



CLEAN ECONOMY FUND

INSTRUMENT ANALYSIS
OCTOBER 2025



Green Artha Clean Economy Fund

LAB VEHICLE ANALYSIS

October 2025

The Lab identifies, develops, and launches sustainable finance vehicles that can drive billions to a low-carbon economy. The 2025 Lab cycle targets three thematic areas (mitigation, adaptation, and sustainable agriculture and food systems) and five geographic regions (Brazil, East & Southern Africa, India, Latin America & the Caribbean, and the Philippines).

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SUMMARY

The Clean Economy Fund (CEF) is an Indian-based USD 75M structured-equity fund that finances first-of-a-kind (FOAK), IP-led, asset-intensive solutions in hard-to-abate sectors. It invests via USD~1M convertible notes for techno-commercial validation, followed by USD 4-5 million early-growth equity. It employs an 80/20 senior-junior structure that allocates downside losses from non-converting notes to the junior tranche while sharing upside pari passu.

Governance is anchored by an independent investment committee and a dedicated impact/governance committee. Green Artha brings deep pipeline access through long-standing corporate and public networks and a prior track record (ACT for Environment Fund) in which nine of 11 investments raised significant follow-on capital with strong revenue and valuation growth.

The implementation path targets USD 35-40M first close by mid-late 2026 (DFI anchors plus 3-4 commercial LPs), with India as the master fund location and a Singapore/Mauritius feeder to accommodate foreign capital and FX considerations. A ring-fenced TA facility supports commercialization, exit readiness, and debt-readiness for portfolio companies.

- **Innovative:** CEF directly tackles India's financing gap for mitigation technologies and FOAK factories that are seeking between USD 1-10 million in financing, combining venture risk appetite with PE-style diligence and a structured junior layer that absorbs early-stage validation risk-features largely absent in the domestic market.
- **Actionable:** The team has a near-term first-close plan, legal structuring, and staffing, with two clear investment tracks (early commercialization via notes; early growth via equity) and defined ticket sizes and conversion triggers – enabling deployment soon after first close.
- **Financially Sustainable:** Concessional anchors de-risk early investments to crowd in commercial LPs, while milestone-linked capital and exit-oriented TA aim for 3–7-year partial/full exits; senior returns remain protected if notes don't convert, sustaining market viability without perpetual public subsidy.
- **Catalytic:** A pilot close of USD 35-40 million is designed to leverage DFIs and attract co-investors and follow-on growth equity, with Green Artha leading rounds, sharing diligence, and aligning corporates and lenders to accelerate scale.

The Secretariat recommends endorsement of this instrument. The instrument targets a clear market failure with a well-specified structure, credible team, and strong governance/impact approach, offering a pragmatic pathway to mobilize private capital into industrial decarbonization.

In terms of next steps, over the following six months to a year, the team will secure anchor term sheets (DFIs + 3-4 commercial LPs), finalize master-feeder legal setup, hire an additional partner with a track record of exits in the Indian market, capitalize the TA facility, lock initial pipeline MoUs with corporates/lenders, and formalize the impact/IM systems (Project Frame, LCA, UNEP-FI adaptation framework) ahead of first close.

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CONTEXT

Indian startups seeking between USD 1-10 million in funding to develop first-of-a-kind low-carbon industrial technologies face a financing gap. New venture funds that underwrite market and technology risks are necessary to unlock private investments and accelerate the adoption of scalable climate innovations.

India, home to over 1.4 billion people, is the world's fastest-growing major economy, with annual GDP growth of 6.7% and industrial output projected to increase 21-fold by 2050 (S&P 2024). Today, direct and indirect emissions from the industrial sector account for more than 49.3% of India's energy-related emissions (Climate Transparency 2021). If India's current industrialization trends continue without reducing its reliance on high-emitting technologies, it could consume a significant portion of the global 1.7°C carbon budget.

The Indian government estimates it will need USD 170 billion in annual climate investment to meet its Nationally Determined Contribution (NDC). However, mitigation-focused capital flows in 2021–22 only reached USD 50 billion, revealing a need to increase private investment to support a green transition (Climate Policy Initiative 2024).

In India, thousands of climate-focused companies receive technical support and financing of up to USD 1.5 million from a large network of incubators and accelerators at the pre-seed and seed stages (Latitude Media 2025). A smaller group of companies access larger sums of capital—typically USD 10-50 million—at later growth finance stages. However, there is a notable gap in financial and technical support for Series A and early growth-stage companies seeking USD 1-10 million (IVCA 2023). This leaves many asset-heavy and intellectual property (IP)-led mitigation technologies and business models, including those that are first of a kind, underfinanced.

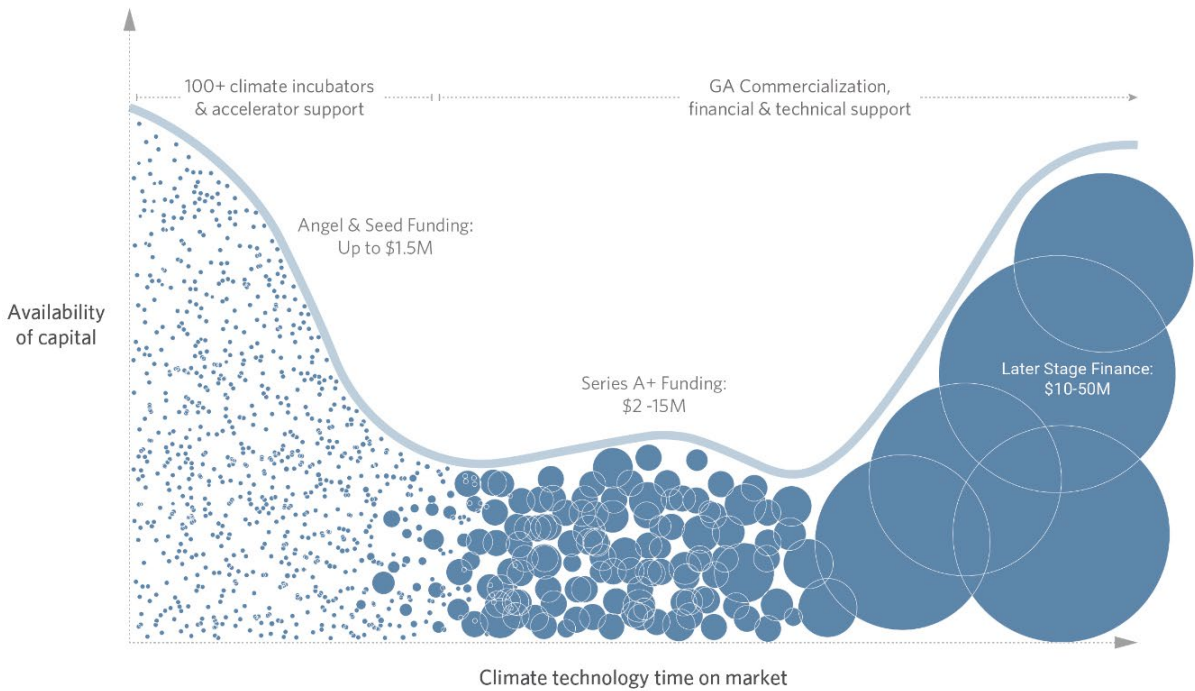
These companies face difficulty scaling because of 4 key barriers:

