more mature EV bus markets, scaling has often depended on long-term public-sector partnerships and concession-based operating models that remain difficult to replicate across many African markets.

As a result, progress in electric bus deployment depends less on technology readiness than on the institutional, financing, and operational structures needed to support large-scale adoption.

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*That's how EV buses have scaled in Mexico City and Bogota. It's all through municipal government contracts. Unfortunately, in the markets that we focus on, we're not able to quite do that yet and most of the activity is underwritten by private operators.*

— *Marcus Watson, Investment Director, KawiSafi Ventures*

<sup>8</sup> Africa E-Mobility Alliance. (2025, September 29). Africa E-Mobility Report 2025 - Africa E-Mobility Alliance. <https://africaema.org/african-electric-mobility-status-2025/>



**BOX 3**

## ARC Ride and the convergence of mobility and energy infrastructure



The growth of electric mobility in Africa highlights one of the defining challenges of applications in Late Frenzy. Scaling requires investment not only in the product itself, but also in the supporting infrastructure needed to make adoption viable at scale. Operating across both Light Electric Mobility and Charging & Battery Infrastructure, ARC Ride provides a useful example of how infrastructure, market conditions, and operating realities shape the path to scale.

*“We are a batteries-as-a-service first company. The long-term goal is to build healthy infrastructure for mobility across Africa.”* Julius Kiptoon, ESG Lead, ARC Ride

Although ARC Ride deploys electric motorcycles, much of its business centers on battery-swapping infrastructure and energy services. As the company expanded, it found that vehicle affordability alone was not enough to drive adoption. Riders also needed reliable access to charging, maintenance services, spare parts, and battery swaps that minimised downtime.

The company’s expansion across African markets also exposed how scaling constraints differ by

geography. In some markets, relatively reliable electricity infrastructure and rising fuel costs have supported EV uptake. In others, grid instability poses operational risks to charging infrastructure, while lower smartphone penetration can reduce the effectiveness of digital rider coordination systems that underpin battery-swapping operations.

These differences show why expansion cannot be approached the same way in every market. Infrastructure, operating costs, consumer behaviour, and digital adoption all shape how the model performs and what adjustments are required.

The economics of scaling have also been demanding. Electric mobility businesses require significant upfront investment in vehicles, batteries, charging infrastructure, and field operations before revenues can support expansion. ARC Ride has raised at least \$20 million in disclosed equity and debt funding from investors, including Novastar Ventures, IFC, Mirova, and British International Investment.

*“Setting up infrastructure is heavy in terms of financial needs. Getting all the vehicles, the charging infrastructure, and the staff to maintain it requires significant CAPEX and OPEX.”* Julius Kiptoon, ESG Lead, ARC Ride

At the same time, the company identified policy coordination and public adoption as equally important constraints. While governments are beginning to introduce electric mobility frameworks, implementation gaps around taxation, standards, and customs processes continue to create uncertainty for operators. ARC Ride also pointed to tensions between ICE motorcycle operators and EV riders, suggesting that the transition is not only a technical and financial challenge but also a social one.

ARC Ride's experience highlights a broader challenge facing mobility applications in Frenzy. The barriers to growth are rarely the same from one market to another. Infrastructure readiness, regulatory clarity, financing availability, and consumer adoption can each become the binding constraint. At this stage of the curve, scaling depends as much on adapting to local conditions as it does on the underlying technology.

## Agriculture & Land Use

**Agriculture & Land Use is the most active cluster in the ecosystem by deal count, and one of the most constrained by funding concentration.** Since 2016, companies in this cluster have raised \$446 million across 151 companies operating in 30 countries, but only 29 of those companies have raised more than \$1m. The cluster has generated more early-stage activity than almost any other, yet relatively few companies have broken through to larger rounds. This gap is a defining feature of a cluster that has undergone broad experimentation and is now entering a more selective phase, in which capital is increasingly concentrating on models that can demonstrate commercial viability.

Investors and founders pushed back against optimistic readings of agriculture's position on the Perez curve, arguing that grant dependence and unproven business models mean parts of the cluster remain earlier-stage than the headline numbers suggest. Part of this may

reflect the scale of prior experimentation, during which agriculture saw some of the broadest early-stage activity in the ecosystem, making the current shift toward selectivity and commercial viability appear sharper.

Investors confirmed that the core challenge in agriculture is not the technological capability, but commercialisation. The economics of serving smallholder farmers remain difficult. Low and volatile incomes, fragmented distribution systems, unpredictable weather and market conditions, high last-mile delivery costs, and limited ability to pay create a ceiling on margins that many business models cannot overcome. The challenge is therefore less about innovation itself and more about building commercially viable pathways to adoption and scale. This becomes even more difficult for solutions requiring behaviour change or long adoption timelines, including regenerative agriculture, soil health management, and climate-resilient inputs.

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*Smart farming, I don't think you can say that's past Irruption. And climate data companies are still 90% grant-reliant. We're significantly overestimating where these solutions actually are.*  
—Rose Goslinga, Pula

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*Smallholder farming economics are very challenging. And the cost of serving small-scale farmers in sparsely populated areas is high, while most AgTech models are not yet proven.*  
—Marcus Watson, Investment Director, KawiSafi Ventures

**Climate-Smart Inputs & Technologies are at a Turning Point.** Climate-smart inputs and technologies, including precision agriculture tools, farm management platforms, biofertilisers, remote sensing, and irrigation systems, have raised \$278 million across 75 companies operating in 21 markets since 2016, making it the largest application in the cluster by funding volume. However, of those 75 companies, only 14 have raised more than \$1m. Growth has moderated relative to earlier periods, while grant dependence remains significant, accounting for 50% of deals. The strongest-performing companies increasingly combine multiple services into integrated operating models rather than standalone technologies. Apollo Agriculture illustrates this approach by combining satellite crop monitoring, input credit, insurance, and agronomic advisory into a single platform for Kenyan smallholders. Using data to underwrite credit risk, the company reduces the need for farmers to access services separately. By late 2023, Apollo had raised over \$70 million and was expanding across East Africa. As funding becomes more selective, integrated models appear better positioned to demonstrate commercial viability than standalone technologies operating in isolation.

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*We see success models that combine pieces to build platform businesses that address more than one pain point of smallholder farmers. It's bits and pieces, but when you put those moving parts together, they work pretty well, whether it's supply chain optimization, market access, access to input financing, and/or agronomy support coming together in one model.*

*—Tamer El-Raghy, Managing Director of the Acumen Resilient Agriculture Fund (ARAF)*

Credit:  
Noor Nation, Egypt





#### BOX 4

## Mazao Hub and the shift from point solution to integrated model



Mazao Hub illustrates how commercialisation challenges reshape business models within Climate-Smart Inputs & Technologies. While many ventures begin with a targeted technological solution, scaling often requires building the broader distribution, financing, and coordination systems needed to consistently deliver value to farmers.

Mazao Hub initially focused on digital agronomy advisory via a mobile platform designed to support farmers with recommendations on soil management, crop health, and farming practices. However, early deployment revealed that information alone was insufficient when farmers still lacked reliable access to fertiliser, suppliers, and broader on-the-ground support systems.

