



Private Adaptation
Finance

Funding Landscape and Opportunities for SMEs and Startups in Pakistan's Climate Sector

Discussion Paper



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Executive Summary

Pakistan offers a microcosm of the challenges and opportunities facing climate-adaptation finance across developing markets. After a record-breaking USD 365 million in venture capital (VC) inflows in 2021, funding fell by ~90 % through 2024 as global liquidity tightened and US aid support withdrew.¹ Yet the diversity of instruments now available - ranging from blended-equity funds to Islamic finance and revenue from voluntary carbon credit - shows how Small and Medium Sized Enterprises (SME) and investors can still mobilise capital amid macro headwinds.

1. Equity remains the entry point, but smart structuring is essential:

Equity financing gives investors a direct stake in the business, aligning their returns with the founders'. On that foundation, Pakistan's VC landscape now comprises ~50 funds, each managing about USD 32 million. Impact managers such as Sarmayacar, i2i Ventures and Climaventures channel capital into renewable energy, water treatment and ag-tech, but because most funds are themselves in fundraising mode, a seed-to-Series A hole has emerged. SAFEs and angel syndicates therefore dominate first cheques, while corporate VCs from banks (HBL-Finja) and conglomerates (Engro, Fatima Group) provide strategic follow-ons. Blending catalytic grants or concessional debt with these equity tools can keep early-stage pipelines alive until macro conditions normalise.

2. Debt and hybrids can scale proven adaptation models:

Debt supplies fixed-return funding that must be repaid, whereas hybrids (e.g. convertibles, revenue-based notes) add equity-like features that share upside without immediate dilution. Although venture-debt issuance was only USD 0.64 million in 2024, policy innovations are widening access: the State Bank of Pakistan's collateral-free SME Asaan Finance (SAAF) guarantee facility and the Kamyab Jawan subsidised-loan scheme give banks cover to lend to asset-light SMEs. Finja's mixed equity/debt round shows how convertibles suit fintechs serving smallholder value chains, and the same structure can scale water-efficient irrigation, cold-chain logistics and other adaptation models. Replicating this risk-sharing approach unlocks working-capital lines while limiting dilution and preserving future upside.

3. Islamic finance offers untapped depth for climate assets:

Islamic finance swaps conventional interest for asset-backed sales or profit-sharing contracts that comply with Sharia law, releasing pools of capital otherwise inaccessible to climate projects. Sharia-compliant banking already controls 19 % of Pakistan's banking assets, yet SMEs capture little of it. Murabaha lines fund equipment purchases, Musharaka partnerships share profits on operating assets, and green Sukuk can finance mid-scale infrastructure such as distributed solar and resilient housing. Co-investment platforms between international climate investors and Islamic banks can aggregate projects, reduce transaction costs and unlock up to USD 1 billion of new adaptation capital before Pakistan's planned full transition to Islamic banking in 2027.

4. Public and development capital de-risk first movers:

Public grants, and development-finance institutions (DFIs) provide concessional layers and guarantees that absorb early losses and attract commercial investors. Programmes such as the Pakistan Startup

Fund (covering 10–30 % of a VC round) and the network of National Incubation Centres bring private angels and funds into pre-commercial ventures. Larger vehicles follow that template: the Green Climate Fund anchored Sarmayacar's USD 40 million blended climate fund with a USD 15 million first-loss tranche, while IFC's equity in i2i Ventures signals external confidence. Karandaaz's GreenFin Innovations couples low-cost debt with technical assistance, giving pilots the runway to prove adaptation revenue models. Syndicating around such structures materially improves risk-adjusted returns.

5. Voluntary carbon markets (VCMs) are a growing non-dilutive revenue source:

VCMs monetise verified emission reductions through tradable credits, delivering cash without surrendering equity or taking on debt. Pakistan's December 2024 Carbon Market Policy Guidelines target USD 250 million in annual VCM revenue; the Delta Blue Carbon project alone has already issued 3.1 million credits worth roughly USD 40 million. Start-ups that embed digital MRV and align with Core Carbon Principles can sign forward-purchase agreements that function as 12- to 24-month working-capital lines, while aggregators lower certification costs for smaller actors. Nature-based solutions - mangrove restoration, regenerative agriculture, efficient cooling - command premium prices and position Pakistan as a blueprint for scalable, high-integrity removals.

Pakistan's experience shows that even amid macro volatility, a diversified toolbox - anchored by blended finance, Shariah-compliant instruments and carbon revenues - can mobilise the patient, risk-tolerant capital required to build climate-resilient economies.

1. Overview

Pakistan's funding landscape for startups - especially in the sustainability and climate-tech sectors - and for small and medium sized enterprises (SMEs) more broadly has undergone significant evolution, marked by phases of rapid growth followed by recent contractions. In 2021 and 2022, venture capital (VC) investments peaked with USD 360 million in 2021 and USD 350 million raised by startups. However, reflecting global economic shifts, funding dramatically dropped by approximately 90% from 2022 to 2024 (as of November 2024).¹ This downturn has persisted into 2025. According to one expert, most local venture capital firms are currently focused on raising their next funds and are therefore not actively deploying capital to startups.² At the same time, the withdrawal of USAID has further limited access to grants and reduced international investor exposure, as USAID had previously facilitated trips and pitching opportunities for startups in the U.S.

This recent stagnation stands in stark contrast to the surge in 2021 and 2022, which was fueled by an influx of both international and local investors, including venture capital funds like Sarmayacar and i2i Ventures, angel investor networks, corporate venture arms, and international DFIs, initially expanded funding availability. Particularly noteworthy has been the growth of dedicated impact-focused funds and blended finance vehicles targeting climate action and sustainability, such as the recent \$40 million blended fund anchored by the Green Climate Fund through Sarmayacar.

The surge was met by the demand, which concurrently intensified, driven by a vibrant entrepreneurial ecosystem focused on fintech, agritech, renewable energy, and sustainability solutions, reflecting both local developmental needs and global climate agendas. As a result, the funding landscape and its available instruments not only be-

¹ Arabnews.pk

² Expert interview with Umair Sheikhon March 30, 2025.

came deeper but also more diverse, now offering instruments, from equity (dominant during peak growth phases through SAFEs), venture debt (emerging to address dilution concerns), government-backed SME schemes (like the SAAF scheme), Islamic finance instruments (Musharaka, Murabaha), and voluntary carbon markets (VCMs), demonstrate varied maturity. Equity financing remains the most preva-

lent, while innovative debt and Islamic financing are gaining traction. VCMs, with the recent regulatory clarity provided by Pakistan's Carbon Market Policy Guidelines, have emerged as promising new channels, potentially reshaping future startup funding dynamics.

1 Explainer: Startup funding stages

Understanding the different funding stages helps investors and entrepreneurs align expectations and strategies at various phases of startup growth. It is differentiated between the following funding stages:

1. **Pre-Seed:** Typically involves funding from founders, family, friends, or angel investors. This stage supports idea validation, initial development, and market research.
2. **Seed:** Early-stage funding from angel investors, accelerators, or early-stage VCs. Funds are used to develop products, initiate marketing strategies, and demonstrate early traction.
3. **Series A:** The first significant round of institutional funding, focused on optimizing product-market fit, expanding operations, and scaling the business model.
4. **Series B:** Funding aimed at substantial growth, market expansion, increased marketing efforts, talent acquisition, and technology enhancement.
5. **Series C:** Capital raised for scaling operations significantly, possibly entering international markets, acquisitions, or preparing for an IPO.
6. **Series D and Beyond:** Additional rounds that occur as needed for further growth, acquisitions, or preparing the company for exit scenarios such as IPO or strategic sale.

Box 1: Startup funding stages

2. Equity Financing

2.1 Equity Financing - How it Works:

The two distinct forms of equity investments in private companies are private equity (PE) and venture capital (VC), differing primarily in their target companies and investment stages. Private equity firms typically acquire ownership of established, mature companies across various industries, aiming to enhance their value through operational improvements before eventually selling them. In contrast, venture capital firms invest in early-stage startups, often in technology, biotechnology, and clean technology sectors, acquiring minority stakes with the goal of nurturing innovation and achieving substantial growth. Additionally, PE firms often utilize both equity and debt in their investments, whereas VC firms primarily deal with equity financing.³

Equity-based venture capital has been the lifeblood of Pakistan's startup growth in the past years. In 2021, Pakistani startups raised a record \$365 million (followed by \$355 million in 2022) amid a surge of VC interest.⁴ However, the ecosystem experienced a dramatic shift, with investments plummeting by 90%, from 2022 to just \$37 million in 2024 (as of November 2024). This decline in funding has profound implications for Pakistani startups. The reduced capital inflow has led to a significant decrease in the number of funded startups. In 2022, the ecosystem witnessed a robust number of 72 deals⁵, but by 2024, only 15 deals were recorded, marking the lowest since at least 2018.⁶ Furthermore, the scarcity of funds has hindered startups from reaching the scaling stage, as evidenced by the meager \$3 million in seed funding attracted in the first half of 2024 - a staggering 92% drop compared to the same period in the previous year.⁷ As of 2025, the

situation has not improved. This contraction underscores the challenges startups face in securing necessary capital to scale operations and expand their market presence, making new funding avenues the more important (see Chapter 3 onwards).