- 1. A lack of access to capital for mitigation technologies including first-of-a-kind (FOAK).** Mitigation focused startups in India, especially those seeking funding in the USD 1 million-USD 10 million range, often face valleys of death, first at the techno-commercial validation stage and again at the early-growth equity inflection point. This is often due to a lack of capital availability, which is a consequence of perceived market risk and actual risk. This risk stems from the difficulty equity investors have in finding buyers for their positions, which constrains their ability to exit their investments. Furthermore, these risks are difficult for investors to underwrite without education and experience.
- 2. Limited access to technical assistance.** Access to commercialization support is critical for startups as they look to grow. This support is typically composed of advisory around debt readiness, industry partnerships to secure offtake, capital structuring, and distribution and sales strategy. Green Artha supports the portfolio across market and customer strategy, product and business model validation, and capital and partnership guidance (see Annex 1). Without this support, startups take longer to exit (if at all) thereby diminishing investor returns.
- 3. Underdeveloped private equity markets and FOAK challenges.** The limited depth of private equity and public markets for climate tech in India makes it difficult to exit investments, constraining capital flow. This is compounded for asset-heavy, FOAK startups with long commercialization timelines and high upfront costs, which require patient, strategic capital to reach commercial viability.

Despite these persistent challenges, national climate commitments and evolving sector-specific policy frameworks are starting to send clearer market signals aimed at driving industrial decarbonization.

Furthermore, the Securities and Exchange Board of India (SEBI) is working to accelerate the listing of climate tech companies. Simultaneously, advancements in green capital markets—such as India’s first green taxonomy, improved ESG disclosure standards, and platforms for SME listings—are gradually enhancing investor confidence and beginning to open more credible pathways for future investment exits (Climate Capital Network 2024). Collectively, these shifts signal early yet promising momentum and help establish the foundations needed to accelerate India’s green industrial transition.

Figure 1. Availability of capital across the climate technology maturity timeline



DESIGN AND POSITIONING

1. INTRODUCTION TO THE VEHICLE

CEF is a USD 75 million structured equity fund that aims to accelerate India's green transition by investing in innovative technologies and business models, including FOAK industrial processes.

1.1 INVESTMENT THESIS: INDIA'S FIRST STRUCTURED EQUITY FUND DEDICATED TO DECARBONIZING ECONOMIC GROWTH

While climate tech investment in India is expanding, a critical funding gap persists for companies seeking USD 1 million to USD 10 million in growth capital. This challenge is most acute for IP-led, capital and infrastructure-intensive solutions in hard-to-abate sectors. These companies face high upfront costs, long development timelines, and the need for deep technical validation, factors that deter traditional venture investors, who prefer faster-cycle, lower-risk plays such as digital models, solar, or EV solutions. As a result, many promising technologies sit in a “financing dead zone,” too risky for commercial lenders, too capital-intensive for typical early-stage funds, and not yet large enough for growth equity.

This gap represents a high-impact investment opportunity. The climate value chain is expected to unlock USD 5–11 trillion in excess ROI by 2030, the largest addressable market in the Asia-Pacific region (GIC 2023). Much of this value remains stranded, not for lack of technical viability, but due to barriers in early commercialization financing.

CEF targets the three verticals where this gap is most pronounced:

1. **Industrial solutions** for green chemicals and materials,
2. **Energy systems** such as batteries, storage, and smart grids, and
3. **The built environment**, including decarbonized infrastructure and efficiency technologies.

In these sectors, companies often struggle to secure capital to move from functional prototypes to commercial deployment.

CEF is purpose-built to serve this underserved segment—supporting decarbonization ventures at the pre-growth inflection point. These companies require strategic capital to build FOAK (first-of-a-kind) facilities, validate business models, and scale commercially (see Figure 1). Beyond funding, they need investors with deep technical and market expertise to navigate complex commercialization cycles. CEF provides both, positioning the fund to unlock a significant, under-captured opportunity in the region.

CEF's theory of change is built on the following:

- **If** CEF deploys capital at the validation and early-growth equity inflection points, which require first-of-a-kind factories or business models,
- **And** if it provides commercialization technical assistance for emerging industrial decarbonization technologies to develop economically viable business models that meet market needs (see Annex 1),
- **Then** it will demonstrate that this structure can work and can be replicated to close the critical market gap that climate companies in the USD 1-10 million range face, leading to companies being able to develop those technologies at a commercial scale, which will lead to the accelerated adoption of high-impact technologies.

- **This, in turn, will lead to** the reduction of industrial emissions, make industrial customers more financially competitive, strengthen innovation ecosystems, and foster the development of de-risked pathways for replication and follow-on capital.
- **Contributing to India's net-zero transition**, enhancing climate resilience and the environmental sustainability of target sectors and regions, while developing pathways for other emerging markets.

Figure 2. Theory of Change

GOAL	Accelerate India's green transition by investing in technologies and business models in high-growth, high-emission sectors					
IMPACTS & CO-BENEFITS	15 megatons reduction in CO2 equivalents					
	Adaptation	Job creation	Resource efficiency	Air quality	Water usage	Gender inclusion
OUTCOMES	Reduced industrial emissions & shifted means of production		Expanded market of mitigation investment opportunities		Pathway for sustainable, low-carbon growth in EMDEs	
OUTPUTS	De-risked companies with accelerated market entry		Technologies verified for market		Improved company finance readiness	
ACTIVITIES	Commercialization & early-growth capital investments		Technical & business advisory to prepare for debt readiness and improve bankability			
VERTICALS	Industry		Energy		Built environment	

1.2 TARGET PIPELINE

The fund focuses on commercially viable, capital-efficient technologies with strong industrial use cases and quantifiable climate benefits, such as advanced materials, energy storage, and low-carbon manufacturing processes. These solutions must demonstrate the potential for scalability within high-emitting sectors such as cement, steel, heavy industry, and chemicals.

CEF will identify and source its pipeline through Green Artha's established networks and deep sector relationships, built over more than a decade of climate-focused investing and ecosystem building. The team has also sourced high-quality deal flow through national innovation challenges like the India Clean Air Challenge and Innovate to INSPIRE, which together have brought over 100 climate startups to market.

