

CLIMATE FINANCE MARKET OPPORTUNITIES

THE ROLE OF SYMBIOTICS IN A FAST-GROWING IMPACT THEMATIC

September 2025

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BACKGROUND & SCOPE

Symbiotics is the leading market access platform for impact investing, dedicated to private markets in emerging and frontier economies. The group offers investment, asset management and capacity building services. Since 2005*, we have originated over 8,200 investments representing more than USD 10.5 billion for 608 companies in 99 countries. We manage an aggregate portfolio of USD 2.8 billion spread across 20 funds and mandates.

Historically, Symbiotics has been focused on social impact but now aims to become a global player in climate finance in emerging markets through debt instruments. With climate finance investments of USD 50–75 million per year since 2021, Symbiotics aims to reach USD 150 million in climate debt investments in 2025. The company will target a mix of financial institutions focused on green loans, as well as green corporates and project finance opportunities.

This report examines and maps the demand for private debt financing in emerging markets, particularly in relation to corporate and project finance activities that deliver positive climate benefits. The overall objective is to describe how we, at Symbiotics, identify and research innovative sectors that offer promising financing prospects for Symbiotics' future origination and investment opportunities. This involves a comprehensive analysis of the risk-return-impact dynamics within these identified sectors, leading to the formulation of strategic approaches for us to engage with counterparties operating in these sectors.

EXECUTIVE SUMMARY

Three main climate verticals

Investment opportunities in climate finance can be categorized into clean energy, sustainable cities and infrastructure, and nature-based solutions. Symbiotics has traditionally focused on direct clean energy lending, which we consider to offer the most promising opportunities. Additionally, we have a diversified portfolio across various climate verticals through financial institutions. However, climate adaptation opportunities remain limited, as they are not yet commercially viable at scale.

Continued focus on clean energy and launch of new verticals

Using a prioritization ranking system, we witness a continued focus on clean energy verticals, particularly C&I solar. Given current market dynamics, Symbiotics considers expansion into emerging sectors such as e-mobility and the waste & circular economy to strengthen and diversify its market position.

Investing through financial institutions (FIs) and corporates

Climate finance opportunities in emerging markets offer a wide range of lending terms and, when combined in a portfolio, a competitive risk, return and impact profile. However, direct lending opportunities in local currency are limited. An alternative could be a dual approach based on corporate and project finance loans, with a focus on high-demand solutions such as refinancing and holding finance.

Development of partnerships

Some climate finance sectors are already well covered by specialized competitors, DFIs, and local lenders. However, there is still room for Symbiotics to focus on underserved geographies and sectors, while building partnerships with stakeholders to increase investment volumes and diversify the portfolio through co-investments.






CLIMATE FINANCE AT SYMBIOTICS

CONCEPTUAL FRAMEWORK

WHAT?

Examples of climate mitigation measures

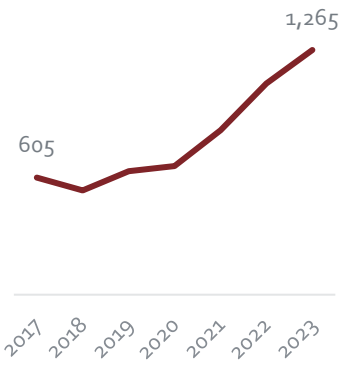
-  Clean energy reduce GHG emissions
-  Energy efficiency reduces GHG emissions
-  Biochar removes GHG emissions

- **Climate finance** is a subset of green finance and an umbrella term for capital allocation in climate mitigation and adaptation solutions.
- **Climate investments** are investments in companies offering a product or a service addressing the causes and or the consequences of climate change.
- **Climate mitigation** aims at avoiding and reducing greenhouse emissions (GHG).
- **Climate adaptation** measures prepare, prevent, or respond to the impact of climate change.

THE INVESTMENT CASE FOR CLIMATE FINANCE

WHY?

Global climate finance investment (USD Bn)



Year	Investment (USD Bn)
2017	605
2018	~580
2019	~620
2020	~650
2021	~750
2022	~950
2023	1,265

Source: Climate Policy Institute (2023)

- **Policy & regulation.** Governments translate their decarbonization commitments into policies and regulations, while also addressing the effects of climate change through strategic investments.
- **Technology developments.** With scale, the cost of climate solutions has come down and technologies are now spreading to emerging markets, even without government support.
- **Consumer & business demand.** Consumers and businesses in emerging markets are most affected by climate change. Some companies are under pressure to decarbonize their operations.
- **Investor demand.** Asset allocators recognize the risk that climate change poses to asset values. They need to manage and disclose climate-related risks and recognize the opportunities presented by climate solutions.