Equity funding involves raising capital by selling company shares to local or international investors. This type of funding requires no repayment and does not accrue interest; instead, investors benefit directly from the company's future profits or any proceeds from a potential sale. Investors, therefore, have a strong incentive to support and actively guide their portfolio companies, often providing critical market insights, valuable networks, and operational expertise. This is different to venture debt, as described in Chapter 3, where investors have no direct 'skin in the game' and primarily seek returns through interest payments and loan repayment, rather than through the company's long-term growth and success.

The increasing popularity of equity investments in Pakistan's startup scene, particularly at early stages, is largely due to simplified investment instruments such as Simple Agreements for Future Equity (SAFEs), which allow startups to secure funding without immediate valuation pressures, streamlining the process and helping attract both local and foreign investors into Pakistan's evolving entrepreneurial ecosystem.

3 Investopedia.com

4 islamabadscene.com

5 Magnitt.com

6 Insights.datadarbar.io

7 tribune.com.pk

SAFEs are an early-stage venture funding instrument that allow startups to secure investment without immediate valuation. Created by Y Combinator, SAFEs grant investors the right to future equity under specified conditions without accruing interest or having a maturity date, making them simpler and more favorable for startups than convertible notes. In capital-constrained markets, SAFEs are particularly attractive as they avoid immediate valuations, providing necessary funding while bypassing valuation pressures. There are different types of SAFEs:

- **Valuation Cap, No Discount:** Sets a maximum valuation for the next funding round with no discount on the future share price.
- **Discount, No Valuation Cap:** Offers a discount on the future share price without setting a valuation limit for the next funding round.
- **MFN (Most Favoured Nation) Clause, No Discount, No Valuation Cap:** No discount or valuation limit is agreed on, but an investor gets the right to switch terms if another investor gets offered better ones later.

For instance, in 2022, Cordoba Logistics and Ventures Ltd. invested Rs31 million in the fintech company Neem Exponential through a SAFE note, highlighting the growing acceptance of such instruments in the country.⁸

Box 2: Simple Agreement for Future Equity (SAFE)

2.2 Angel Investors

Angels are individual high-net-worth investors who typically fund startups at earlier stages (pre-seed/seed) in exchange for equity, usually leveraging instruments such as SAFEs. In Pakistan, angel investment networks have emerged, including local groups and expatriate Pakistanis pooling funds to back startups. Angel investors play a pivotal role in Pakistan's startup ecosystem, providing crucial early-stage capital to emerging ventures. While precise figures are challenging to ascertain, platforms like the Angel Investment Network report over 363,000 registered angel investors globally, with a subset actively investing in Pakistani startups.⁹ The majority of angel investment activity is concentrated in major urban centers, particularly Karachi, Lahore, and Islamabad, where entrepreneurial activity is most vibrant. These cities serve as hubs for innovation, attracting both local and international angel investors seeking promising opportunities. Regarding investment size, angel investors in Pakistan typically contribute between \$10k to \$100k per deal.¹⁰ This range aligns with global standards, reflecting the individual capacity and risk appetite of investors. However, some investors may opt for smaller or larger amounts depending on the startup's potential and their personal investment strategy. Despite the growing interest, challenges persist within Pakistan's angel investment landscape. Fragmented networks and limited access to reliable data can hinder the investment process, underscoring the need for more structured platforms and comprehensive market information to support both investors and entrepreneurs.¹¹

Angel investors tend to care more about the impact of their investments resulting in a support for green and social initiatives that align with their values. For instance, impact angels have funded Sehat Khani (female-led health-tech startup) which in total secured a \$2.7 million Series A funding round in 2023 recognizing both their social impact and business potential.¹² One advantage of angel investors is that they provide mentorship and industry connections beside their capital investment. Their involvement can be crucial for the startup in a market where formal venture funding for very early-stage or unproven concepts is still limited. Startups in the sustainability space often leverage angel funding to validate their model before larger investors come on board.

Platforms for Pakistani startups looking for early-stage investments from Angel Investors include Pak Angels (www.pakangels.com), Angel Investment Network Pakistan (www.angelinvestmentnetwork.com.pk) and Paklaunch (www.paklaunch.com/startups).

2.3 Venture Capital Funds

Pakistan hosts a mix of local and international VC funds targeting tech and impact opportunities. The VC landscape has expanded especially in 2021 and 2022, reflecting a growing interest in the country's startup ecosystem. As of January 2025, there are approximately 50 VC funds operating in Pakistan, collectively managing portfolios that include around 430 companies (entire list of VC funds: <https://tinyurl.com/mr2nhnhh>).¹³ The average Assets under Management (AuM) among Pakistani VC firms is approximately \$32 million, with individual funds ranging from \$4 million to \$60 million.¹⁴

⁸ Dawn.com

⁹ angelinvestmentnetwork.com.pk

¹⁰ Invest2Innovate – Starter Guide to Angel Investing in Pakistan (2024)

¹¹ Invest2Innovate Starter Guide

¹² sehatkahani.com

¹³ For Pakistani, TecSpectrum offers a comprehensive overview of key VC players in the country (<https://tecspectrum.com/happenings/top-vc-firms-in-pakistan>)

¹⁴ ResearchGate

Venture Capital (VC) funds are essential players in the startup funding environment, providing capital in exchange for equity. Understanding their structure and operational model is essential for investors and entrepreneurs alike.

Structure:

- **General Partners (GPs):** GPs are the fund's managers, responsible for investment decisions, portfolio management, and fund operations. GPs possess expertise in specific sectors or stages and actively source and evaluate investment opportunities.
- **Limited Partners (LPs):** LPs are the investors who provide the capital to the fund. They include institutional investors (pension funds, endowments), high-net-worth individuals, and corporations. LPs are passive investors with limited involvement in day-to-day fund operations.

Business Model:

- **Fundraising:** Raising capital from LPs for an investment horizon of up to 15 years, depending on the fund's strategy.
- **Deal Sourcing and Due Diligence:** Identifying promising startups and conducting thorough evaluations of their business models, market potential, and management teams.
- **Portfolio Management:** Actively supporting portfolio companies through strategic guidance, network access, and operational assistance.
- **Exits:** Generating returns by facilitating exits through acquisitions by other firms or Initial Public Offerings (IPOs)

Revenue Streams:

- **Management Fees:** A percentage of the fund's committed capital, typically 2%, charged annually to cover operational expenses. This fee provides a stable revenue stream for the GPs.
- **Performance Fees (Carry):** A share of the fund's profits, usually 20%, earned upon successful exits. This incentivizes GPs to maximize returns for LPs.

Box 3: Venture Capital Fund

A significant portion of these funds concentrate on early-stage investments, including pre-seed, seed, and Series A rounds. Notable examples include Sarmayacar, i2i Ventures, and Fatima Gobi Ventures, which have been instrumental in providing early-stage capital to startups. Additionally, Zayn Venture Capital focuses on early-stage technology-driven startups, particularly those with a fintech orientation.^{15,16} However, despite the presence of these funds, the volume of deals has declined in 2025, according to an expert familiar with the ecosystem. Most local VCs are currently in fundraising mode themselves and have limited fresh capital available for deployment. This has created a temporary gap in early-stage financing, particularly affecting startups seeking seed and Series A funding. The pause in the funding cycle poses a significant challenge for emerging ventures – especially in high-potential areas like sustainability and climate tech.

When capital is available, Pakistani VCs, when they have cash at hand, typically invest in scalable businesses in the area of fintech, e-commerce, logistics, and increasingly in climate tech as well as social enterprises. For example, Climaventures, a \$40 million initiative with Sarmayacar (a leading Pakistan-focused VC) as General Partner, recently secured \$15 million from the Green Climate Fund (GFC) to invest in startups addressing climate challenges.¹⁷ This blended climate-focused fund plans to back ventures in renewable energy, electric mobility, water treatment, sustainable agriculture, and carbon reduction – demonstrating how venture capital is being channeled into sustainability sectors in Pakistan. Another example is Invest2Innovate (i2i) Ventures, an early-stage fund with a mandate to support overlooked founders and impact-focused startups which provided seed financing to Oraan – a women-led fintech startup promoting financial inclusion.¹⁸ With i2i's backing, Oraan scaled to reach over 2 million wo-

men with its services,¹⁹ giving an example of how equity investment can empower social enterprises. Venture capital's "smart money" is especially valuable in Pakistan's nascent environmental sector, as investors often bring domain knowledge (e.g. in solar technology or agri-tech) and help ventures navigate local market challenges.