The CEF team also uses research-led outbound connections to build its pipeline and has a strong flow of inbound referrals from startup founders and incubators. This reach ensures early access to IP-led innovations with strong industrial applications, enabling CEF to identify high-potential companies well before they are visible to mainstream investors. Many of these IP-led technologies may otherwise have difficulty accessing investment, because the underlying value stems from intangible assets that cannot be easily collateralized.

The fund supports technologies that can displace emission intensive incumbents through competitive advantages such as lower operational costs and enhanced process efficiency. By enabling resource-

efficiency and circularity or minimizing reliance on carbon-intensive systems, the technologies are likely to face widespread uptake and long-term integration into industrial value chains.

Examples of CEF investments across three priority verticals:

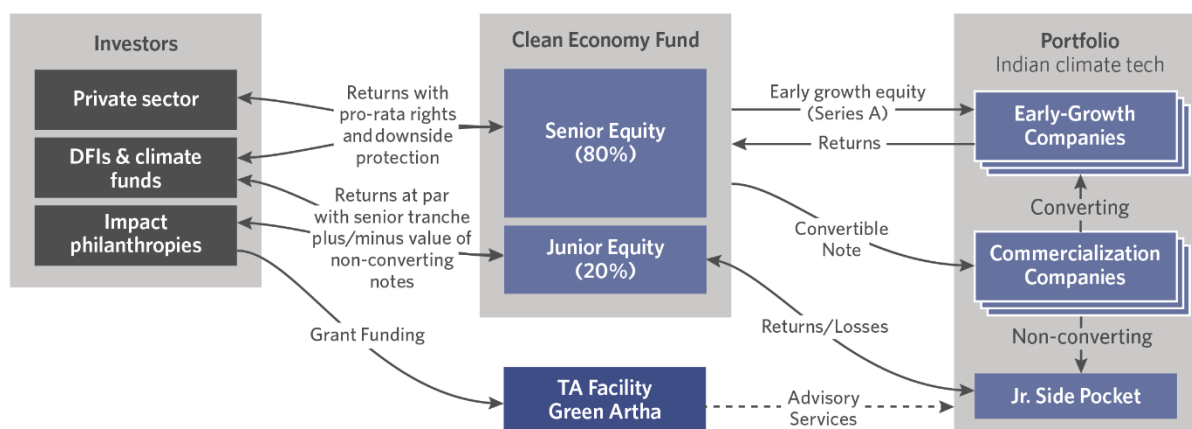
Table 1: Climate Tech Verticals

Vertical	Summary	Examples
Industry	Companies that decarbonize industrial processes and maximize resource efficiency.	- Green chemistry & advanced materials - Efficient manufacturing - Waste valorization - Process optimization
Energy	Companies that enable the energy transition by improving generation, storage, and efficiency.	- Battery components - Mechanical, electrical, & thermochemical storage - Smart grid automation - Energy-efficient machinery & retrofits - Renewables management
Built Environment	Companies that reduce embodied or operational carbon of the built environment leading to lower carbon footprint and climate resilience.	- Alternative materials - Enhanced energy efficiencies (improved cooling, thermal regulation, and insulation) - Sustainable water management

1.3 VEHICLE MECHANICS: STRUCTURED EQUITY FUND SUPPORTING SCALABLE, IP-LED CLIMATE TECH IN HARD-TO-ABATE SECTORS

The Clean Economy Fund (CEF) is a USD 75M structured-equity fund that finances first-of-a-kind (FOAK), IP-led, asset-intensive solutions in hard-to-abate sectors over a 10-year fund life. Figure 3 presents an overview of the mechanics of the structure.

Figure 3: Instrument Mechanics Diagram



CEF invests through two primary instruments—convertible notes and equity—and operates along three investment tracks based on company maturity and risk profile:

- **Convertible Notes for Early Commercialization:** Companies requiring more de-risking at the pre-growth inflection point will receive initial funding averaging USD1M (in rounds up to USD2M) via convertible notes. Convertible notes let startups raise early capital quickly, without locking in a premature valuation, while giving investors downside protection and upside rewards. In the case of CEF, Convertible notes support companies at the early commercialization stage, allowing CEF to

validate technical performance, market traction, and business readiness before converting to equity. Conversion occurs through securing a qualified financing round, indicating readiness to scale.

- **Follow-on Equity:** For the notes that convert, follow on investment may reach USD 5M, with a maximum total investment of USD 6M over the fund's life.
- **Direct Equity Investments for Early Growth:** Companies ready for early growth – having mitigated early risk through certifications, contracts, and other validations and indicating readiness for larger capital absorption – are typically too nascent for project finance/debt. Since they require capital that is unavailable in the market, these companies will be targeted for direct equity investments. The first investment will typically be USD 4-5 million, with a maximum total investment of USD 6 million over the fund's ten-year life.

1.3.1 A UNIQUE APPROACH TO LEVERAGING CONCESSIONAL CAPITAL

CEF has a unique approach to risk mitigation, and the vehicle aims to deliver risk-adjusted returns by aligning concessional capital with specific investment risks rather than taking a portfolio-level view on risk. To accomplish this, CEF leverages a 20% junior tranche, which provides downside risk protection to convertible note investments on a per-investment basis.

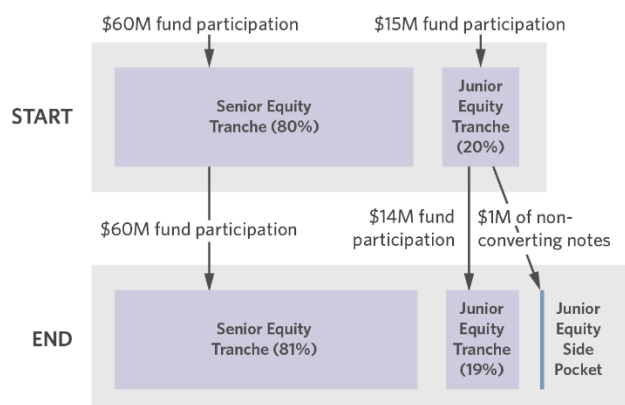
Alongside the senior tranche, junior equity participates *pari passu* in the investments in successful early-commercialization companies. However, if a startup does not secure a qualified financing round (for a maximum of up to five years) – due to stalled progress or fundamental issues such as failed pilots or team breakdowns – the note will not convert. In such cases, the convertible note is moved to a side pocket, and losses are fully absorbed by the junior equity tranche, which also retains *exclusive* rights to any potential side-pocket recoveries, including principal, if the debt is secured.

By containing losses within the junior layer, CEF protects senior investors and upholds the fund's risk discipline. The fund adjusts distributions accordingly: senior returns remain steady, while junior participation is reduced. Importantly, not all non-conversions signal failure; in some cases, companies are able to self-finance their growth. This was true for two of the eleven investments in CEF's pilot fund.