*“We realized you cannot solve the problem these farmers are facing by just coming up with an app.”*  
Geophrey Tenganamba, Co-Founder and CEO, Mazao Hub

Mazao Hub responded by shifting from a standalone farmer-facing platform toward a bundled model delivered through agro-dealers,

cooperatives, and farmer groups. The company integrated advisory services, soil testing, input access, and market linkages into a single operating system, generating revenue across agronomy services, input sales, and crop marketing.

*“Tech alone cannot solve problems in Africa... it has to be tech-and-touch.”* Geophrey Tenganamba, Co-Founder and CEO, Mazao Hub

The model continued evolving as new operational constraints emerged. Running farm clinics directly proved too expensive to scale, leading the company to adopt a franchise structure through local partners. Recommendations without localised soil data also proved ineffective, prompting the introduction of soil testing and the later development of low-cost soil kits.

Since its inception, Mazao Hub has raised approximately US\$2.6 million through a combination of grants, equity investments, accelerator support, and venture-building programmes from impact investors, philanthropic

funderson, and climate-focused partners. This blended funding mix reflects the realities of building companies in the Climate-Smart Inputs and Technologies sector, where patient capital is often required to refine operational models, strengthen local distribution systems, build farmer trust, and develop scalable engagement approaches before fully commercial models emerge. Mazao Hub is now entering its next phase of growth with the planned launch of CropSupply Version 2 on June 30, a global marketplace for crops and food designed to connect buyers, aggregators, exporters, food companies, and other key players in the agricultural value chain to source crops from Tanzania and East Africa from anywhere in the world. This evolution positions Mazao Hub not only as a climate-smart agriculture technology provider but also as a market-enabling platform that links farm-level production data, farmer networks, and structured sourcing opportunities to regional and global food markets.

The broader takeaway is that scaling in Climate-Smart Inputs & Technologies increasingly depends less on the technology itself and more on whether companies can build the operational systems that surround it. Mazao Hub's evolution shows that advisory tools alone are often insufficient without embedded distribution networks, trusted local intermediaries, and coordinated access to inputs, diagnostics, and markets.

**Sustainable Production Systems is moving into Synergy.** Sustainable Production Systems, including aquaculture, climate-resilient seeds, climate-smart livestock, and related models, have raised \$150 million across 64 companies since 2016. The application raised \$38 million across 24 companies through 2022, then added \$90 million and 29 new companies between 2022 and 2025, making it one of the clearest upward transitions in the dataset. The models that have reached Synergy are typically built around a defined value chain, integrating inputs, advisory services, production, and market access within a single commercial structure. Aquaculture is the clearest example. Victory Farms, East Africa's fastest-growing tilapia platform, raised \$35 million in its Series B to expand from Kenya into Rwanda, Tanzania, and DRC, connecting producers directly to consumers through more than 80 distribution branches. Yalelo, Zambia's largest aquaculture company, followed a similar path, building an integrated tilapia operation from hatchery to retail and establishing one of the region's few fully commercial fish supply chains.

segments in the Agriculture & Land Use cluster. While funding grew by over 200% between 2022 and 2025, absolute figures remain modest, with \$17.5 million raised across 11 companies since 2016. More than 80% of these companies have raised capital only in the last three years, and 50% of all deals remain non-commercial. Only 4 companies have raised more than \$1m. Clear distinctions are emerging between business models in this space, affecting their resilience and attractiveness to investors. Companies tied to tangible demand, such as inputs, advisory services, financing, or market access, are establishing durable commercial foundations. Models relying heavily on carbon credit revenues struggle if their underlying economics cannot sustain growth independently. Since 2023, credibility concerns in voluntary carbon markets and weakening policy support in the United States have made this distinction increasingly important for investors and operators<sup>9</sup>. These dynamics suggest a segment attracting growing interest and experimentation, but where long-term commercial models remain relatively unproven.

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*We have seen success in sustainable aquaculture.*

—*Tamer El-Raghy, Managing Director of the Acumen Resilient Agriculture Fund (ARAF)*

**Regenerative agriculture is in Early Frenzy.** Covering soil carbon monitoring, soil testing, soil health solutions, and regenerative farming systems, it represents one of the smallest and earliest-stage

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*If your business model relies on carbon credit revenues to subsidise costs and that revenue disappears, the product becomes too expensive and farmers won't buy.*

—*Abel Boreto, Novastar Ventures*

## Food Systems & Value Chains

Food Systems & Value Chains, including Post-Harvest, Processing & Cooling, Supply Chains, Markets & Traceability, and Alternative Proteins & Novel Foods, is a cluster in which the aggregate picture conceals significant divergence across applications. Since 2016, the cluster has raised \$330 million across 127 companies operating in 34 countries, making it the fourth-largest cluster by funding volume. While both applications address inefficiencies within agricultural value chains, they differ markedly in their financing structures, commercial maturity, and ability to scale across markets.

**Supply Chains, Markets & Traceability is at Early Synergy.** Since 2016, platforms for logistics, farmer-to-market links, and post-harvest loss reduction have raised \$232.8 million across 48 companies in 21 markets, with 16 companies having raised more than \$1m. Commercial capital, repeat investors, and multi-market deployment are all growing, signalling that the sector has moved through its Turning Point and is beginning to consolidate around proven models. This transition follows a period of reckoning for early companies like Twiga Foods, which shifted toward an asset-light model and third-party distribution to address the high costs of owning physical supply chains. A new generation of platforms, such as Nigeria's Winich Farms, is building from the outset around the model Twiga had to learn the hard way, integrating market access, logistics, and embedded finance without the overhead of physical infrastructure, and connecting farmers directly to defined off-takers rather than assuming demand will follow supply. The progression into Synergy stems from more than continued funding growth. It suggests that the underlying commercial model is becoming clearer, with companies increasingly demonstrating repeatable routes to scale and stronger alignment between financing structures and operational needs.

**Post-harvest, processing, and cooling solutions are at Turning Point.** Cold chain, agro-processing, and storage companies raised \$90.2 million across 67 companies in 21 markets since 2016, but only 12 have raised more than \$1m. The number of companies jumped from 29 in 2022 to 67 by 2025, with 67% raising funds within the last three years. Funding is driven by a smaller group of larger players, such as Keep It Cool (\$1.9M), SureChill (\$5.2M), Koolboks (\$11M), and InspiraFarms (~\$10M), that are scaling. About 60% of deals remain non-commercial; a correction is likely as the application still relies

heavily on grants. However, approximately 60% of deals remain non-commercial, highlighting continued dependence on grants and concessional capital. Within the Perez framework, this suggests that while experimentation and venture formation remain active, financing structures have not yet fully transitioned toward commercial deployment.

The application, therefore, exhibits many of the characteristics of a Turning Point: investor interest remains strong, but capital is becoming increasingly selective and concentrated around companies that can demonstrate a credible path to commercial viability and scale.

## Data & Finance

Data & Finance is the broadest cluster in the taxonomy, including climate analytics platforms, agricultural insurance, conservation monitoring, and sustainability reporting. Unlike other clusters, it is not sector-specific and applications cut across other parts of the ClimateTech ecosystem. It is also where the gap between what the data shows and what funders believe is widest. The cluster has raised \$411.8 million across 30 companies since 2016.