2.4 Corporate Venture Capital

Corporate Venture Capital (CVC) refers to equity investments made by established companies into startup ventures, driven by a dual objective: generating financial returns and achieving strategic alignment. It enables corporations to innovate beyond their core operations while supporting the growth of early-stage businesses. Although specific data on CVC activity in Pakistan remains limited, there are growing signs that local corporations are exploring the establishment of dedicated venture arms.²⁰

Large Pakistani corporations and banks are beginning to invest in startups as a strategy to foster innovation and gain exposure to new markets. Corporations particularly in energy, agriculture, and finance have shown interest in ventures that complement their business or advance their sustainability goals. For example, in 2021 HBL – Pakistan's largest bank – made a landmark investment of PKR 176 million (~\$1.15 million) into Finja, a fintech startup providing digital lending to small businesses. HBL became the first Pakistani bank to directly invest in a startup, aiming to further financial inclusion for SMEs.²¹ In the environmental area, corporate venture activity is nascent but growing. Strategic investors such as Engro (a conglomerate in fertilizers and energy) have shown interest in agritech and renewable energy

¹⁵ Tecspectrum.com

¹⁶ Zayn.vc

¹⁷ reuters.com; SAP047: Climaventures: Harnessing the Domestic Private Sector Ecosystem for Climate Action in Pakistan

¹⁸ & ¹⁹ ifc.org

²⁰ Mach49 - Venture Driven Growth

²¹ hbl.com

startups,²² while telecom operators (e.g. Jazz, Telenor) support digital innovation through accelerators that often nurture socially impactful startups (like mobile agriculture advisory services).²³ Fatima Gobi Ventures (FGV), a joint venture between Pakistan's Fatima Group and Gobi Partners, actively invests in technology startups across various sectors, including agriculture supply chains and mobility. Notably, FGV has invested in Tazah, a B2B agritech startup focused on addressing inefficiencies in Pakistan's food and agricultural supply chains.²⁴ For sustainability entrepreneurs, partnering with corporations via equity can bring not just money but also pilot opportunities, infrastructure, and market access. The trade-off is that corporates may negotiate significant equity or preferential terms, but if aligned in mission, they can be catalyst investors for scale.

However, CVC can also present significant challenges for startups due to inherent differences in operational dynamics and objectives between large corporations and emerging ventures. One primary issue is the misalignment of incentives; corporations typically have longer decision-making processes, distinct risk tolerances, and strategic

priorities that often do not align with the rapid innovation cycles of startups. This disparity can lead to conflicts, ultimately hindering the startup's agility and responsiveness.²⁵ Startups generally operate with greater flexibility, agility, and less hierarchical structure compared to established corporations. These fundamental differences in operational culture can create friction between the corporate entity and the startup, potentially hindering the latter's innovation potential and slowing down its growth trajectory.²⁶ These challenges underline the necessity for startups to carefully evaluate CVC partnerships, ensuring alignment in expectations, operational styles, and strategic objectives for a mutually beneficial relationship.

While there isn't a single centralized platform exclusively dedicated to connecting Pakistani startups with CVC investors, several venture capital firms and platforms facilitate investments in Pakistani startups, some of which may include corporate-backed funds. For instance, Fatima Gobi Ventures is a notable collaboration between Fatima Group and Gobi Partners, aiming to support the local startup ecosystem.²⁷

4

Explainer: Key Considerations for Finding the Right Equity Investor

- **Alignment of Vision and Goals:** Ensure investors share your startup's mission, growth expectations, and strategic priorities, facilitating long-term collaboration and mutual understanding.
- **Industry Expertise and Network:** Select investors with relevant industry knowledge and strong networks that can actively support business development and open doors to potential partners or clients.
- **Investment Stage Compatibility:** Confirm investors specialize in your startup's specific funding stage (pre-seed, seed, Series A, etc.) to match their risk tolerance and resource capabilities.
- **VC vs. Private Equity:** Venture Capital investors tend to invest in riskier companies making them a suitable financing partner for startups in their first years while Private Equity investors look for firms with a longer track record and stable cash flows.
- **Value Beyond Capital:** Look for investors who provide strategic advice, mentorship, and operational guidance, helping your startup navigate growth challenges effectively.
- **Due Diligence Preparation:** Be thoroughly prepared with financial statements, market analysis, clear business plans, and growth projections to demonstrate professionalism and readiness.
- **Clear Terms and Expectations:** Clearly negotiate investment terms, equity stakes, governance roles, and exit strategies upfront to prevent conflicts and align expectations from the outset.

Box 4: Key Considerations for Finding the Right Equity Investor

²² engro.com

²³ propakistani.pk

²⁴ mystartupworld.com

²⁵ MIT Sloan review

²⁶ Mandalore Partners

²⁷ Fatima Group

3. Debt Financing

3.1 Debt Financing - How It Works:

While equity grabs headlines, debt financing is an important alternative, particularly as Pakistan's startup ecosystem matures. Debt finan-

cing involves startups and SME borrowing capital with an obligation to repay the principal along with interest over an agreed timeframe. Unlike equity, debt does not dilute ownership, but it introduces repayment commitments. Startups and SME often pursue debt financing to preserve equity for future growth or to manage working capital without relinquishing ownership.

5

Explainer: Understanding Interest Structures and Collateral Requirements

Whether you're an entrepreneur seeking flexible financing or an investor evaluating risk and return, understanding the trade-offs between fixed and variable interest rates - as well as secured vs. unsecured loans - is key to navigating venture debt effectively.

Fixed interest vs variable interest rates: Fixed interest loans have a set interest rate (e.g., 20% per annum) on the loan principal. Entrepreneurs benefit from predictable repayments and protection against rising interest rates but face higher costs if market rates decline. Investors enjoy steady, predictable returns but may see lower returns if market rates increase. Variable interest loans adjust rates based on specific factors, either external (e.g market interest rate such as 10% above 1 year US treasury bills) or internal (e.g., revenue or profit generated). Entrepreneurs might pay lower interest if rates or revenues fall but face uncertainty and higher costs if they rise. Investors can earn higher returns if rates or revenues grow but risk lower returns if they decline. A notable example in venture debt is revenue-based interest, where a startup repays a percentage of its revenue as interest, capped at 1.5 to 3 times the initial investment. This structure ensures startups and SME only pay interest when earning, aiding financial planning and business growth.

Non-collateralized vs collateralized: An uncollateralized loan, also known as an unsecured loan, is a loan that does not require the borrower to provide physical assets as collateral. For investors, they provide higher interest rates to offset increased risk and streamline processes with less paperwork. For SMEs and startups, uncollateralized loans are accessible without needing physical assets as collateral, preserving their resources and offering flexibility in fund usage. On the other hand, a collateralized loan, also known as a secured loan, is a loan that requires the borrower to provide physical assets as collateral to secure the loan, reducing the lender's risk. Collateral can take various forms, from company assets like cars or machinery to personal assets like the owner's house or the savings or a group of people (lending groups). Given the risks involved, it is not unusual for the collateral value to exceed 100% of the credit amount being raised. However, collateral alone might not be enough to convince an investor, as its value is dependent on accessibility and liquidity in case of loan default. Thus, successfully raising private debt often requires a thoughtful approach to structuring a solution to this collateral problem, such as using a trust-like entity that holds ownership of the collateral and is qualified to liquidate it if necessary.

Box 5: Understanding Interest Structures and Collateral Requirements

For startups and SME, venture debt offers the advantage of not requiring the relinquishment of ownership or enabling them to bridge funding rounds until they can secure equity deals at higher valuations. Thus, when raising debt capital, companies need to adjust their traditional pitch deck to highlight their cash flow stability and potential collateral. The focus shifts from demonstrating exponential growth to negotiating favorable interest rates and loan conditions. This means that, when seeking debt financing, the emphasis is on financial stability and repayment capability rather than high growth trajectories.

3.2 Venture Debt Landscape in Pakistan

The venture debt market in Pakistan is still in its infancy. In 2024, total capital raised through venture debt was estimated to have reached \$640k, underscoring its limited role in the country's startup financing landscape.²⁸ Reliable data on the number of deals and average ticket sizes remains scarce, further reflecting the underdeveloped nature of this financing tool. This lack of transparency not only signals a nascent market but also highlights the absence of structured mechanisms to support startup growth through debt-based instruments. To understand where Pakistan's venture debt market could head, it's useful to look at more mature ecosystems. In the Middle East and North Africa (MENA), for example, the number of venture debt deals fell from 19 in 2022 to 12 in 2023, but the total value of these deals

rose sharply - from \$202 million to \$757 million. This translated to a sixfold increase in average deal size, from \$10 million to \$63 million.²⁹ While these figures are region-specific, they reflect a broader trend: as ecosystems mature, venture debt becomes more strategic, larger in scale, and integral to startup financing.