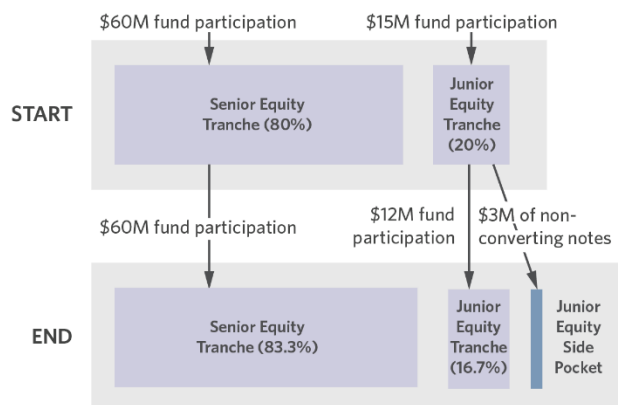
There is no protection offered to Senior investors in direct equity or follow on equity investments as these will be sufficiently de-risked to absorb growth capital. Figure 4 shows this approach in practice and highlights the impact of non-conversion on junior and senior rights to the fund returns. The structure is attractive for commercial investors as their downside exposure is partially capped while allowing junior equity to play a catalytic role.

Figure 4: Capital Stack & Example Adjusted Distribution Payments

Assuming a \$75 million fund & one \$1M non-converting note:



Assuming a \$75 million fund & three \$1M non-converting notes:



An experienced Investment Committee with independent advisors will oversee governance, supported by legal structures that embed LP protections, transparent reporting, and risk-sharing mechanisms. Other key stakeholders include DFIs, catalytic climate funds, impact philanthropies, family offices, institutional investors, and strategic partners such as Mahindra, Tata, Laurus, Luminous, HUL, Nike, Adidas, JSW Steel, Bosch, ABB, and government agencies, including EESL, MoHUA, and MoEFCC. There will also be a governance and impact committee for the diligence phase.

2. MARKET ADDITIONALITY ANALYSIS

CEF uniquely targets India's funding gap for climate tech companies valued between USD 1M-10M.

CEF addresses key gaps in the market, including a lack of access to capital for mitigation tech, an innovation-to-industry gap that constrains commercial traction, and the high perceived risk in the Indian market in the following ways.

- **Mobilizing commercial capital earlier in the investment cycle.** CEF provides USD 1 million in convertible notes for techno-commercial validation, business model validation, and de-risking, followed by USD 4-5 million in early-growth equity to accelerate market adoption and scaling. This approach intends to demonstrate the financial viability and scalability of mitigation solutions and strengthen the ecosystem of decarbonization-focused actors in India.
- **Value-driven, exit-oriented business advisory and technical assistance.** By refining business models, facilitating industrial partnerships, preparing investments for debt readiness, and building strategic investor networks, CEF helps create viable pathways to exits. These include strategic sales, secondary sales, and SME IPOs, demonstrating that climate mitigation investments in India can deliver both impact and liquidity. Please see Annex 1 for more details on the support provided at each stage of investment.
- **Institutionally rigorous due diligence approach that blends venture capital's risk tolerance with PE-like enhanced forecasting and capital efficiency analysis.** This approach enables CEF to identify opportunities with both high abatement potential and capital discipline, reducing perceived market risk. By investing across three verticals in industry, energy, and the built environment, CEF

aims to demonstrate commercially viable, capital-efficient models with strong financial returns that catalyze greater investor confidence and follow-on capital in the sector.

In addition to addressing these gaps, CEF's unique added value lies in three elements: It directly targets India's decarbonization start-up sector financing gap; it focuses on FOAK climate tech commercialization which is largely underserved in India, taking on commercialization risk that other investors are not willing to underwrite; and it employs a hybrid venture capital-private equity model with concessional elements to de-risk investments, enabling capital deployment to earlier-stage companies.

CEF invests in B2B businesses that have the potential to transform entire industries but fall outside mainstream VC models. Structured diligence combines private equity-style analysis with deep industry insights to determine capital needs, risk-adjusted return potential, and long-term financing pathways.

By engaging follow-on investors and corporate partners early, the team ensures alignment of growth milestones and product-market fit. This strategy enables capital efficiency and return potential even in sectors where high valuation multiples are unlikely. The model has proven effective in unlocking capital for high-impact companies overlooked by others, while delivering both climate and financial returns.

Table 2 contextualizes CEF's model within the broader investment landscape, comparing it to other instruments targeting early-stage climate tech and decarbonization.

Table 2: Comparable Instruments

Instruments	Overview	Differentiation
Green Frontier Capital (Approx. USD 177)	Impact-driven VC with a focus on India and Southeast Asia's climate startups. Invests in asset-lite D2C businesses only.	• Ticket size of USD250K-3M vs 1-USD5M (CEF) • No FOAK mandate • NoB2B / Industrial decarbonization
Peak Sustainability Ventures (Approx. USD 100M)	Early-growth tech funding with later-stage focus on commercialization support, likely partner funders where there are mandate overlaps.	• Pre-Seed-pre-Series A vs Seed-Series A for CEF • Ticket size of USD1-3M vs USD1-5M (CEF) • No concessional component
Avaana Sustainability Fund (USD120M)	Focuses on technology-driven climate solutions with digital scale potential, with a focus on clean mobility, agri-climate tech, supply chain decarbonization, and digital climate SaaS. Invests in asset-lite D2C businesses primarily.	• Pre-Seed-Series A vs Seed-Series A for CEF • Ticket size of USD1-13M vs USD1-5M (CEF) • Not FOAK focused. No concessional component • No focus on B2B / Industrial decarbonization