**Insurance and Risk Transfer is at Early Synergy, but questions are emerging.** Insurance and risk transfer, including parametric crop insurance, weather-index products, and climate risk financing, has raised \$296 million across 18 companies since 2016, with 6 companies raising more than \$1m. Commercial capital leads, institutional investors are present, and the business model has been demonstrated at scale. On paper, it sits firmly in Synergy. However, interview participants questioned whether current adoption levels are sufficient to support long-term commercial growth without continued institutional support and subsidy.

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*The market opportunity within some ClimateTech segments isn't the total number of end users. It's the number of organisations willing to pay or subsidise that product.*

*—David Longdon, Equator VC*

<sup>9</sup> Panizza (2026) attributes this shift to a structural demand-side problem in voluntary carbon markets, where buyers are moving away from speculative offsets toward models that drive genuine, operational emissions reductions. (Panizza, U. [2026]. An autopsy of the voluntary carbon market. Toulouse School of Economics.)

This distinction between users and payers emerged repeatedly throughout interviews and helps explain why technical viability does not always translate into commercial scale.

**Climate Data and Forecasting is at an Early Turning Point.** Climate data and forecasting, including climate risk platforms, remote sensing analytics, and decision support tools, have raised \$107.7 million since 2016, but nearly 90% of that capital (\$89.3 million) was deployed before 2022. Only \$18.4 million was raised in the last three years, with just 8 companies active, of which only 4 companies have raised more than \$1m. This sharp deceleration does not signal reduced importance as climate data is increasingly foundational to the ecosystem. Rather, it indicates that the speculative financial phase has ended, and the commercial model for monetizing that data has not yet been resolved.

The same payer logic applies here as in insurance. Technology maturity may be necessary, but it is not sufficient for commercial success. Progression increasingly depends on whether companies can identify institutional buyers such as governments, DFIs, agribusinesses, or development programmes that are both willing and able to pay at scale. Platforms that have identified such buyers are progressing.





**BOX 5**

## Pula, Ignitia, Gro Intelligence, and the path from value to viability



The experiences of Pula, Ignitia, and Gro Intelligence show that technical viability alone is no longer enough. As capital becomes more selective, long-term success increasingly depends on identifying a durable payer and a commercially sustainable route to market.

Pula, an agricultural insurance provider, has raised approximately \$45.4 million across equity, debt, and grants from development finance institutions, impact investors, and venture capital firms. Its growth came from identifying who could pay. The company began by targeting agribusinesses but found that smallholder farmers could not sustain demand for insurance directly. Over time, governments emerged as the primary payer, leading the company to restructure around long procurement cycles and public sector delivery. This alignment enabled the company to expand across markets while continuing to rely on both commercial and concessional capital.

*“If you’d asked me who the payer is, I would have said agribusinesses. Over time, we realised our customers were the government. In agriculture, you avoid the government at your own peril.”*  
Rose Goslinga, Pula

Ignitia, a weather and climate intelligence provider in the same cluster, has raised approximately \$9 million across equity, debt, grants, and hybrid instruments from venture capital firms, development finance institutions, and impact investors. Despite a high-performing technical product, Ignitia faced a different challenge. Commercial uptake was constrained not only by willingness to pay, but by gaps in the market infrastructure needed to deliver and monetise climate information services at scale. Limited access to reliable farmer registries, digital payment systems, trusted distribution channels, weather data infrastructure, and coordinated public support meant that private providers were often required to build parts of



the ecosystem themselves. To scale, Ignitia increasingly relied on institutional partnerships (such as the World Food Programme)<sup>10</sup> and B2B channels through which demand, distribution, and payment mechanisms could be aggregated.

Gro Intelligence illustrates the consequences when payer alignment fails to fully materialise. The company raised more than \$85 million to build an agricultural data platform serving global agriculture and climate markets. Despite immense technical capability and market visibility, the company shut down in 2024. The challenge was not the value of the data itself, but the absence of a sufficiently deep pool of paying customers able to support a venture-scale business model.

At the Turning Point, value and viability are not the same thing.

## Carbon & Nature-Based Solutions

**Carbon & Nature-Based Solutions require a slightly different treatment from the other clusters.** In the Perez application sample, the mapped application is Carbon Capture, Use & Storage, which captures the emerging carbon removal, carbon utilisation, and carbon infrastructure segment. However, the broader taxonomy also includes Ecosystem Restoration & Reforestation and Blue Carbon & Coastal Protection. These applications remain part of the taxonomy, but are not included in the 18-application Perez sample because their data and market dynamics are less directly comparable with the mapped applications.

Carbon & Nature-Based Solutions is the cluster most shaped by forces external to the companies operating within it. Companies in this cluster have raised \$144.9 million across 26 companies since 2016, but this figure is heavily concentrated. Ecosystem Restoration & Reforestation accounts for \$118.9 million, while Carbon Capture, Use & Storage, often the focus of investor attention, accounts for \$21.2 million. Understanding this cluster, therefore, requires keeping these applications distinct.

The standard Perez positioning is therefore harder to apply than in other clusters. Different parts of the ecosystem, including carbon removal, soil carbon, MRV infrastructure, and ecosystem restoration, sit at genuinely different stages of development. Their trajectories depend as much on policy, standards, buyer demand, and carbon market dynamics as on the underlying companies themselves.

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*In one sense, carbon markets are highly mature with established rules and clear pricing in places like the European ETS. In another sense, the push toward high-value voluntary removals, the development of technical removals measurement methodologies, and the adoption of Article 6 adjustment mechanisms are much newer. Carbon behaves more like an ecosystem, and there are policy forces at play; we don't really think of carbon as sitting on a product adoption curve, but rather an emerging financial subsidy that can accelerate the growth of certain businesses.*

*—CJ Fonzi, Co-founder and CEO,  
Africa Climate Ventures*

<sup>10</sup> Gorla, I., Sudan, S., Cohen, H., Stobbs, M., & WFP Innovation Accelerator. (2026, January 5). From Strategy to scale: How a partnership is enabling a culture of innovation at WFP. Medium. <https://wfpinnovation.medium.com/from-strategy-to-scale-how-a-partnership-is-enabling-a-culture-of-innovation-at-wfp-e022fe097dd0>

**Ecosystem Restoration & Reforestation is treated as a contextual deep dive, rather than as part of the Perez application sample.** The application is the largest within the Carbon & Nature-Based Solutions cluster by funding volume, with 9 companies raising \$118.9 million across 7 countries since 2016. However, it is not included in the 18-application Perez sample because its headline funding is concentrated among a small number of companies, and its financing dynamics differ from the broader venture-scaling patterns used to position the sampled applications. The application includes drone seeding, tree nurseries, managed reforestation services, and reforestation monitoring platforms. Funding is driven primarily by three companies, including Kelp Blue in Namibia, Miro Forestry in West Africa, and Komaza in Kenya, leaving the rest of the application substantially smaller. Where companies in this application have found commercial traction, they have tended to rely on patient institutional capital, land-use models, and carbon-market exposure, rather than conventional venture pathways.