In the absence of dedicated venture debt players, traditional financial institutions - such as banks, non-bank financial institutions (NBFIs), and microfinance providers - have cautiously stepped into the space. Relevant actors include Banks like Habib Bank Limited (HBL), United Bank Limited (UBL), National Bank of Pakistan (NBP), Microfinance Institutions like Akhuwat and Kashf Foundation, Development Finance Institutions like the Pakistan Development Finance Company Limited (PDFCL), and Islamic Banks like Meezan Bank and BankIslami. Their involvement, however, remains limited and fragmented, largely constrained by persistent structural and strategic barriers that make venture debt misaligned with their conventional business models. In particular, Pakistani banks have traditionally been reluctant to lend to startups and small enterprises, citing a lack of collateral and the high perceived risk associated with early-stage ventures. Conventional bank loans typically require asset security and come with high interest rates (which climbed as high as 22% policy rate in 2023 amid inflation).³⁰ However, there are initiatives to bridge this gap. The State Bank of Pakistan (SBP) introduced the SME Asaan Finance (SAAF) scheme in 2021 to enable collateral-free lending up to PKR 10 million

²⁸ Statista

²⁹ JADA Fund of Funds Company | JADA | KSA

³⁰ tradingeconomics.com

to small businesses.³¹ SAAF provides banks a refinancing facility and partial credit guarantees, effectively de-risking loans to SMEs that lack traditional collateral. Startups and other eligible SMEs in Pakistan can apply directly through participating commercial banks, which

handle application processing and loan disbursement. While the SBP oversees the scheme, each bank may have its own specific criteria, so it's important to contact individual banks for details.

Example: The Kamyab Jawan Youth Entrepreneurship Program

The government's Kamyab Jawan Youth Entrepreneurship program has offered subsidized loans to young entrepreneurs (including startups) with lower interest and simpler approval, injecting billions of rupees into new small ventures. Eligible applicants for this government initiative need to be aged between 21 and 45 years (with a lower age limit of 18 for IT/E-Commerce-related businesses), and can apply for loans categorized into three tiers:

- Tier 1 (T1): Loans ranging from PKR 100,000 / USD 350 to PKR 1 million / USD 3,500, with a 3% markup rate.
- Tier 2 (T2): Loans above PKR 1 million and up to PKR 10 million / USD 35,000, with a 4% markup rate.
- Tier 3 (T3): Loans above PKR 10 million and up to PKR 25 million, with a 5% markup rate.

The maximum loan tenor is up to 8 years, including a grace period of up to one year. This scheme is designed to provide affordable financing options for establishing new businesses or strengthening existing small and medium enterprises (SMEs), thereby enhancing debt capital availability for small, potentially innovative ventures.³²

Box 6: Example of: The Kamyab Jawan Youth Entrepreneurship Program

3.3 Hybrid & Mezzanine Financing

Hybrid and mezzanine financing are versatile funding solutions that blend characteristics of equity and debt. They provide startups and SME with greater flexibility in capital structuring, enabling them to optimize their financial management while limiting dilution of ownership. Hybrid financing typically combines debt with equity instruments, such as convertible loans, that can transform from debt to equity under predetermined conditions. This approach allows startups and SME to defer valuation until a future equity financing round.

Mezzanine financing, often regarded as subordinated debt, usually involves debt instruments with equity-like features, such as warrants or profit-participation rights. These instruments rank below traditional debt in repayment priority, typically carrying higher interest rates due to increased risk exposure to lenders. Hybrid and mezzanine financing are beneficial for startups and SME seeking capital to fund growth without significantly diluting founder and early investor equity. These financing solutions provide startups SME with vital capital injections when traditional bank loans are unavailable or unattractive due to collateral requirements or inflexible terms. Moreover, the flexibility of mezzanine and hybrid structures can align investor and entrepreneur incentives, offering tailored terms that reflect the startup's growth trajectory and risk profile.

Globally, hybrid and mezzanine financing are growing in relevance. The global mezzanine finance market is experiencing strong growth, projected to rise from \$ 212.58 billion in 2025 to \$ 420.79 billion by 2034, driven by demand for flexible capital and private equity activity.³³ While mezzanine financing is also gaining traction in Asia-Pacific, it remains underutilized in Pakistan, where it accounts for less than 5% of SME credit due to low awareness and regulatory barriers.^{34 35} Anecdotal evidence from deals like Finja's 2022 hybrid round, however, suggests initial investor interest in structured finance solutions that mitigate dilution while offering fixed returns. Finja secured fun-

ding from a UK-based fund (Sturgeon Capital) and HBL in a Series A2 round that combined equity, debt, and off-balance sheet capital.³⁶ The debt portion effectively provided Finja with lendable capital to on-lend to SMEs through its digital platform. By structuring part of the infusion as debt, Finja could fuel its loan book growth without over-diluting existing shareholders.

³¹ tribune.com.pk

³² sbp.org.pk

³³ EINPRESSWIRE

³⁴ [Adb.org](https://adb.org)

³⁵ Amir, Ali, Ahmad (2020)

³⁶ magnitt.com

A convertible loan is a debt instrument that converts into equity under certain agreed conditions. Below is a fictitious but realistic example for a Pakistani startup:

- **Loan Amount:** PKR 20 million / USD 70k
- **Interest Rate:** 8% per annum (payable upon conversion or maturity)
- **Maturity:** 24 months
- **Conversion Trigger:** Automatic conversion at next qualified equity round of at least PKR 50 million / USD 175,000
- **Conversion Discount:** 20% (investors receive shares at 20% discount to the valuation of the next round)
- **Valuation Cap:** PKR 200 million / USD 700k (maximum valuation at which the loan will convert, regardless of the round's valuation)
- **Repayment Option:** If no equity round is closed within 24 months, the startup repays principal + accrued interest, unless both parties agree to extend or renegotiate

Convertible loans such as these allow startups to raise bridge financing during fundraising cycles or early traction phases, offering flexibility while postponing valuation discussions until more data is available.

While dedicated mezzanine finance funds for startups and SMEs remain rare in Pakistan, such instruments are not unusual for venture debt and hybrid equity investors. Startups and SMEs can proactively include convertible loans in their funding strategy and negotiation approach - framing them as part of their financial ask to bridge rounds or accelerate growth.

Box 7: What Could a Convertible Loan Look Like for a Climate-Tech Startup in Pakistan?

4. Public and other non-profit Support

4.1 Government Initiatives

The Pakistani government and international development finance institutions (DFIs) play a significant role in facilitating finance for SMEs and startups, particularly in sectors with public good like sustainability. Public support often comes in forms of grants, subsidized funding, credit guarantees, and technical assistance programs. These can de-risk investments for the private sector and channel capital into under-

served areas such as climate adaptation, social services, and inclusive business models. In recent years, the government has launched specific programs to boost startups and SME. Notably, the Pakistan Startup Fund (PSF) was introduced as a co-investment initiative to encourage venture capital activity. The PSF is structured to provide a grant in a startup's funding round – essentially a matching grant disbursed after a private investor has committed funds. For example, if a green fintech startup secured an investment from a VC, the PSF could contribute an additional grant on top, reducing overall risk and extending the startup's runway. This scheme, supported by Ignite (the national technology fund), aims to attract top-notch local and international VCs by leveraging public money to amplify private investments.³⁷

Example: Grant-Based Funding Options for Startups and SME in Pakistan

Two key programs - the Pakistan Startup Fund (PSF) and the National Incubation Centers (NICs) - offer indirect and direct equity-free funding to support early-stage ventures. Here's how each works and what startups and investors need to know:

Pakistan Startup Fund (PSF) - Eligibility and Application Process: The PSF operates by providing equity-free grants ranging from 10% to 30% of the total investment made by a venture capitalist in a particular funding round. To be eligible for PSF support, the following criteria must be met³⁸: The Venture Capitalists interested in availing its facilities must first register as a PSF partner on the designated portal. PSF then conducts due diligence on the VC and, if approved, adds them to its verified list of partners. Registered VCs can then apply to the PSF for the grant against their investment in a Pakistani startup. The VC is responsible for vetting the startup and assessing its potential. If the application is successful, PSF disburses the grant funds proportionally to the tranche of the investment released by the VC, acting as the 'last cheque' in the funding round.³⁹ It's important to note that the startup itself does not initiate the grant application; instead, the partnering VC undertakes the process.