IMPLEMENTATION AND OPERATIONALIZATION

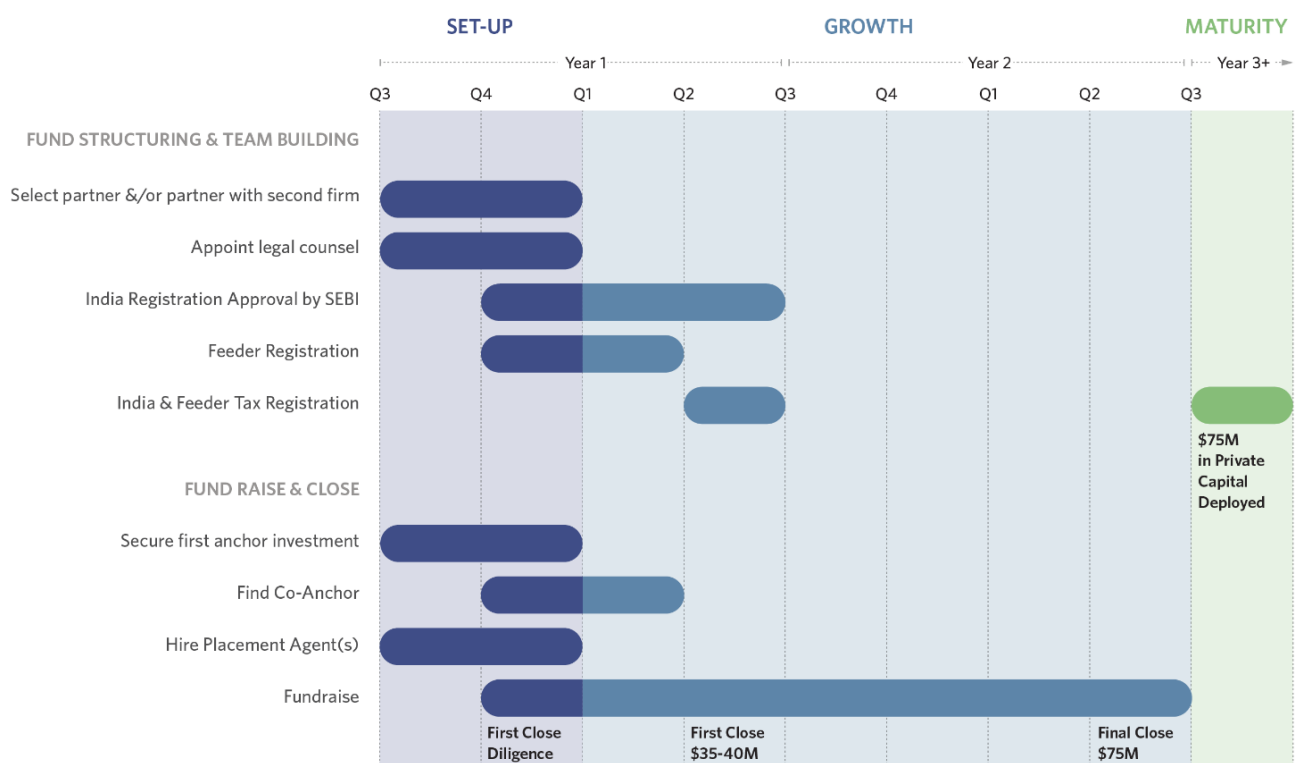
3. IMPLEMENTATION PATHWAY AND REPLICATION

CEF aims to raise USD 35 million-40 million in first close capital by mid- to late-2026, unlocking a USD 75 million fund.

3.1 PILOT LAUNCH VISION

The pilot fund targets a first close of USD 35 million to 40 million, composed of two anchor commitments from development finance institutions (DFIs) and 3-4 commercial investors. In addition to capital, Green Artha will require resources for legal structuring, fund registration, and ongoing compliance. Its core investment and technical team is already in place, but the fund is actively seeking an additional partner with a strong financial background and a proven track record of successful exits in India to strengthen capital mobilization and portfolio scaling.

Figure 5: Green Artha Clean Economy Fund Operationalization Timeline



To reach the first close, the following resources and capabilities will be required:

- **Personnel:** An additional fund partner to extend investment and fundraising bandwidth and with a successful track record of exits in India, or staffing and fundraising support from a merger with another fund or financial entity. The firm has confirmation of an investment partner joining pending the ability to meet minimal salary requirements and is in late-stage discussions to join forces with one of two international funds that would strengthen fundraising and future market access for portfolio companies.
- **Funding:** Anchor capital from DFIs and Foundations on both concessional and commercial side to achieve first close, start deploying capital and build momentum to final close; a first close of

USD 35 million to 40 million is targeted for mid-to late-2026; and full fund size target of USD 75 million to be closed within 12 months of first close in line with Indian regulatory requirements.

- **Legal Setup:** Fund registration and regulatory compliance in India, plus a master-feeder structure in Singapore or Mauritius (dependent on anchor funder requirement) to facilitate foreign investment.

Between endorsement and first close, the fund will aim to secure anchor investors. The Fund will simultaneously pursue fundraising conversations with concessional and commercial LPs, building on talks with European DFIs, Foundations and institutional investors to secure anchor commitments and build fundraising momentum. The 12-month window following first close will be used to secure both concessional and commercial funding to round out the USD 75 million fund.

3.1.1 STAKEHOLDER AND ENABLING ENVIRONMENT ANALYSIS

Green Artha is well-positioned to lead the implementation of CEF due to its proven track record in investing in early-stage climate tech ventures in India. The team previously launched the ACT for Environment Fund, a USD 10 million venture philanthropy vehicle that successfully validated its thesis: making climate tech investable.

Out of ACT's 11 investments, nine raised significant follow-on capital, while the remaining two scaled independently; the portfolio on average has achieved 13 times revenue growth and 8.5 times valuation increases. CEF will replicate ACT's rigorous due diligence process, which blends climate impact assessment with commercial growth fundamentals.

Successful implementation of CEF requires clearly defined roles across multiple stakeholders, as outlined in the table below.

Table 3: Overview of Stakeholder Responsibility

Stakeholder	Responsibility
Green Artha Fund Team	Investment sourcing, diligence, capital deployment, and portfolio management.
SEBI	Regulatory oversight and compliance.
BCG, CII Advisors	Strategic advice, commercialization support, and industry engagement.
Industry Partners	Adoption, and validation of technologies.
DFIs/Philanthropic Funders	Anchor catalytic capital and support fund credibility.
Commercial Investors (LPs)	Provide growth equity for scale-up stage.
Capital Markets Partners, including debt providers, co-investors, and follow-on investors	Co-investment, debt, follow-on investment, guidance on debt readiness requirements during diligence.

3.2 POTENTIAL RISKS AND CHALLENGES TO INSTRUMENT SUCCESS

The implementation of the instrument depends on its enabling environment. While India's climate policy landscape is becoming increasingly supportive of industrial decarbonization and low-carbon innovation, regulatory complexity remains a challenge for fund structuring and foreign capital deployment. To help navigate these constraints, CEF will use a master-feeder structure, with the Master Fund in India and Feeder structure based in Singapore or Mauritius (depending on anchor funder requirements).

The following table captures some of the key challenges to instrument success and potential mitigants.