Komaza stands out as a cautionary signal for this model. The micro-forestry company raised \$48.2 million in VC and DFI capital, including a \$28 million Series B, before going into administration. Its model, which managed a vertically integrated smallholder forestry network at scale, ultimately proved difficult to sustain given the exit timelines and return expectations associated with venture capital. The experience highlights a recurring challenge within nature-based solutions. Long development cycles and patient capital requirements do not always align with traditional venture financing models.

**Carbon Capture, Use & Storage sits between Late Irruption and Early Frenzy.** Companies in this application, including those working on direct air capture, enhanced weathering, soil carbon sequestration, carbon utilisation, and related carbon infrastructure, have raised \$21.2 million across 13 companies, with more than 90% of funding raised in the last three years. Four companies have now raised more than \$1 million. This rapid growth from a low base, combined with limited geographic reach across just 7 countries, points to an application moving from Late Irruption into Early Frenzy.

The main challenge is that companies in this application must build both the technology and the market simultaneously. Demand is growing from global corporates with net-zero commitments, but market formation remains shaped by factors outside the control of African startups, including shifts in US policy, the evolution of the EU Emissions Trading System, and changing standards in voluntary carbon markets. The strongest companies are therefore likely

to be those that reduce dependence on any single buyer group, policy framework, or carbon revenue stream.

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*We don't shy away from carbon, but we need conviction that the product has value beyond carbon exposure and irrespective of external parties. Otherwise, it creates systemic risks outside the control of the business.*  
—David Longdon, Equator VC





## BOX 6

# Octavia Carbon, KOKO Networks, and the financing gap for science-based ClimateTech



Credit:  
Octavia Carbon, Kenya

Carbon removal and carbon solutions illustrate one of the defining challenges of Late Irruption and Early Frenzy. Companies are not only developing technologies but also building the markets, financing structures, and institutional frameworks required for those technologies to succeed.

This presents a dual structural challenge. First, science-based solutions sit in a funding gap between small, rigid grant pools and traditional venture capital that lacks the patience for deep-tech deployment timelines. Second, their business models depend entirely on sovereign or international regulatory frameworks that are still forming.

*“We need someone in between who can withstand some technology risk but deploy a lot more capital at low cost.”* Duncan Kariuki, Co-founder and CTO, Octavia Carbon

Octavia Carbon exemplifies one response to this challenge. The company raised over \$8 million across equity and non-dilutive funding

from venture capital firms, impact investors, accelerators, and philanthropic organisations to develop direct air capture systems in Kenya. The reliance on both equity and non-dilutive funding reflects the difficulty of financing deep-tech ClimateTech through conventional venture structures alone. Rather than waiting for domestic or sovereign carbon frameworks to crystallize, Octavia anchored its business model directly to corporate buyers purchasing high-integrity forward removals. It also adjusted its operational model by pivoting from importing components to becoming a full-stack technology developer, after finding that foreign-sourced DAC infrastructure was prohibitively expensive and poorly adapted to African environmental contexts.

*“Our initial business model was as a project developer where we would take Direct Air Capture technology developed abroad and deploy it in Kenya to leverage Kenya’s rich endowments of clean energy, geology, and talent. We quickly realized that there wasn’t any Direct Air Capture technology that was mature enough*

*for us to import and deploy which made us quickly pivot into developing the technology ourselves. That is the business model that we have been executing on with success since.” Duncan Kariuki, Co-founder and CTO, Octavia Carbon*

This strategy has yielded technical and commercial validation over rapid scaling. Octavia has secured advance purchase agreements from more than a dozen international corporate buyers. In addition, the company recently finalized an underground CO<sub>2</sub> injection pilot in Kenya’s Rift Valley in partnership with Cella Mineral Storage, positioning it as one of the few companies globally to successfully combine direct air capture with permanent geological storage<sup>11</sup>.

Relying too heavily on policy alignment can create its own risks. KOKO Networks built a bioethanol cooking fuel network serving 1.3 million Kenyan households, but its model depended on clear carbon-credit rules and timely government approvals. When the required authorisations did not come, the company had to shut down within days.

The contrast between these two paths highlights the primary vulnerability of Late Irruption climate applications. Both solutions built their core economics around emerging carbon market frameworks. However, while Octavia insulated itself by targeting direct, voluntary corporate buyers, KOKO exposed its entire operating infrastructure to a single sovereign regulatory mechanism that was not yet operationally mature. At this stage of the curve, companies are not simply commercialising a technology, they are building into institutional frameworks that are themselves still unstable.

## Circular Economy & Waste

The Circular Economy & Waste cluster is characterised by high levels of venture formation but relatively limited capital. Since 2016, companies in the cluster have raised \$130.6 million across 119 companies and 171 deals, making it one of the most active ClimateTech clusters by company count and deal activity, but one of the smallest by funding volume. While many ventures access early-stage support, relatively few progress to larger rounds. The gap between deal activity and funding volume suggests that experimentation remains active, but commercially scalable models have yet to emerge consistently.

“

*The customer doesn’t appreciate the additional technology... it’s very hard to charge extra for it.*

*—Dianah Irungu, Global Innovation Fund*

The central challenge is economic rather than technical. Across recycling, waste processing, and resource recovery, climate-positive alternatives often struggle to compete on price with conventional products. Input materials may be available at low or zero cost, but collection, processing, logistics, and conversion remain expensive relative to what customers are willing to pay for the final product.

**Waste-to-Value is the dominant application** by both deal count and funding volume, with \$123.9 million raised across 84 companies. It added 51 companies between 2022 and 2025, but raised only \$52 million more over the same period. This suggests that venture formation continues to outpace capital formation, with many new entrants attracting relatively small amounts of funding. The unit economics challenge remains acute. Companies often need to build collection networks, processing capacity, and reliable end markets simultaneously before revenues can support scale.

<sup>11</sup> Velev, V., & Velev, V. (2026, May 5). BREAKING: Direct air capture breakthrough in Kenya signals new era for CO<sub>2</sub> geological storage. Carbon Herald. <https://carbonherald.com/breaking-direct-air-capture-breakthrough-in-kenya-signals-new-era-for-co2-geological-storage/>

“

*In black soldier fly, the capex required to reach scale is very high, and no one has really cracked it yet.*

*—Luisa Carpenter, AfricInvest*

The companies making the most progress have shifted from a product mindset to a systems mindset. Instead of relying on a single recycled product competing directly with conventional alternatives, they position themselves as waste-management infrastructure capable of generating multiple revenue streams from a single input stream. Municipalities have emerged as particularly important customers in this transition. Faced with rising waste-management costs, local governments are often motivated by fiscal efficiency rather than climate outcomes, creating a more predictable commercial customer base.

Alternative Materials remains at Irruption (stalled). The application has raised just \$1.0 million across 22 companies since 2016. Activity spans bioplastics, alternative packaging, sustainable textiles, biomaterials, and circular consumer products. While venture formation remains active, funding is highly fragmented and largely concentrated in grants, prizes, accelerators, and small early-stage investments. The application has yet to produce a clear commercial breakout, highlighting the challenges of competing against incumbent materials that benefit from mature supply chains and lower production costs.

## Built Materials

Built Materials remains one of the earliest-stage clusters in the ClimateTech ecosystem. Since 2016, companies developing green construction materials, low-carbon building inputs, building-efficiency systems, and cooling solutions have raised just over \$10 million across 20 companies and 25 deals. The cluster remains at Irruption, with limited capital, fragmented activity, and little evidence of sustained commercial scaling yet.