National Incubation Centers (NICs): Locations and Grant Opportunities: The National Incubation Centers (NICs) are a network of incubators established across Pakistan to nurture startups and SME and engage them with investors and corporations. The NICs are located in Islamabad, Lahore, Peshawar, Karachi, Quetta, Hyderabad, Faisalabad (specialized for agritech) and Rawalpindi (specialized for aerospace technologies).⁴⁰ These centers offer various programs, including seed grants to winning teams in hackathons and accelerators focused on themes like smart agriculture or renewable energy. For instance, NIC Quetta provides seed grants of up to PKR 3 million to eligible entrepreneurs from Balochistan.⁴¹ While specific eligibility criteria may vary between NICs, common requirements include that applicants should demonstrate innovative business ideas with potential for scalability. Additionally, some NICs may prioritize applicants from their respective regions or those participating in programs or competitions aligned with the NIC's focus areas, such as agritech or renewable energy.

Box 8: Example of: Grant-Based Funding Options for Startups and SME in Pakistan

³⁷ Ignite

³⁸ Pakistan Startup Fund

³⁹ Ministry of Information Technology & Telecommunication

⁴⁰ Ignite

⁴¹ NIC Quetta

Such initiatives and financing signals the government's recognition that startups (including those addressing climate and social issues) and SME need patient capital and that a little public funding can crowd-in much larger sums of private funding.

4.2 Development Finance Institutions (DFIs) & Non-Profit Organizations

Pakistan's sustainable development challenges have attracted financing from multilateral and bilateral DFIs like the Green Climate Fund (GCF). In late 2024, the GCF committed \$15 million to Sarmayacar's venture fund as anchor capital to invest in Pakistani climate-tech startups.⁴² This was contingent on Sarmayacar raising additional private capital, effectively blending public climate finance with private VC money.⁴³ The result will be a new \$40 million fund targeting areas like renewable energy, electric mobility, water treatment, recycling, and carbon accounting⁴⁴ – all critical for Pakistan's climate resilience. For entrepreneurs, this means greater availability of dedicated risk capital for green ventures, due to DFI involvement. The International Finance Corporation (IFC) has also strengthened the early-stage funding landscape by taking equity stakes in local venture funds. In 2024, it has taken equity stakes in local venture funds – IFC invested \$3 million in i2i Ventures to boost financing for Pakistani startups (with a focus on women-led businesses).⁴⁵ This not only injects capital but also validates the market, encouraging other investors to follow. Another key player is Karandaaz Pakistan, funded by FCDO and Gates Foundation. Karandaaz operates as a development finance platform that invests in SMEs and infrastructure to promote inclusion and green growth. They have deployed capital into projects ranging from solar power for industries to energy-efficient equipment for utilities.⁴⁶ Karandaaz recently launched GreenFin Innovations (GFI), a program offering concessional financing up to PKR 50 million (~\$170k) plus business development support to startups and businesses addressing climate change.⁴⁷ This is blended finance where Karandaaz provides low-cost loans and mentorship to climate solutions in water conservation, waste management, clean air, etc., to help them scale. For instance, under an earlier Green Challenge Fund, Karandaaz financed pilot projects in plastic recycling and smart irrigation, enabling these innovators to prove their models.⁴⁸

In addition to formal DFIs, globally renowned impact funds and foundations have entered Pakistan. Acumen, a global impact fund, has been investing in Pakistan for over a decade in enterprises providing solar lanterns, clean drinking water, and livelihoods to the poor. It is now launching the Acumen Climate Action Fund (supported by GCF and other donors) which aims to mobilize \$80–90 million for climate adaptation startups in agriculture.⁴⁹

5. Islamic Finance Instruments in Startup Financing

5.1 Islamic Finance Landscape in Pakistan

Pakistan's financial landscape is strongly influenced by Islamic finance principles, with a significant portion of banking assets now Shariah-compliant. Islamic finance has become a significant component of Pakistan's financial sector. As of June 2024, the Islamic Banking Industry (IBI) reported assets totalling PKR 9,689 billion / USD 35 billion reflecting a quarterly increase of PKR 454 billion / USD 1.6 billion. Deposits during this period reached PKR 7,363 billion / USD 26 billion, marking a quarterly rise of PKR 488 billion / USD 1.7 billion. These figures represent year-on-year growth rates of 19.4% for assets and 25.4% for deposits. Consequently, the market share of Islamic banking assets and deposits in the overall banking industry stood at 18.8% and 22.7%, respectively, by the end of June 2024. However, as of June 2022, the share of SME financing within the Islamic banking sector remained relatively low compared to other sectors. For instance, the corporate sector dominated the financing portfolio with a 68% share, while SMEs and agriculture sectors had lesser proportions.⁵⁰

For startups and SMEs, understanding Islamic finance instruments can unlock capital from Islamic banks, funds, and investors who prefer or require Shariah-compliant modes. Key Islamic finance instruments relevant to startup financing include Murabaha, Musharaka (and Mudaraba), and Sukuk.

7

Explainer: Principles of Islamic and Shariah Compliant Financing

Islamic finance refers to financial activities adhering to Islamic law (Shariah). It emphasizes ethical and moral considerations in finance, guided by principles designed to promote social justice and economic fairness. Key principles include:

- **Prohibition of Interest (Riba):** Charging or paying interest is strictly prohibited, as money alone cannot be a source of profit; rather, returns must come from asset-backed or profit-sharing transactions.
- **Asset-backed Financing:** Financial transactions must be tied to tangible assets or real economic activity, ensuring funds are used productively and transparently.
- **Profit and Loss Sharing (PLS):** Investors and entrepreneurs share profits and losses equitably, reflecting a commitment to shared risk and fairness in financial dealings.
- **Avoidance of Uncertainty (Gharar):** Transactions involving excessive uncertainty or ambiguity are disallowed, promoting clarity and transparency in financial agreements.
- **Ethical and Social Responsibility:** Investments must not support businesses involved in activities prohibited by Islam (e.g., gambling, alcohol, tobacco), aligning financial practices with broader societal and ethical goals.

Box 9: Principles of Islamic and Shariah Compliant Financing

⁴² - 44 reuters.com

⁴⁵ ifc.org

⁴⁶ dawn.com

⁴⁷ & ⁴⁸ smefinanceforum.org

⁴⁹ greencclimate.fund

⁵⁰ Islamic Banking Bulletin June 2022

5.2 Murabaha – Cost-Plus Purchase Financing

Murabaha is one of the most common financing modes offered by Islamic banks for businesses. In a Murabaha transaction, the bank does not lend money per se; instead, it purchases an asset or goods on behalf of the client and then sells it to the client at an agreed mark-up, with payment usually in deferred instalments.⁵¹

The mark-up serves as the bank's profit, and since the sale price is fixed, it's not considered interest but rather part of a trading transaction. Murabaha can be regarded as a working capital or trade finance tool. For example, a startup manufacturing eco-friendly home products needs raw materials worth PKR 5 million / USD 180k. Under a Murabaha facility, an Islamic bank would buy those raw materials (perhaps cotton, packaging, etc.) from the suppliers and then sell them to the startup for, say, PKR 5.5 million / USD 200k payable over 1 year. The startup gets the needed materials immediately and pays the bank over time; the bank earns PKR 0.5M as profit. Importantly, the cost and profit are disclosed upfront, and there's no further interest or floating rate.⁵²

For startups and SME, Murabaha can be a good way to finance operational needs once they have some traction. It requires the bank's comfort in the startup's ability to pay instalments, so typically a startup would need to demonstrate reliable cash flows or have guarantors. The advantage is that no equity is given up and no interest is paid, and payments can be structured to match revenue (e.g., monthly or quarterly). Murabaha does require the presence of tangible goods to transact (it's not meant for pure cash needs), so it fits businesses that need to buy something – inventory for a retail startup, laptops for a tech startup's new hires, or a piece of equipment for a recycling facility. The Islamic banks often ask for some collateral or security even in Murabaha (like post-dated checks or a pledge on the goods financed), but under schemes like SBP's Islamic SME refinance, some Murabaha financing can be collateral-free up to certain limits.⁵³

5.3 Musharaka – Equity Partnership Financing

Musharaka (from “shirkah”, meaning partnership) is a profit-and-loss sharing arrangement where the financier actually becomes a partner in the business or project, contributing capital and sharing in profits according to a pre-agreed ratio, and bearing losses in proportion to their capital share.⁵⁴ This is conceptually similar to an equity investment or joint venture. In a Musharaka, since no interest is involved, the startup doesn't incur a debt obligation; instead, the Islamic financier's return comes from the actual profit generated. There are a couple of forms: Permanent Musharaka which is an open-ended partnership and Diminishing Musharaka where the financier's share is gradually bought out by the entrepreneur, often used in housing finance or asset finance.