Table 4: Overview of Challenges to Instrument Success

Challenge	Description	Addressing the Risk
Exit Challenges	Challenges with exits in the Indian market have dampened investor confidence.	Hiring partner with climate finance experience and history of exits in India AND/OR; a joint partnership with an international fund manager with a history of exits.
Compound perceived risk	First structured equity FOAK focused fund in India run by a first-time fund manager.	Diligence that blends risk-tolerance of VC with planning, forecasting, and bankability support of PE. FOAK funding aligned to off-take contracting reducing risk for investors. Team track record around company selection, commercialization and company preparation for follow-on funding provides proof points around the approach and capabilities.
Key Personnel Risk	Investment expertise is currently concentrated in one person at Green Artha, which could potentially place fund management at risk.	The fund is in late-stage discussions with a potential partner who brings exit experience. This is subject to future fundraising that will enable GA to meet salary expectations.
Long investment timelines	FOAK factories/business models/contracts often require more time to mature, creating liquidity risks. This exacerbates exit risk at the fund LP level.	Fund will identify and invest in businesses with a clear line of sight to commercial scale and profitability within the fund horizon. Fund will only enter at key market-growth inflection points and with clear identified interventions to manage risks and timelines to exit. Team's ability to bring on debt for financing and re-financing will also support accelerated scale of factories/ businesses and reduce timelines to exit.
Regulatory uncertainty	Complex and evolving Indian fund regulations limit fund structuring flexibility and timelines.	Ongoing engagement with SEBI and regulatory advisors AND; exploring a master feeder fund structure in Singapore/ Mauritius to manage foreign exchange risk exposure and appeal to international investors.

4. FINANCIAL MODELING OUTCOMES

4.1 QUANTITATIVE MODELING

Fund modeling reflects a standard 10-year fund timeline, including an initial five-year investment period followed by a five-year harvesting period. Additionally – although not included in the model - there is also the potential for two extensions of one year each to be used at the discretion of the General Partner (GP), in line with typical private equity structures.

4.1.1 MODEL ASSUMPTIONS

The CEF team plans to make 12 convertible note investments along with three growth equity investments in the initial phase of the fund. The tables in Annex 2 show a custom-built portfolio model that was used to run sensitivity analysis on the base case and downside case assumptions. Table 5 shows the investment and dilution assumptions behind each investment archetype.

Table 5: Assumptions for investment archetypes

Investment Assumptions		Round 1		Round 2	
		GA	External	GA	External
Investment Archetype	Count	Investment (\$m)	Equity (\$m)	Investment (\$m)	Equity (\$m)
Growth + Follow on	3	5	2.5	1	17
Commercial + External	1	1	0.5	1	6.5
Commercial + Growth	8	1	0.5	4	3.5
Commercial	3	1	0.5	0	0

4.1.2 MODEL RESULTS

A portfolio construction model was created with both base and downside scenarios. In the base case, assuming favorable exit valuations, one in three companies fails while one hyper-scaler succeeds. Under this, the fund is projected to deliver a 21% IRR and 2.9x MOIC, with senior equity at 19% and 3.0x and junior equity at 16% and 2.5x.

In the downside case, where exit valuations are reduced by 50% and one in two companies fails, the fund still generates positive outcomes — 11% IRR and 1.7x MOIC at the fund level, 10% and 1.8x for senior equity, and 8% and 1.6x for junior equity. This highlights that even under conservative assumptions, Green Artha’s investment strategy offers resilience and strong potential returns given its emphasis on the hybrid VC/PE due diligence approach and two stage investment approach that allows them to follow companies from very early stages to early growth.

Table 6: Scenario Analysis

Type of Capital	Base (IRR and MOIC)	Downside (IRR and MOIC)
Fund	21%; 2.9x	11%; 1.7x
Senior Equity	19%; 3.0x	10%; 1.8x
Junior Equity	16%; 2.5x	8%; 1.6x

4.2 PRIVATE FINANCE MOBILIZATION AND REPLICATION POTENTIAL

CEF’s strategy to crowd in private capital is anchored in a de-risked, staged equity model. By securing early concessional anchor commitments, primarily from European DFIs, the fund lowers perceived risk for commercial investors. CEF combines venture-style risk appetite with private equity-style diligence and companies, increasing investor confidence in scalability and returns. Technical assistance and milestone-linked tranches further reduce early-stage risk, making investments appealing for growth equity players.

The fund provides structured equity through tranches linked to performance milestones. This capital is complemented by technical assistance that helps de-risk ventures via market/ customer integration, industry certifications, fit-for-purpose capital structures and business models and early commercial

traction. The fund will not recycle capital but rather return the capital to junior investors earlier than in typical blended equity funds.

The model becomes commercially viable through:

- Successful validation and scaling of innovative mitigation technologies with strong industrial demand.
- Partial or full exits within three to seven years, supplemented by follow-on capital from commercial investors.
- Strengthened regulatory and policy environment supporting industrial decarbonization and SME exit infrastructure (e.g., IPOs, strategic sales).
- Active participation from industry partners, enabling market access and adoption.

As these enablers take shape, CEF can deliver attractive financial returns, replicate the model, and anchor a new category of climate-aligned growth capital in emerging markets.

5. CLIMATE AND SOCIAL IMPACT STRATEGY AND PROJECTIONS

While CEF is primarily a mitigation-focused fund, investments aim to secure broad social, resilience, and economic co-benefits.

5.1 IMPACT MEASUREMENT AND MANAGEMENT STRATEGY

When assessing investments, CEF will prioritize total potential mitigation impact (unit-level impact × scale) over minimum percentage reductions. For example, a 5–10% reduction in emissions intensity in a high-emissions, hard-to-abate sector like steel will be preferred over a 30% reduction in a low-impact sector, such as spice drying, or in technologies unlikely to achieve broad adoption. CEF will prioritize businesses that shift the materials and processes of how goods are produced, thus making many more products sustainable.

Mitigation impact: CEF will use Project Frame’s guidance to assess its pre-investment, post-investment, and per-unit impact. The Project Frame Methodology provides a standardized framework, developed from inputs of a group of actors convened by Prime Coalition, to help early-stage investors evaluate the greenhouse gas impact of their investments. Their approach to quantifying GHG impact is anchored in a core equation; unit impact is multiplied by volume to produce GHG impact, which can then be multiplied by optional adjustment factors to produce adjusted GHG impact (Project Frame 2024).

CEF will contract with third parties to conduct life cycle assessments (LCAs) to verify net unit mitigation impact (total CO₂e abatement) of its investments and input into the Project Frame models outlined below. The first two equations will be used for modeling, adjusting for the varied level of information available at each stage of pipeline development, while the final equation will be used to verify impact:

- **Potential Impact = Net Unit Impact (CO₂e/Unit) x Serviceable Obtainable Market [SOM] (Units/ year).** Used for early-stage startups (e.g., convertible note round) where the solution works but the business model is still evolving.
- **Planned Impact = Net Unit Impact (CO₂e/ Unit) x Commercial Projections (Units/ year).** Based on business plans, typically over three years; most relevant for companies at pre-growth inflection points or FOAK stage.

- **Realized Impact = Net Unit Impact (CO2e/ Unit) x Historical volumes (Units/ year).** Backward-looking, validated through actual sourcing, use, and retirement of solutions; most relevant post-commercialization.