Many of the challenges mirror those seen elsewhere in ClimateTech, but are often more pronounced in the built environment. Conventional construction materials such as cement are cheap, widely available, and supported by mature supply chains. Low-carbon alternatives, therefore, face the difficult task of competing against incumbents that already benefit from scale, familiarity, and established distribution networks.

Capital remains scarce, funding is largely non-commercial, and there is limited evidence of repeat deployment across markets. Progress depends not only on improving product economics but also on creating demand. Procurement policies, building standards, certification systems, and other market-shaping interventions may prove as important as technology innovation in helping low-carbon materials achieve wider adoption. Without these conditions, many solutions are likely to remain in Irruption despite their climate potential.





BOX 7

## Kubik and the shift from product to system economics



Kubik illustrates one of the defining challenges facing the Circular Economy & Waste and Built Materials clusters. Technical viability does not automatically translate into commercial viability when conventional alternatives remain cheaper, familiar, and supported by established supply chains.

Low-carbon products frequently enter markets where conventional alternatives are cheaper, subsidised, operationally familiar, and supported by mature supply chains. As a result, companies struggle when competing as standalone “green products” on price alone. Increasingly, viability depends on redesigning the surrounding business model rather than optimising the product itself.

Kubik illustrates this transition. The company initially focused on producing recycled building materials from plastic waste. Technically, the product worked and customer interest existed. But falling cement prices, rising plastic input costs, and the conservatism of the construction sector made direct product competition difficult.

*“Our building materials struggled, not because people are not convinced of the product, but because unit economics made traction harder. The cost of cement was getting lower while the cost of recycled plastic was increasing; our unit economics never matched. If it took \$2 to make \$1, I didn’t see that as a convincing pathway for us to scale. We needed to change something.”* Kidus Asfaw, Co-Founder and CEO, Kubik

Since 2022, Kubik has raised more than \$5 million in seed funding from investors including King Philanthropies, Endgame Capital, African Renaissance Ventures, Satgana, and GIIG Africa Fund. The funding mix itself reflects the nature of the application where investors willing to fund the company were generally those comfortable with operational experimentation, infrastructure exposure, and longer pathways to commercial scale rather than rapid venture-style growth.

To fix its economics, Kubik pivoted from a pure materials supplier to a broader waste-management model. Waste became the core asset, allowing the company to build multiple

outputs from a single input stream, including construction materials and alternative fuel products for cement manufacturers. This shift insulated the business from relying on a single green product competing against subsidized incumbents, allowing it to capture value across several linked revenue streams instead.

*“We had to flip the script, see ourselves as a waste management company first, and find the low-carbon value of that trash.”* Kidus Asfaw, Co-Founder and CEO, Kubik

The company also found that attempting to scale before securing repeatable unit economics created financial strain. This realized insight prompted significant cost reductions and a renewed focus on operational discipline.

The broader takeaway is that companies within these clusters rarely succeed through simple product substitution. Success requires redesigning system economics around waste flows, institutional demand, and diversified revenue streams.

## Water Access and Management

**Water Access & Management remains at Irruption.** The cluster includes Water Access, Sanitation & Hygiene, Water Treatment & Reuse, and Water Efficiency & Management. Together, these applications have raised \$37 million across 23 companies since 2016. Only 6 companies have raised more than \$1m. Further, both the company count and the geographic footprint are among the smallest of the applications. While deal activity remains steady, it has not accelerated into the Frenzy phase of the Perez curve that would indicate rising investor confidence. The structural challenge here directly mirrors the dynamics seen in waste-to-energy, where the line between private venture capital and public infrastructure finance is deeply blurred. However, while waste-to-energy companies have begun attracting capital by positioning themselves as infrastructure with identifiable revenue streams, water applications have struggled to establish an equivalent commercial pathway. The commercial model for private water provision remains unresolved in many markets because core water and sanitation services are still widely viewed as government responsibilities and fundamental public goods.

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*At some point, we may have to accept these require a subsidy. They should be considered a public good.*

*—Marcus Watson, Investment Director, KawiSafi Ventures*

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*Some sectors are seen as public goods... harder to productize and attract private capital.*

*—David Longdon, Equator VC*

Unlike applications that have progressed into Frenzy by identifying clear commercial customers or revenue streams, Water Access & Management continues to face unresolved questions around who pays, who owns the infrastructure, and how returns are generated. Until those questions are addressed, growth is likely to remain dependent on public funding, donor support, and concessional capital.

# Key findings



01 Introduction ↗	02 A new ClimateTech taxonomy ↗	03 The ClimateTech landscape in Africa ↗	04 The Carlota Perez Framework: A new lens for analysing ClimateTech in Africa ↗
05 How the ecosystem is evolving ↗	06 Key findings •	07 Implications ↗	



**The findings draw on the two lenses used throughout this report to move beyond headline funding totals and interpret how African ClimateTech is evolving.** The first is the report's Application-led taxonomy. An Application refers to a specific use case or business model within the broader ClimateTech sector, such as Energy Generation, Light Electric Mobility, Climate Data & Forecasting, or Waste-to-Energy. Looking at Applications allows the report to move beyond broad sector-level trends and compare groups of similar solutions more consistently.

The second lens is an adapted version of the Carlota Perez framework, which this report applies to African ClimateTech to show how different Clusters and Applications move through stages of experimentation, rapid investment, scrutiny, scale, and consolidation. In **Irruption**, new ideas and business models are being tested. In **Frenzy**, investment accelerates and some companies grow quickly, although not every model is proven. At the **Turning Point**, funders become more selective and companies must show that their business models can work. In **Synergy**, proven business models begin to attract larger and more suitable forms of finance. In **Maturity**, markets consolidate around established companies and business models.

Together, the Application-led taxonomy and adapted Perez framework provide a clearer basis for understanding where progress is happening, where markets are stalling, and what kind of capital, policy, or ecosystem support may be needed next.

**Most Applications are progressing, but at very different speeds.** Comparing the ecosystem in 2022 and again in 2025, 13 of the 18 Applications tracked progressed to a more developed stage in just three years. That is an encouraging signal. It shows the ecosystem is not stuck. But the pace of this progress varies enormously. Energy Generation has reached Early Maturity, Light Electric Mobility has moved to Late Frenzy, while Recycling & Alternative Materials and Water Access remain in Irruption. Looking at the direction and speed of progression offers insight beyond the Applications' current position. It shows where momentum is building, where markets are stalling, and what kind of capital, policy or ecosystem support may be needed next.

**Headline funding volume can make progress appear broader and deeper than it is.** African ClimateTech companies raised \$6.35 billion across 779 companies between 2016 and 2025, but the headline figure masks the concentration of that

capital. The 20 top-funded companies captured 60% of total funding, while the top 10 alone raised as much as all other companies combined. Large totals may reflect momentum in one company, cluster, or application rather than broader growth. For example, Road EVs & Buses companies raised \$259 million, yet a single company accounts for most of that total. Waste-to-Energy companies raised \$58 million across ten businesses, but solutions are active in only four countries, few funders return for follow-on rounds, and 38% of deals remain non-commercial, including grants, prizes, and in-kind support rather than investment. Progress is therefore about more than funding volume; the type, depth, and breadth of funding matter as much as headline totals.