For startups and SME, Musharaka can be an attractive way to raise capital from Islamic investors who might be uncomfortable with interest-based lending or who want a share in the venture's success. It effectively functions like bringing on a silent partner. For example, an angel investor might structure their investment as a Musharaka: they provide PKR 10 million / USD 350k to a social enterprise startup, and it's agreed that the investor will get 30% of profits annually until the partnership is ended by mutual consent. If the startup makes no profit, the investor gets nothing (and could even lose capital if the company dissolves with losses) – aligning with the Islamic tenet of risk-sharing.⁵⁵ If the business is profitable, the investor could also agree to reinvest some profits to fuel growth. Many Islamic banks also utilize a form of Musharaka for project finance. One challenge is that Musharaka requires a high degree of trust and transparency, as the

profit calculation must be clear and agreed. The upside for startups and SME is potentially interest-free capital and a financier who is incentivized to see the business grow since they share profits.

5.4 Sukuk – Islamic Bonds/Investment Certificates

Sukuk are often described as Islamic bonds, but technically they are certificates of investment that represent ownership in an underlying asset or project, with returns coming from the yield of that asset. Sukuk have seen notable development in Pakistan's financial markets. As of the first quarter of 2022, Pakistan's outstanding Sukuk volumes stood at USD 11 billion, with 82% denominated in local currency. Globally, the Sukuk market has experienced robust growth, with total issuance volumes reaching \$168.4 billion in 2023, reflecting the increasing prominence of Islamic finance. In Pakistan, the government has introduced frameworks to facilitate Sukuk issuance under various modes, including Murabaha and Mudarabah, aiming to diversify financing options and promote Shariah-compliant instruments. It is noteworthy to mention that while Sukuk are theoretically accessible to startups and SMEs in Pakistan, their practical use is largely limited to larger corporations. This is due to high structuring costs, complex regulatory and Shariah compliance requirements, and the need for sizable issuance volumes to justify transaction expenses. For early-stage startups, these barriers often outweigh the benefits. However, scale-ups with proven models and higher capital needs may find Sukuk a viable financing option – particularly if pooled issuance models or intermediary platforms are used to reduce complexity and cost. Thus, Sukuk should be considered more realistically as a mid- to late-stage financing instrument within the Islamic finance landscape, particularly for high-growth SMEs or scale-ups in sectors aligned with sustainability, infrastructure, or impact investing.

Unlike a conventional bond which is a promise to repay a loan with interest, a Sukuk is structured as ownership in tangible assets or a lease or a joint venture, so that the periodic payments to Sukuk holders are profit share or rent, not interest. Sukuk can be a powerful tool to raise large amounts of capital from the Islamic capital market. In Pakistan, Sukuk has been used by the government and some corporates (often for infrastructure or energy projects). For startups and SME, Sukuk is not a near-term instrument (no startup is issuing Sukuk at seed stage), but as companies grow, Sukuk could be a way to finance scale-up projects or specialized ventures in a Shariah-compliant way.

In the sustainability context, Green Sukuk is gaining traction globally. Malaysia and Indonesia have issued Green Sukuk to fund solar parks and other green projects.⁵⁶ Pakistan is looking to follow suit – the SECP's 2021 guidelines cover Green Sukuk issuance, ensuring they meet international green standards and map to SDGs.⁵⁷ With the government's push to convert banking to fully Islamic by 2027, and encouragement of sustainable finance, green Sukuk could become a mainstream source of funding for renewable energy, clean transport, or social infrastructure projects in Pakistan.⁵⁸

51 & 52 bankalfalah.com

53 bankalfalah.com

54 & 55 investopedia.com

56 - 58 tribune.com.pk

- 1. Approach Islamic banks for SME products:** Many have teams for SME and agriculture financing with targets to meet (especially as regulators push Islamic banks to support SMEs). If one bank turns you down for Murabaha or Musharaka, try another with a strong SME focus.
- 2. Consider leasing (Ijarah)** from Islamic leasing companies for equipment or vehicles – it's akin to renting with an option to buy and can be easier than getting a pure loan.
- 3. Keep financial records clean and perhaps consult a Shariah advisor** if planning an innovative structure. If you propose a novel financing structure to an Islamic fund, having it pre-vetted for Shariah compliance will speed up acceptance.
- 4. Use the Islamic angle in marketing** your investment opportunity. For instance, an app that helps zakat distribution or an ethical fashion business could specifically pitch to Islamic investors that their model avoids interest and aligns with Islamic values of ethical trade and social good.

Box 10: Suggested Approach to Islamic Finance Options

6. Voluntary Carbon Markets for Startup Financing

6.1 Voluntary Carbon Markets in Pakistan

At the risk of oversimplification, the path to net-zero emissions must begin with measuring and reporting emissions across an organization's operations and supply chains. This foundational step establishes a baseline, enhances transparency, and helps identify the most impactful areas for intervention. Once the carbon footprint is clearly understood, the next step is to reduce emissions by improving ener-

gy efficiency and minimizing waste across the value chain. This may involve optimizing processes, upgrading infrastructure, or adopting circular economy practices. For remaining energy needs that cannot be avoided or reduced, organizations must switch from fossil fuels to low- or zero-carbon alternatives. Common strategies include electrifying operations, sourcing renewable energy, or transitioning to green hydrogen and synthetic fuels. Yet even with the most ambitious efforts, some emissions are unavoidable. That's where offsetting and carbon removal come into play. Through mechanisms like Voluntary Carbon Markets (VCMs), organizations can invest in certified projects that compensate for residual emissions - completing the journey toward net zero in a credible and climate-aligned way.

REACHING NET-ZERO

4 Steps - simplified!

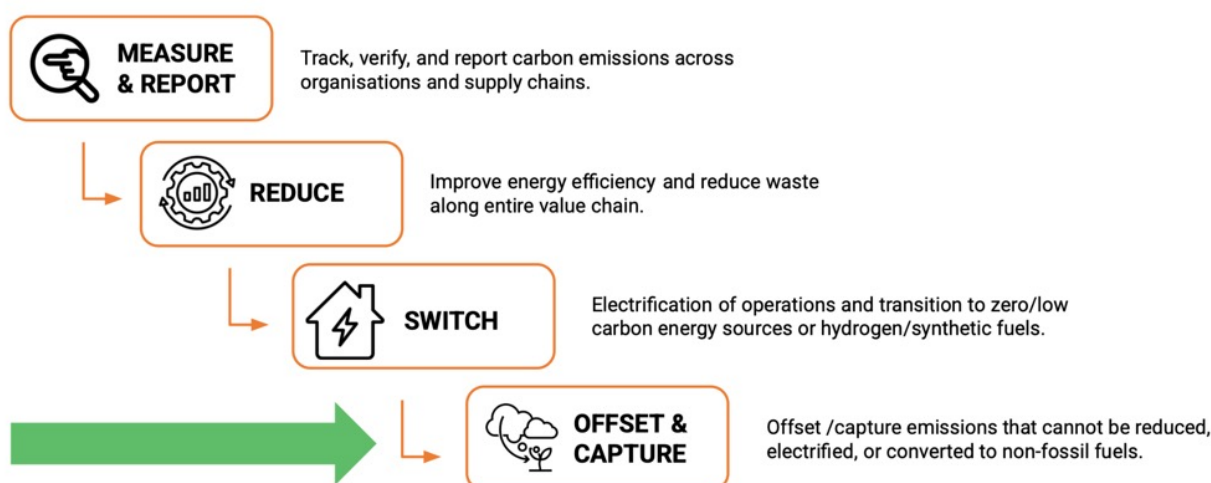


Figure 1: Journey toward net zero

As global climate goals accelerate, VCMs are emerging as a promising - yet still underutilized - avenue for startup financing, especially in developing economies like Pakistan. These markets provide a flexible mechanism for early-stage ventures to monetize climate-positive activities by generating and selling carbon credits, creating new pathways for non-dilutive revenue generation.⁵⁹ To understand the potential of VCMs, it is essential to distinguish them from Compliance Carbon Markets (CCMs). CCMs are government-regulated systems that require specific high-emitting industries - such as energy, aviation, and manufacturing - to obtain carbon allowances or credits in order to offset their emissions. One prominent example is the EU Emissions Trading Scheme (EU ETS), which caps emissions and allows companies that stay below their limits to sell excess allowances to others. This creates a financial incentive for emissions reductions and has become a central feature of many national and international climate strategies. In 2022 alone, the global value of CCMs reached an estimated EUR 865 billion⁶⁰, underlining their scale and institutional maturity.