Adaptation impact: Impact frameworks and reporting mechanisms will be established in alignment with the [UNEP-FI Adaptation & Resilience Impact Framework](#). To determine whether an investment has an adaptation impact, the fund will:

- Identify beneficiaries and geography: Define the end users or beneficiaries of the investment pipeline, identifying the relevant states or regions of India.
- Assess local climate hazards: Analyze current/projected climate hazards affecting the identified target geography, including their intensity, frequency, and impact.
- Evaluate vulnerability reduction: Determine whether and how the investment reduces the exposure of identified beneficiaries or assets to the specific hazards and the additionality of the realized resilience.

To measure these impacts, CEF will develop investment-specific impact assessments. These will prioritize metrics that are both feasible for target companies to measure and aligned with the UNEP-FI framework requirements for qualifying as adaptation impact in the pre-investment period. Post-investment assessment will also include climate-risk exposure for planned expansion, scaling, supply chains, manufacturing, and distribution.

Additional Impact: Beyond mitigation and adaptation outcomes, CEF will also measure impact across the themes presented in the table below.

Table 7: Impact themes and sample KPIs

Theme	Sample KPIs
Job creation	• Net jobs created • Quality of jobs created (per Upaya framework)
Air quality	• Pollution intensity per output unit • % reduction in pollution v. incumbent
Water usage	• % reduction in water use v. incumbent • Liters of water used in production
Gender Inclusion	• Wage differentials for employees at same level • Gender diversity in portfolio company leadership team

5.1.1 ASSESSING AND MANAGING CLIMATE RISK

Understanding that its portfolio companies will be exposed to physical climate risks such as extreme heat, water scarcity, flooding, and other hazards, CEF will work with potential investee companies to assess, disclose, and manage their climate risk exposure. To support this, CEF built out a Resilience and Risk Management Policy for pipeline development and management. Criteria include factory and site location, worker conditions and safety, business continuity and disaster recovery plans, and governance/reporting structures.

This focus on building portfolio company resilience and insurability prepares investments to take on debt by lowering the perceived risk profile of each company, strengthening their ability to withstand and recover from shocks, and improving their eligibility for financing from banks, insurers, and other capital providers. In practice, this means that CEF's investees are better positioned to secure favorable lending terms, access risk transfer instruments such as insurance, and maintain operations even under stress –

factors that increase both the durability of returns and the long-term attractiveness of the portfolio to investors.

5.2 PRE-INVESTMENT IMPACT MODELING PROJECTIONS

Based on its projections, CEF plans to mitigate 15 megatons of CO₂e from the atmosphere over the fund life (ten years). It modeled this target using the most relevant companies from the previous portfolio (based on sector, type of technology and stage of commercialization) as examples, leveraging the Project Frame guidance for measurement of potential and planned impact, and fund projections on company business growth rates.

CEF will establish a baseline and projections for industry emissions using the GaBi data, with specific adjustments for the Indian context. LCAs conducted by third parties will use the above key equations (**refer to Section 5.1**) to measure potential, planned, and realized mitigation impact.

5.3 PRELIMINARY GENDER STRATEGY

CEF focuses on promoting and maintaining women in leadership roles, setting a target of at least 30% female representation in portfolio company leadership (this is the rate of female participation in the labor market in general and significantly higher than the 11% representation of women in CXO/ Founder/ Co-Founder roles). In alignment with the 2X principles, the fund will formally join the 2X Challenge upon the first close, furthering the fund's commitment to gender equality and inclusion.

At the **portfolio level**, CEF will track key KPIs including:

- Gender diversity in founding team
- Gender diversity in leadership team
- Gender diversity in workforce
- Wage differentials for employees at same level

At the **fund level**, additional KPIs will include:

- Gender diversity in investment team
- Gender diversity in Investment Committee
- % and # of applications received from women-led organizations
- % and # of women-led organizations in portfolio
- % of 2X-compliant portfolio companies at origination and exit

REFERENCES

- Adaptation & Resilience Investors Collaborative. “Adaptation & Resilience Impact: A Measurement Framework for Investors.” United Nations Environment – Finance Initiative (UNEP FI), April 2024. Available at: https://assets.bii.co.uk/wp-content/uploads/2024/04/16171508/Adaptation-and-Resilience-Impact_A-measurement-framework-for-investors.pdf [assets.bii.co.uk+2UNEP FI+2](https://assets.bii.co.uk/wp-content/uploads/2024/04/16171508/Adaptation-and-Resilience-Impact_A-measurement-framework-for-investors.pdf)
- Climate Capital Network. *The India Climate Finance Report 2024*. Available at: [The India Climate Finance Report 2024 PDF](#)
- Climate Policy Initiative. (2024). *Landscape of Green Finance in India 2024*. <https://www.climatepolicyinitiative.org/publication/landscape-of-green-finance-in-india-2024/>
- Climate Transparency. *2022 Climate Transparency Report – India*. Climate Transparency, October 2022. Available at: <https://www.climate-transparency.org/wp-content/uploads/2022/10/CT2022-India-Web.pdf>
- Confederation of Indian Industry (CII). “National Manufacturing Mission Will Serve as a Crucial Step Towards Achieving \$7.5 Trillion Manufacturing GDP by 2047.” *Press Release*, 30 May 2025. Available at: <https://www.cii.in/PressreleasesDetail.aspx?enc=+6hSfwVOd2t0Uj5k1nBcOyQ7W60kLflavJeCxPYZyU>
- Giacobone, Bianca. “Is India the next frontier for climate tech?” Latitude Media, 19 Aug. 2025. Available at: <https://www.latitudemedia.com/news/is-india-the-next-frontier-for-climate-tech/>
- GIC. “Beyond Financing Gaps: Sizing the Decarbonisation Investment Opportunity.” *ThinkSpace*, 13 December 2023. Available at: <https://www.gic.com.sg/thinkspace/sustainability/beyond-financing-gaps-sizing-the-decarbonisation-investment-opportunity/>
- India Brand Equity Foundation (IBEF). “Manufacturing Sector in India.” *Industry Overview*. Accessed 22 October 2025. Available at: <https://ibef.org/industry/manufacturing-sector-india>
- Indian Venture & Alternate Capital Association (IVCA). “Fund In Focus: From Growth to Scale – How Amara Partners is Redefining Mid-Market Investment in India.” *IVCA Insights Blog*, 2024. Available at: <https://www.ivca.in/insights/blogs/growth-to-sale>
- MacroTrends. “India Manufacturing Output.” *Historical Chart & Data*. Accessed 22 October 2025. Available at: <https://www.macrotrends.net/global-metrics/countries/ind/india/manufacturing-output>
- Modern Diplomacy. (2025, June 26). India’s Climate Pathway: NDCs, Green Economy, and Global Leadership. <https://moderndiplomacy.eu/2025/06/26/indias-climate-pathway-ndcs-green-economy-and-global-leadership/>
- Project Frame. (n.d.). Project Frame Methodology. [Project Frame Methodology for Early-Stage GHG Impact Assessment — Frame](#)
- S&P Global. *India Forward Volume 1: Emerging Perspectives*. 19 September 2024. Available at: https://www.spglobal.com/content/dam/spglobal/global-assets/en/special-reports/india-forward/0924_IndiaForwardVolume1.pdf
- UNEP Finance Initiative. (2024, April). *Adaptation & Resilience Impact: A measurement framework for investors*. https://www.unepfi.org/wordpress/wp-content/uploads/2024/04/Adaptation-and-Resilience-Impact_A-measurement-framework-for-investors.pdf
- Upaya Social Ventures. “How We Measure What Matters: A Framework for Measuring Job Quality.” November 15, 2022. Available at: <https://www.upayasv.org/blog/2022/11/15/how-we-measure-what-matters-a-framework-for-measuring-job-quality-by-shruti-goel>