**ClimateTech does not mature towards a single financing model.** One of the clearest findings is that companies do not simply move from grants to venture capital to debt in a linear fashion as they grow. Instead, companies and Applications build capital stacks that evolve with their needs and as markets mature. For some Applications, grants become less important as commercial finance develops. For others, grants, concessional finance, subsidies, and public support remain core parts of the financing mix even at scale because they fund activities that commercial capital is unlikely to finance on its own. This matters especially in ClimateTech because many solutions target critical infrastructure and essential services, such as clean water, reliable energy, food production, and waste management, among others. Governments around the world typically support these areas through subsidies, procurement, guarantees, tax incentives and public investment. In many African markets, governments have more limited fiscal capacity, meaning that concessional and development capital often play a larger role in funding these services.

This is already visible across the ecosystem. More mature Energy businesses increasingly combine equity, debt, guarantees, concessional finance, and subsidies at various stages along the curve. Water Access & Management may continue to depend more heavily on grants, concessional finance, subsidies, and procurement because many of the public benefits it creates are difficult to monetize fully through private markets alone. The question is therefore not when grants disappear, but whether the right combination of financing instruments is emerging for each Application at the right time.

**The biggest constraint is often financial maturity, not technology maturity.** Some Applications still face real technology risk. Carbon removal is a clear example, where the technology itself remains pioneering and companies need to generate operational data in real-world conditions to prove

scalability. But across much of African ClimateTech, the underlying technologies are already relatively well understood. The harder challenge is often whether the financing environment is mature enough to support them.

This means asking different questions. Is there working capital? Are there procurement pathways? Are customers able and willing to pay? Are there investors who understand the risk profile? Is regulation clear enough? Are there debt, guarantees, or subsidies that can support scale? Looking through this lens helps explain why the same technology can progress in one market and stall in another. It also shifts the conversation from “does the technology work?” to “what conditions are needed for this business model to become investable and scalable?”

“

*Where we see companies get stuck, it's mostly due to capital. Sometimes it's regulatory, but it's rarely technology. So redesigning capital programs from first principles and implementing and correctly sequencing tiered financing product SKUs become critical to survivability and long-term impact.*  
—Eghosa Omoigui, Echo VC

**Financing gaps appear at multiple points, not just in one missing middle.** Companies need bridges at several stages. Early-stage companies may need small amounts of flexible capital to move from prototype to pilot. Others may have early revenue but still lack the working capital, bridge finance, or short-term debt needed to keep operating while larger rounds are being negotiated. Some companies are too advanced for grants but not yet ready for commercial debt, larger DFI facilities, or institutional capital. Many companies therefore stall not because the model has failed, but because the next appropriate instrument is too slow, too large, too rigid, or unavailable at the ticket size they need. This is especially important for asset-heavy, hardware, agriculture, circular economy, mobility, and adaptation-focused businesses, where companies often need financing for equipment, inventory, deployment, and working capital before they have the balance sheet to support conventional debt.

**Local commercial and institutional capital remains limited.** The funder base has broadened, but African

ClimateTech remains heavily reliant on foreign, concessional, and development-oriented capital. DFIs, donors, specialised VCs, and climate funds remain essential, particularly for earlier and riskier Applications. But they cannot finance the full path to scale alone. As more companies progress, local banks, corporates, pension funds, insurers, and other institutional investors will need clearer pathways to participate, supported by guarantees, local-currency facilities, co-lending structures, stronger evidence of repeatable business models, and better risk-sharing mechanisms.

**Beyond these broader funding gaps, more specific financing challenges are emerging across the ecosystem.** These do not affect all applications equally. Instead, they reflect differences in business models, climate outcomes, and founder demographics that shape who receives capital, what type of capital is available, and how quickly markets develop.

- **Debt and working capital remain difficult to access as companies grow.** Many ClimateTech businesses need finance to buy equipment, build inventory, and deploy physical assets. This is especially important in Agriculture & Land Use, Mobility & Transport, and Circular Economy & Waste. Yet debt is often unavailable, too expensive, or poorly suited until companies have established revenues or assets, leaving many reliant on equity for longer than necessary.
- **Adaptation solutions are harder to finance because their value is not always easy to monetise.** While mitigation captures around 84% of ClimateTech funding, adaptation receives just 16%. Adaptation applications in Agriculture & Land Use, Water Access & Management, and Health & Human Resilience often depend on longer-term benefits, public-sector involvement, or shared outcomes, making them harder to finance through purely commercial capital.
- **Women-only founding teams receive less than 1% of ClimateTech funding.** This reflects not only founder demographics but also where capital flows. The largest rounds go to Energy and Mobility & Transport, where women are underrepresented, while women-led companies are more concentrated in Clusters and Applications with smaller ticket sizes and greater grant dependence.

**Liquidity is beginning to emerge, but remains underreported and uneven.** Exit activity is most visible where Applications are closest to maturity, especially in Energy. Acquisitions and consolidation matter because they show that strategic buyers are beginning to value scale, infrastructure, distribution,

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*Working capital debt can be very hard for early-stage companies to secure, and often only available at very high rates and security levels.*

—Eva Stolz, *Persistent Energy*

and customer relationships. But liquidity is broader than acquisitions alone. It can happen through secondaries, recapitalisations, partial investor exits, and other ways of returning capital, even when these are not captured in the data. This matters because liquidity allows early investors to recycle capital, gives later-stage investors greater confidence in routes to return, and helps founders and employees realise value without necessarily selling the company. A narrow focus on headline exits may therefore understate how much capital is beginning to circulate through the ecosystem.

**Policy and market conditions shape how quickly Applications progress.** ClimateTech companies in Africa often face currency swings, infrastructure gaps, regulatory uncertainty, customs delays, slow procurement, and expensive working capital. These conditions can make every stage take longer than investors expect. Policy can accelerate markets through tax treatment, procurement, infrastructure, subsidies, regulation, and market rules, but it can also slow them where regulation is uncertain or implementation is delayed. Investors therefore need to treat policy, infrastructure, and market conditions as part of the business case, not background context.

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*There is no way you can get the same done in four years in Africa. The market conditions, the infrastructure gaps, the regulatory environment, these are not obstacles to work around; they are the work.*

—Tamer El-Raghy, *Managing Director of the Acumen Resilient Agriculture Fund (ARAF)*

Taken together, these findings show that African ClimateTech is becoming more mature, but not uniformly. The priority is not simply to increase total funding, but to understand what each Application needs to progress, what capital stack is most appropriate, where financial maturity is lagging, and how liquidity can begin to recycle capital across the ecosystem.



Credit:  
Keep It Cool, Kenya

# Implications



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02  
A new ClimateTech  
taxonomy



03  
The ClimateTech  
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The Carlota Perez  
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African ClimateTech needs more capital, but more capital deployed in the same way will not close the gaps identified in this report. The priority is to match capital, policy, and institutional support to where different Applications sit on the maturity curve and what they need to progress.