VCMs, by contrast, function outside such regulatory mandates. They enable individuals, companies, or organizations to voluntarily purchase carbon credits - often to fulfil internal ESG goals, strengthen sustainability branding, or demonstrate progress toward net-zero targets. Though significantly smaller in scale - valued at approximately EUR 2 billion globally - VCMs play a crucial complementary role by channelling private capital into climate mitigation projects that may not qualify under compliance frameworks. These include initiatives in reforestation, renewable energy, regenerative agriculture, and waste management, many of which are highly relevant in the Pakistani context.⁶¹ The flexibility of VCMs makes them particularly accessible to startups and SMEs, which often face barriers in accessing traditional finance or navigating the bureaucracy of compliance markets. For climate-tech ventures in Pakistan, participation in VCMs offers a viable non-dilutive financing mechanism that also aligns with international sustainability trends. By integrating carbon asset generation into their business models, startups and SME can unlock new revenue streams while contributing to global decarbonization efforts.

Additionally, the potential of VCMs in Pakistan is beginning to materialize through both policy support and market activity. In December 2024, the Pakistani government approved the Carbon Market Policy Guidelines, which aim to establish a regulatory framework to ensure transparency, environmental integrity, and investor confidence for both, VCMs and compliance markets alike.⁶² The policy aims to attract substantial investment into low-emission development projects across sectors such as energy, agriculture, waste management, and forestry, thereby creating market incentives for startups and SMEs to engage in emission reduction initiatives.⁶³ Pakistan's total VCM potential has been estimated at over \$250 million annually, with significant room for growth as verification infrastructure and institutional capacity improve.⁶⁴

There are already 27 registered carbon offset projects in Pakistan under international certification standards, many of which focus on afforestation, renewable energy, and cookstove distribution. One standout example is the Delta Blue Carbon (DBC-1) project in the Indus Delta region, which has generated over 3.1 million verified carbon credits to date. These credits were sold on international markets for an estimated \$40 million, demonstrating the revenue-generating potential of well-designed carbon projects. Another successful model is the work by Indus Earth Trust, which deployed nature-based solutions like afforestation and regenerative agriculture to create

marketable credits while building community resilience and livelihoods. However, carbon markets are still evolving, and price volatility can affect planning. Average prices for voluntary carbon credits range widely - from \$5 to \$20 per tonne of CO₂, depending on project type, location, and certification. Nature-based solutions (e.g., forestry and soil carbon) and community-level interventions often command a premium, while renewable energy projects face downward pressure due to oversupply in some registries.⁶⁵

6.2 Voluntary Carbon Markets - A Practical Guide for Startups and SME

For startups and SMEs working in climate-related sectors, Voluntary Carbon Markets (VCMs) are increasingly emerging as a strategic opportunity - not only for climate impact but also for financial sustainability and growth. By generating and selling carbon credits, startups and SME can access non-dilutive funding, enhance their credibility, and align more closely with the expectations of institutional funders, donors, and impact investors.

VCMs are particularly valuable for ventures that face challenges in securing traditional financing. Early-stage climate innovations often have long return horizons, uncertain regulatory conditions, or require proof of concept before commercial uptake. Carbon finance can provide essential funding without requiring equity dilution or incurring debt, allowing founders to preserve ownership and strategic control. Moreover, the added revenue from carbon credits can significantly improve the financial viability of pilot projects that might otherwise struggle to attract early support. Participation in VCMs can also build reputational capital. By aligning with internationally recognized verification standards - such as Verra's Verified Carbon Standard (VCS) or the Gold Standard - startups and SME gain credibility in the eyes of global stakeholders. This can open doors to partnerships with governments, international donors, and ESG-conscious investors. Additionally, by structuring their models around verifiable climate benefits, startups and SME align themselves with key global priorities such as the UN Sustainable Development Goals (SDGs) and net-zero strategies - both of which are increasingly driving investment decisions. However, not every sustainability initiative qualifies automatically for carbon credits.

Understanding the demand side of carbon markets is just as critical as understanding supply. Startups and SME entering the VCM space should be aware of who their potential buyers are. Most credits are currently purchased by multinational corporations with public net-zero commitments, such as Microsoft, Shell, and Unilever (a list of the 2,000 largest publicly-traded companies globally by revenue, along with their Net Zero strategies, is available here: <https://zerotracker.net>). These buyers are increasingly seeking high-quality, verifiable carbon removals to meet internal decarbonization targets or compensate for hard-to-abate emissions. Notably, there is a growing shift in buyer preferences - from lower-cost avoidance credits to carbon removal and nature-based solutions that also deliver co-benefits (like biodiversity, gender equality, or livelihoods). Platforms like Climate Impact X (www.climateimpactx.com) and Puro.Earth (www.puro.earth) cater to this new demand by curating high-integrity projects. This evolving landscape presents opportunities for climate-focused startups and SME that can meet the rising bar of buyer expectations.

⁵⁹ World Economic Forum

⁶⁰ Statista 2022

⁶¹ Carbon Containment Lab

⁶² UNEPCCC

⁶³ Ministry of Climate Change & Environmental Coordination

⁶⁴ & ⁶⁵ KRN Research, 2024

Broadly, carbon credits fall into four categories, each with specific characteristics and market dynamics. Nature-based credits are generated from ecosystem-based projects such as reforestation, afforestation, and wetland restoration. These credits sequester carbon through natural processes and are often attractive to buyers interested in biodiversity and social co-benefits, though they typically require longer timelines and robust monitoring. Technology-based credits, on the other hand, are derived from innovations such as renewable energy installations (solar, wind) and emissions-trapping technologies in industrial processes. These projects are often easier to scale and verify, but can face more competitive pricing due to higher supply. Avoidance-reduction credits come from interventions that prevent emissions from occurring - like switching from coal to solar power or distributing improved cookstoves that reduce deforestation. While these projects can be cost-effective and scalable, eligibility depends

on proving that emissions would have occurred in the absence of the intervention. Finally, removal-sequestration credits represent some of the highest-quality credits in the market. These are generated by technologies or methods that physically remove carbon dioxide from the atmosphere, such as direct air capture with long-term storage or biochar application. Given their durability and climate integrity, these credits often command premium prices and are in growing demand from companies with ambitious net-zero targets. However, what all carbon credit types have in common - regardless of whether they are nature-based, technological, avoidance-focused, or involve direct removal - is the fundamental criterion of “additionality.” This means that the emissions reductions or removals generated by the project must go beyond what would have happened in a business-as-usual scenario.

9

Explainer: The issue of “Additionality” and what qualifies for Carbon Credits

One of the core principles that determine whether a project is eligible to generate carbon credits is “additionality.” This refers to whether the emission reductions or removals from a project are beyond what would have happened in a business-as-usual scenario.

The concept of additionality is critical because it underpins the environmental integrity of the entire carbon market. If projects are incorrectly labeled as additional when they would have happened anyway (e.g., a renewable energy project that was already economically viable), then the carbon credits generated are not actually offsetting emissions elsewhere. This is the root of many greenwashing accusations: companies may purchase such credits and claim carbon neutrality without delivering real climate benefits.

In response, most registries now require rigorous baseline assessments, financial viability tests, and third-party audits to ensure additionality. Furthermore, beyond just emissions impact, co-benefits - such as improved livelihoods, biodiversity conservation, gender equity, and health outcomes - are increasingly being emphasized in the evaluation of carbon projects. Standards like the Gold Standard and Verra’s Sustainable Development Verified Impact Standard (SD VSta) incorporate these broader impacts, recognizing that truly sustainable carbon projects must contribute to both climate goals and the well-being of communities involved.

Box 11: The issue of “Additionality” and what qualifies for Carbon Credits

Despite the promise of Voluntary Carbon Markets, startups and SME must be aware of growing scrutiny around the environmental integrity of carbon credits. Several high-profile investigations have revealed cases of overstated baselines, double counting, or credits being issued for projects that would have occurred without carbon finance - undermining trust in the system. Projects relying on avoided deforestation, in particular, have faced criticism due to challenges in proving permanence and preventing leakage.

In response, a range of initiatives has emerged to improve transparency and accountability in VCMs. The Integrity Council for the Voluntary Carbon Market (ICVCM) has introduced a “Core Carbon Principles” framework to guide high-integrity crediting practices.⁶⁶ Similarly, the Voluntary Carbon Market Integrity Initiative (VCMI) helps ensure that carbon credit claims made by buyers are credible and aligned with science-based targets.⁶⁷ Startups and SME developing carbon projects should monitor these reforms closely and aim for compliance with emerging best practices. Startups and SME interested in developing carbon credit-based revenue streams should begin by assessing whether their project is eligible under existing carbon standards. Engaging early with verification methodologies is key, as is developing a plan for robust data collection and reporting. Where individual projects are too small to meet threshold requirements, startups and SME may consider aggregating their projects through carbon developers or cooperatives.