ANNEX 1: TECHNICAL ASSISTANCE SUPPORT ACROSS INVESTMENT STAGES

Table A1.1. Technical Assistance Support Across Investment Stages

Support	Description
Customer segmentation	<u>Early Commercialization</u>: Prioritizing customer segments to match pricing requirements, ability to pay, and scale of demand. <u>Early Growth</u>: Optimize expansion plans including entry into new sectors, international markets, or segments that would require adoption of new business models such as JVs, licensing or franchising or new financing.
Product techno-commercial validation	<u>Early Commercialization</u>: Enabling commercial validations to test product stability both independently and within larger systems and founder understanding of operations, maintenance, and training requirements. Facilitating market-specific testing and obtaining relevant certifications upon completion. <u>Early Growth</u>: Evaluation of add on products, services or features, as may be relevant or necessary to the business growth.
Pricing strategy	<u>Early Commercialization</u>: Determining an optimal pricing strategy by considering production costs, competitor pricing, perceived value, and the target market's willingness to pay. This analysis is specific to business concerns including competition with new high-tech solutions, cheap grey products, commodities, and replacement values. <u>Early Growth</u>: Refinement of pricing strategy within the context of customer financing, price sensitivity and growth opportunity of new markets, and optimization of margins.
Business model and monetization strategy	<u>Early Commercialization</u>: Supporting business to develop a robust growth plan based on both early/ beach head and long-term customer projections. Developing strategies driven by customer needs, price sensitivity, demand, and team capabilities. Examples include ESCO, leasing, Pay-as-models, revenue through credits, etc. Ensure the right models of IP protection are in place. <u>Early Growth</u>: Business model calibration based on pre-growth adoption and new customer segments. Evaluation and negotiation of new business models that accelerate scale such as licensing, franchising, etc.
Distribution & sales strategy	<u>Early Commercialization</u>: Aligning distribution strategy – whether it is direct sales through partners, distributors, or franchisees – with early/ beach head customer base, purchasing processes, the nature of the product (e.g. commodity vs concept sale) as well as team capabilities. <u>Early Growth</u>: Calibrating distribution strategy to align with long-term customer base and monetization strategy. Streamlining processes to create customer pull and/or lower the cost and time of customer acquisition. Support team on upskilling or adding appropriate team capabilities for distribution and product support.
Operations & Production	<u>Early Commercialization</u>: Assessing existing production set up and capacity and aligning with beach head customer requirements.

	<u>Early Growth</u>: Working with the team to enable shift from batch to continual process manufacturing. Aligning sales contracts with a company's ability to add capacity and stress-testing the scalability of the supply chain for key input materials, locking in quantum and pricing, and building sufficient risk mitigation against volatility to ensure long-term viability. Supporting production facility alignment with industry operational best practices and quality standards.
Customer financing	<u>Early Commercialization</u>: Understand customer cash flows and financing (ability to pay, raise or absorb debt) to develop payment mechanisms that align with customer purchasing power. Validating with appropriate financing / insurance partner. <u>Early Growth</u>: Calibrating understanding of customer financing and onboarding all the relevant financing and insurance partners to accelerate customer adoption.
Capital Structure	<u>Early Commercialization</u>: Developing appropriate capital structure to support growth and access the right capital at the right time or dynamically adapt to market conditions. <u>Early Growth</u>: Calibrate business model and capital planning based on business performance and market conditions, with particular focus on enabling access to debt to prevent over dilution or later stage capital raise failure.
Debt Readiness and Bankability	<u>Early Commercialization</u>: Support startups in identifying optimal business models and the capital required to operationalize and scale the model. <u>Early Growth</u>: Enable partnerships between relevant debt providers and startups, working with both parties to establish the business metrics and timelines required to validate the model, ensuring debt funding once the metrics are proven. These partnerships offer valuable expertise on financial structuring, cash flow optimization, and building a strong credit profile, positioning startups to attract debt investors and secure loans as needed throughout their growth cycle.
Partnerships with equity investors	<u>Early Commercialization</u>: Facilitating co-investments where required. Begin early growth conversations and market preparation for follow-on funding. <u>Early Growth</u>: Partner with equity funders across the capital spectrum to bring in relevant and value additive co-funders or follow-on funders, including sharing fund diligence materials and de-risking success plans.

ANNEX 2: MODELING ASSUMPTIONS

Table A2.1. Investment and growth archetype assumptions across the portfolio for the base case

Companies	Investment Archetype	Growth Archetype
Company 1	Growth + Follow on	Medium
Company 2	Comm + External Conversion	Slow
Company 3	Comm + Growth	Medium
Company 4	Comm	Non-converting
Company 5	Comm + Growth	Slow
Company 6	Comm + Growth	Failure
Company 7	Comm + Growth	Failure
Company 8	Growth + Follow on	Failure
Company 9	Comm + Growth	Failure
Company 10	Comm + Growth	Failure
Company 11	Comm	Non-converting
Company 12	Comm + Growth	Fast
Company 13	Growth + Follow on	Fast
Company 14	Comm	Non-converting
Company 15	Comm + Growth	Hypergrowth

Table A2.2. Investment and growth archetype assumptions across the portfolio for the downside case

Companies	Investment Archetype	Growth Archetype
Company 1	Growth + Follow on	Medium
Company 2	Comm + External Conversion	Failure
Company 3	Comm + Growth	Medium
Company 4	Comm	Non-converting
Company 5	Comm + Growth	Failure
Company 6	Comm + Growth	Failure
Company 7	Comm + Growth	Failure
Company 8	Growth + Follow on	Failure
Company 9	Comm + Growth	Failure
Company 10	Comm + Growth	Failure
Company 11	Comm	Non-converting
Company 12	Comm + Growth	Fast
Company 13	Growth + Follow on	Fast
Company 14	Comm	Non-converting
Company 15	Comm + Growth	Hypergrowth