The Application-led taxonomy and adapted Perez framework provide a practical lens for doing this. They show where an Application sits on the curve, whether it is moving or stalling, and what kind of capital or support is likely to matter next. But the analysis also points to a broader conclusion which is that mature ClimateTech Applications do not all converge on the same financing model. They converge on different capital stacks, shaped by their technology risk, revenue model, infrastructure needs, public-good characteristics, policy environment, and market maturity.

Five implications are coming into view for investors, funders, policymakers, and innovators.

**1 - Tailor capital stacks to what each Application needs to progress.** The aim should not be to replace grants with commercial capital, but to build financing systems in which grants, equity, debt, guarantees, subsidies, procurement, concessional finance, and

other instruments each play the roles for which they are best suited.

Applications in Irruption may need R&D funding, pilots, early customers, technical expertise, grants, catalytic equity, and venture builders who can help test the route to market. Applications moving into Frenzy need to build commercial momentum, show that customers will pay, and grow beyond isolated pilots. At the Turning Point, companies need to prove repeatable demand, unit economics, repayment capacity, and operational resilience. As Applications move toward Synergy and Maturity, they need capital that can support scale, including working capital, asset finance, debt, guarantees, local-currency facilities, subsidies, procurement, and institutional investment.

Different Applications will therefore require different long-term capital stacks. Energy Generation may combine equity, debt, guarantees, subsidies, and concessional finance. Water Access & Management may continue to require grants, concessional capital, subsidies, and procurement because clean water, sanitation, and public health generate public-good outcomes. Carbon removal may require R&D grants, venture capital, carbon finance, and advance purchase commitments for longer because both technology and market risk remain high.

**2 - Use catalytic capital where Applications are most likely to stall.** Applications do not face one “missing middle”. They face different financing gaps as they move through the adapted Perez stages, and no single stakeholder can provide every type of finance an Application needs as it progresses. Between Irruption and Frenzy, companies need flexible capital to move from prototype to pilot, establish routes to market, and demonstrate that customers will pay. Around the Turning Point, the challenge changes. Companies may already have early revenue but still lack the working capital, guarantees, bridge finance, repayment history, or risk-sharing mechanisms needed to unlock larger pools of debt or institutional capital. As Applications move into Synergy and Maturity, they require deeper pools of long-term finance, including asset finance, local-currency debt, and institutional investment to support scale.

Catalytic capital is most valuable when it helps companies move from one stage of maturity to the next. In earlier stages, this may mean funding pilots, supporting first customers, or helping establish commercial demand. Around the Turning Point, it should focus on reducing risk, supporting commercialisation, and helping companies build the operational track record required to access larger pools of commercial and institutional capital.

**3 - Create clearer pathways for local and institutional capital.** DFIs, donors, VCs, and ClimateTech funds remain essential, especially in earlier-stage and structurally harder-to-finance Applications. But they cannot finance the full path to scale alone. As more companies mature, the ecosystem will need greater participation from local banks, corporates, pension funds, insurers, and other institutional investors. This will not happen automatically. Local and institutional capital often requires clearer evidence of repeatable revenues, stronger governance, local-currency structures, guarantees, risk-sharing mechanisms, co-lending models, and credible pathways to liquidity. For many Applications, especially those with public-good characteristics, local capital will also depend on stronger policy, procurement, and subsidy frameworks.

The goal is not simply to “crowd in” private capital in general, but to identify where private capital can realistically participate, what risks need to be shared, and which public or concessional instruments are needed to make that participation possible.

**4 - Treat liquidity as part of ecosystem maturity, not an afterthought.** African ClimateTech cannot mature only through new funding rounds. It also needs credible ways for capital to be returned and recycled.

Acquisitions are important, especially in more mature Applications such as Energy Generation, but liquidity is broader than M&A exits alone. Secondaries, partial investor exits, and other ways of returning capital can all help show that value is being created and realised.

This matters for founders, investors, and the wider ecosystem. Liquidity allows early investors to recycle capital into new companies, gives later-stage investors more confidence that returns are possible, and helps founders create value without necessarily selling the business. Better visibility on liquidity pathways would also improve how ecosystem maturity is assessed, especially where transactions, such as secondaries, are private or underreported.

Future ecosystem analysis should therefore track not only acquisitions, but also secondaries, investor buyouts, structured liquidity events, shutdowns, and other forms of capital recycling.

**5 - Use policy to help Applications progress.** The role of policy is not only to remove barriers, but to help build markets. In many ClimateTech Applications, especially those linked to clean water, reliable energy, food production, public health, and resilience, public support is not a distortion. It is part of the capital stack that allows markets to form. Policy should therefore be treated as part of the market-building process. Regulation, procurement, tax treatment, subsidies, guarantees, infrastructure, and market rules can determine whether promising Applications move forward or lose momentum.

For some companies, working with government creates enormous scale opportunities but also longer timelines and higher execution risk. For others, policy matters indirectly through licences, infrastructure, tariffs, import rules, standards, or public procurement. Founders and investors need to build these realities into planning and fundraising timelines, while policymakers need to recognise that slow procurement, unclear regulation, weak infrastructure, and limited fiscal support can prevent otherwise viable companies from scaling.

Ultimately, African ClimateTech will not mature by converging on a single financing model, but by developing the right capital stacks, policy environment and market conditions for each Application to progress.

Annex



## Annex A: Funder Categories

Category	Definition	Examples
Venture Capital	Equity-led venture funds investing in early-stage and growth-stage startups. This includes both generalist VC funds and specialist climate, energy, agri, mobility, resilience, or Africa climate-tech VC funds.	Catalyst Fund, E3 Capital, ARAF, Factor[e], KawiSafi, Mercy Corps Ventures, Gaia Impact Fund, Holocene, Satgana, Launch Africa, Kepple Africa, EchoVC, Techstars, Novastar
Specialist Debt / Structured Finance Provider	Specialist finance providers offering debt, mezzanine, asset finance, project finance, working capital, receivables finance, or blended credit, often focused on climate, energy access, or impact markets.	SunFunder, Mirova, Triodos IM, Trine, Oikocredit, Symbiotics, Ceniarth, responsAbility, Nithio, Bettervest, SIMA
Development Finance Institution	Public development finance institutions, regardless of whether the instrument is debt, equity, or blended finance.	FMO, DFC, BII, Proparco, Norfund, IFC, AfDB
Corporate / CVC	Strategic corporates and corporate venture capital arms investing directly or through corporate-backed vehicles.	Total Carbon Neutrality Ventures, Mobility 54, Salesforce Ventures, Leaps by Bayer
Bank / Commercial Lender	Commercial banks and bank-led lenders providing conventional lending or balance-sheet finance.	Citibank, Rabobank, Standard Bank, local banks
Donor / Grantmaker / Foundation	Donors, foundations, public programmes, challenge funds, and philanthropic funders providing grants, prizes, technical assistance, or non-commercial funding.	USAID, BMZ / develoPPP, USADF, Efficiency for Access, Shell Foundation, Mastercard Foundation
Accelerator / Venture Studio / Venture Builder / Prize	Programme-led support where the main role is acceleration, incubation, venture building, venture studio support, fellowship, or competition funding.	Delta40, GIZ SAIS, Seedstars, Village Capital, GoGettaz, Techstars accelerator programmes