Startups and SME that lack the capacity to manage end-to-end certification can engage with carbon project developers or aggregators who bundle multiple smaller projects into scalable programs. These

intermediaries handle key tasks such as methodology selection, Monitoring, Reporting, and Verification (MRV) design, registration, and credit sales - typically in exchange for a share of revenue or future credits. In South Asia, organizations like South Pole (www.southpole.com), myclimate (www.myclimate.org), and VNV Advisory (<https://www.vnvadvisory.com>) offer such services. While working with aggregators can reduce complexity and upfront costs, startups and SME must carefully negotiate ownership rights, profit-sharing terms, and long-term commitments. These partnerships work best when project developers offer not just certification expertise, but also market access and technical guidance tailored to the startup’s sector.

At the heart of this process lies a critical operational challenge: Monitoring, Reporting, and Verification (MRV). Entering the VCM space requires strict adherence to MRV protocols, which ensure that climate claims are both credible and auditable. Startups and SME must select a relevant certification standard (e.g., Verra or Gold Standard), design their interventions in line with accepted methodologies, and work with accredited third-party verifiers. This process, while essential for trust and transparency, can be resource-intensive - particularly for early-stage companies. Emerging digital MRV (dMRV) tools are beginning to transform how climate projects are measured and verified. These technologies include satellite imagery, remote sensing, IoT sensors, and AI-driven data analytics - all designed to reduce the time, cost, and subjectivity involved in verification. For instance, platforms like Open Forest Protocol (www.openforestprotocol.org) use blockchain and drone imagery to verify forest-based credits, while Pachama (www.pachama.com) combines satellite data and machine learning to monitor forest carbon projects. Startups and SME can ex-

⁶⁶ <https://icvcm.org/>

⁶⁷ <https://vcmintegrity.org/>

plore integrating dMRV tools from the outset to strengthen project transparency and potentially reduce costs. These technologies are particularly valuable in Pakistan, where the pool of accredited local MRV professionals is still limited. To reduce the MRV burden, platforms and organizations such as the Karachi Research Network (KRN) in Pakistan are emerging to support SMEs and startups with capacity-building and technical guidance throughout the project development and registration process.⁶⁸

The costs and duration for certifying carbon offset projects can vary significantly based on factors such as project type, scale, complexity, and the chosen certification standard. While specific figures are not always publicly detailed by certification bodies, the process typically involves several stages where each stage incurs costs and requires time to ensure compliance with the selected standard's methodologies and requirements.⁶⁹ Given these variables, it's advisable for startups and SME to consult directly with certification bodies or experienced consultants to obtain tailored estimates based on their specific project parameters. Thus, startups and SME should plan with high upfront costs and the timelines can be prohibitive for early-stage startups, particularly those without venture capital support. Recognizing this challenge, several international programs have emerged to subsidize and de-risk the certification process. A notable example is the Carbon Credit Accelerator (ACRA), which provides financial and technical support to project developers in the Global South. ACRA offers targeted funding for project feasibility, methodology selection, and early-stage certification expenses - helping projects overcome cost barriers and advance toward market entry.⁷⁰ Although not yet Pakistan-specific, ACRA's model is highly relevant for climate-tech ventures in South Asia and could be replicated or expanded through partnerships with local institutions.

Pakistani startups and SME seeking to certify their carbon credits can access several platforms and programs designed to facilitate this process. One is the Ahya's Tawazun Marketplace - an AI-enabled platform that ensures transparency in purchasing voluntary carbon offsets. Its marketplace, Tawazun, integrates registries and local banks, simplifying the certification and trading of carbon credits for startups and SME.⁷¹ A second platform is Climate Impact X (CIX) - a marketplace featuring a wide range of quality carbon projects globally. While not exclusive to Pakistan, it provides a platform for startups and SME to buy and retire quality carbon credits, facilitating engagement in carbon markets.⁷²

Startups and SME generating and selling carbon credits should also be aware of potential legal and tax implications. While the Carbon Market Policy Guidelines in Pakistan set out a framework for market participation, there is currently limited clarity on how carbon credits are taxed - whether as tradable assets, non-operating income, or services. Founders should consult local tax advisors to understand how carbon revenue will be treated under Pakistani law, especially in relation to income tax, VAT, and cross-border transactions.

Moreover, there may be restrictions or reporting requirements tied to foreign buyers or platforms. Establishing legal ownership over issued credits and maintaining clear documentation is essential to avoid future disputes or audit issues. As the market matures, clearer regulatory guidance is expected, but early adopters must proceed with caution.

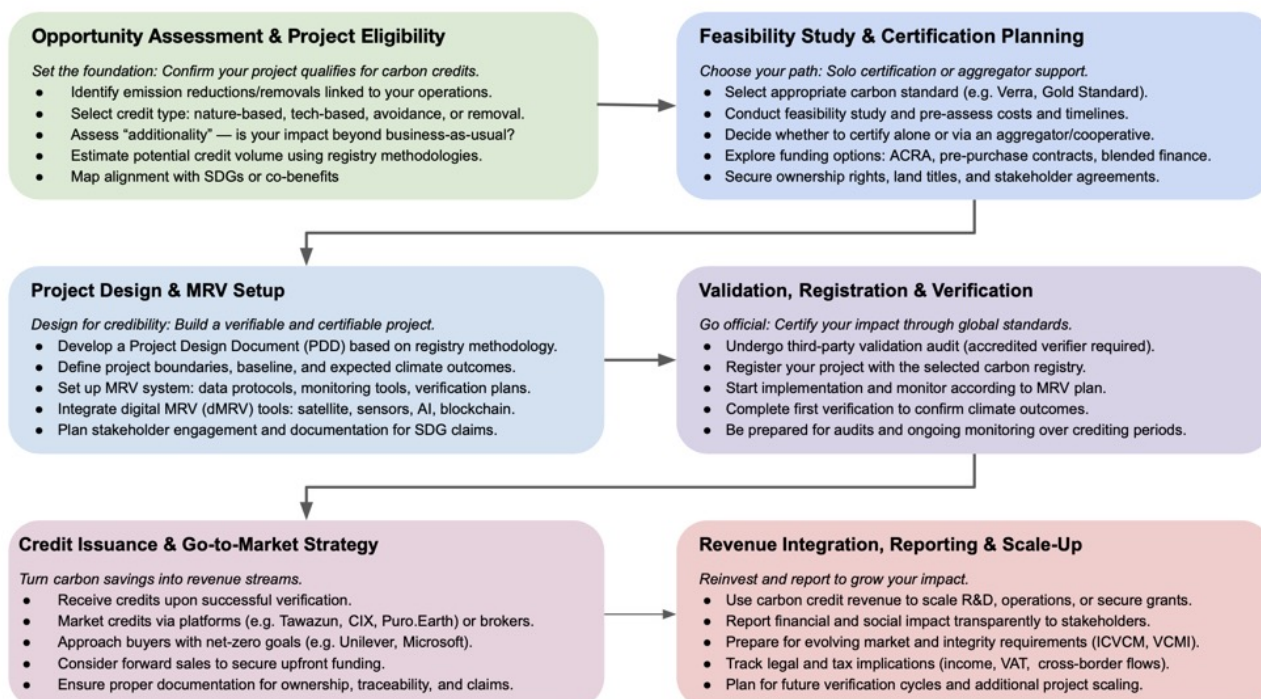


Figure 2: Voluntary Carbon Markets: Practical approach for SMEs

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69 Gold Standard

70 ACRA Program

71 Ahya.ai

72 climateimpactx.com

6.3 Outlook and Associated Developments

There are also innovative financing models being explored in the VCM space. For example, pre-purchase agreements (forward contracts) allow investors or corporate buyers to commit funds to a startup in exchange for future carbon credits. This model can serve as a quasi-grant or working capital line to initiate projects before revenue is generated. Blended finance structures are also emerging, where donor funding is used to de-risk carbon projects, allowing startups and SME to attract commercial capital based on verified climate outcomes.

Still, challenges remain like high transaction costs, lack of local MRV expertise, and limited awareness among entrepreneurs can slow adoption. In conclusion, voluntary carbon markets offer a powerful opportunity for climate-tech startups and sustainability-focused SMEs in Pakistan. By monetizing environmental impact through carbon credits, startups and SME can unlock new revenue streams, attract blended finance, and enhance their credibility with stakeholders. As regulatory clarity improves and market infrastructure develops, VCMs are poised to become a strategic pillar of climate innovation financing in Pakistan. Forward-thinking entrepreneurs who integrate carbon assets into their models early can gain a competitive edge while contributing to national and global climate goals.⁷³

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