## Annex B1: Metrics

Category	Relevance	Perez	Metrics
Funding volume & growth	Proxy for overall market activity and investor confidence and signals scale and momentum but not necessarily maturity.	Treats rapid funding growth as the symptom of speculative capital cycles (Installation phase), not as an indicator of institutional maturity.	Total funding volume (USD) % change in funding (3 yrs)
Funding	Determines the composition and quality of capital and how funding is structured matters more than how much.	Captures the shift from donor or VC-led speculative capital to productive, blended, and institutionalised finance.	% non-commercial deals (grants, awards, in-kind) % deals < \$250 k # companies > \$1 m raised % companies raised since 2022
Ecosystem	Reflects investor stickiness, localisation, and institutional alignment as markets mature.	As ecosystems evolve, repeat and local funders emerge, and DFIs/banks begin to replace one-off foreign investors.	% repeat funders % local funders # of active stakeholders
Solutions	Measures how innovations replicate across geographies, markets, signalling diffusion rather than experimentation.	Adoption breadth tracks the Deployment phase of Perez where technologies move from pilots to productive scale.	# of active companies % change in active companies # of countries deployed

## Annex B2: Stakeholder list

### I. Workshop participants

Participant Name	Organisation
Arnold Mwangi	DOB Equity
Daniel Samuka	Nithio
Dianah Irungu	Global Innovation Fund
Eva Stolz	Persistent Energy
Hossam Allam	CRA Fund
Josh Romisher	Holocene Africa
Juliet Munro	FSD Africa
Karen Serem Wathaka	DOB Equity
Kura Wanjau	FSD Africa
Lucy Kimeu	FSD Africa
Mario Wilhelm	Rift Partners
Mark Napier	FSD Africa
Mary Kashangaki	FSD Africa
Marcus Watson	KawiSafi Ventures
Nambuya	Camco Energy
Nicolas Metro	Kinome
Ravi Sikand	OMSIM
Reshma Shah	FSD Africa
Shiro Wachira	Equator VC
Shivani Kotecha	BFA Global
Simon Desjardins	Shortlist
Toukam Ngoufanke	Persistent Energy
Zee de Gersigny	FSD Africa

## II. Interviewee list

Participant Name	Organisation
Abel Boreto	Novastar Ventures
Andrew Lala	Ignitia
CJ Fonzi	Africa Climate Ventures
David Longdon	Equator VC
Dianah Irungu	Global Innovation Fund
Duncan Kariuki	Octavia Carbon
Eghosa Omoigui	EchoVC
Eva Stolz	Persistent Energy
Geophrey Tenganamba	Mazao Hub
Kidus Asfaw	Kubik
Luisa Carpenter	AfricInvest
Marcus Watson	KawiSafi Ventures
Rose Goslinga	Pula
Tamer El-Raghy	ARAF

## Annex C: Perez framework application data (2016–2025)

					Funding growth and volume		Solution scaling			Funding structure				Ecosystem development		
Application	Cluster	Stage 2022	Stage 2025		Total funding 16–25	% growth last 3 years	No of co.	% growth last 3 years	No.countries	Co. raised >\$1m	% raised last 3 yrs	% non-commercial	% deals<\$250k	% repeat funders	% local funders	No. of stakeholders
<b>ENERGY</b>																
Energy Generation	Energy	Synergy	Early maturity	↑	\$3.76bn	95%	140	44%	56	75	46%	17%	11%	22%	24%	269
Clean Cooking	Energy	Frenzy	Turning point	↑	\$216m	221%	28	40%	10	10	54%	36%	3%	4%	1%	51
Energy Efficiency & Management	Energy	Early Turning point	Late Turning point	→	\$111m	45%	26	100%	17	12	62%	12%	2%	3%	1%	75
<b>MOBILITY &amp; TRANSPORT</b>																
Light Electric Mobility	Mobility & Transport	Early Frenzy	Late Frenzy	→	\$363m	662%	18	260%	8	6	89%	26%	2%	3%	4%	47
Road EVs & Buses	Mobility & Transport	Late Irruption	Late Frenzy	→	\$259m	599%	18	125%	16	7	61%	29%	2%	2%	3%	45
Charging & Battery Infrastructure	Mobility & Transport	Irruption	Frenzy	↑	\$89m	459%	15	150%	9	7	67%	26%	1%	2%	4%	31
<b>AGRICULTURE &amp; LAND USE</b>																
Climate-Smart Inputs & Technologies	Agriculture & Land Use	Early Turning point	Late Turning point	→	\$278m	74%	76	138%	21	14	72%	50%	12%	11%	1%	127
Sustainable Production Systems	Agriculture & Land Use	Frenzy	Synergy	↑	\$151m	195%	64	156%	18	11	72%	56%	11%	9%	10%	102
Regenerative Agriculture & Systems	Agriculture & Land Use	Irruption	Frenzy	↑	\$18m	204%	11	83%	9	4	82%	48%	2%	2%	2%	25
<b>FOOD SYSTEMS &amp; VALUE CHAINS</b>																
Supply Chains, Markets & Traceability	Food Systems & Value Chains	Frenzy	Synergy	↑	\$233m	52%	48	71%	21	16	69%	39%	9%	7%	1%	133
Post-Harvest, Processing & Cooling	Food Systems & Value Chains	Frenzy	Turning point	↑	\$90m	76%	66	128%	21	12	67%	60%	13%	11%	11%	94
Alternative Proteins & Novel Foods	Food Systems & Value Chains	Irruption	Irruption	→	\$7m	202%	13	44%	6	3	62%	38%	62%	2%	2%	21

DATA & FINANCE																
Insurance & Risk Transfer	Data & Finance	Turning point	Synergy	→	\$296m	17%	18	38%	7	6	67%	28%	4%	3%	4%	80
Climate Data & Forecasting	Data & Finance	Turning point	Turning point	→	\$108m	21%	8	100%	5	4	75%	29%	1%	1%	9%	34
CARBON & NATURE-BASED SOLUTIONS																
Carbon Markets	Carbon & NBS	Irruption	Frenzy	↑	\$21m	350%	13	550%	7	4	92%	26%	2%	1%	3%	37
CIRCULAR ECONOMY & WASTE																
Waste-To-Value	Circular Economy & Waste	Irruption	Irruption	→	\$124m	72%	84	155%	16	8	69%	60%	14%	13%	13%	90
Alternative Materials	Circular Economy & Waste	Irruption	Irruption	→	\$1m	55%	22	83%	10	-	50%	94%	6%	3%	3%	19
WATER ACCESS & MANAGEMENT																
Water Access	Water Access & Management	Irruption	Irruption	→	\$20m	59%	6	20%	5	3	50%	47%	1%	1%	2%	19

Notes:

**Stages** – Irruption: early experimentation, largely grant-driven, unproven models. Frenzy: rapid capital acceleration, growing investor activity. Turning point: capital becomes selective; weaker models tested for viability.

Synergy: commercial models proven, institutional capital aligned, multi-market deployment. Early maturity: consolidation underway, exits emerging, growth stabilising.

**% non-commercial** – Share of deals that are grants, awards, prizes or in-kind support.

**% repeat funders** – Funders appearing across more than one deal within the application (2016–2025).

**% local funders** – Funders headquartered in Africa.