SYMBIOTICS TRACK RECORD

HOW?

25 Climate investments through financial intermediaries, totalling USD 350M

8 Climate investments to companies totalling USD 100M

45 Green bond issuances, totalling USD 445M

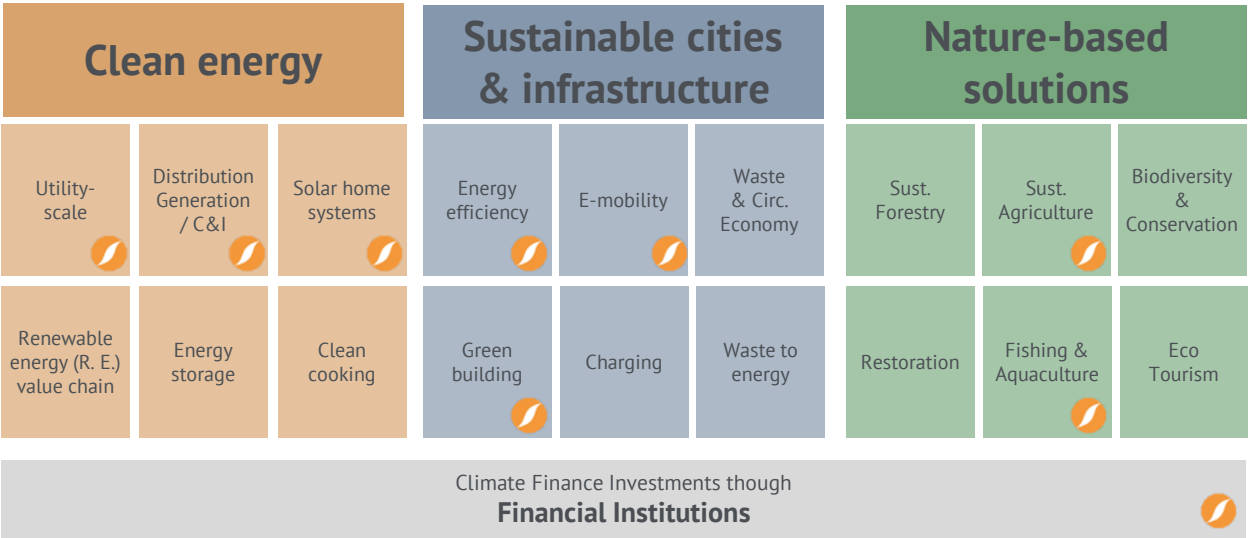
- **Green lending through financial intermediaries.** Symbiotics has provided lending solutions to financial intermediaries, with the proceeds directed towards green assets and businesses across emerging markets.
- **Clean energy lending.** Since 2015, Symbiotics has deployed over USD 100M through corporate loans that provide clean energy solutions to households and businesses.
- **Green bond platform.** To meet the growing investor demand for green assets, Symbiotics developed a green bond framework for its MSME bond platform, enabling ICMA-compliant green bond issuances.

Source: Symbiotics, Data as of 30/40/2025



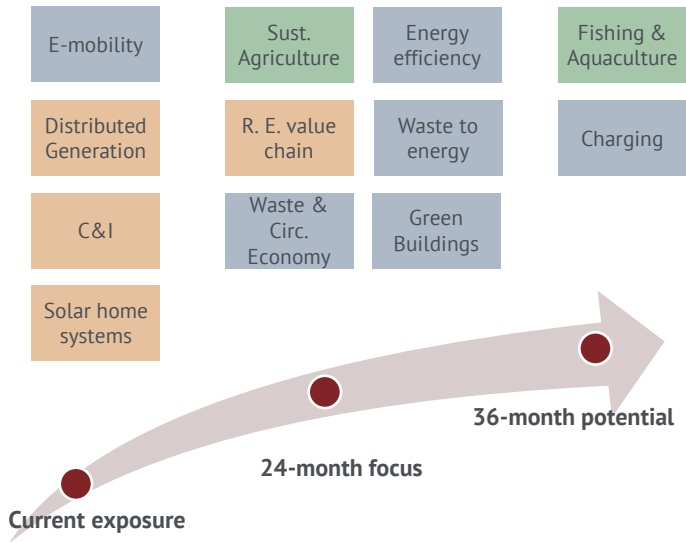
CLIMATE FINANCE VERTICALS

We have identified the following verticals as opportunities based on market research and propose the following typology.



 Symbiotics current exposure

EXPECTED MARKET POTENTIAL



- **Staged expansion** Investing in new verticals requires developing a sector-specific expertise through transaction experience, and not all verticals can be considered at once.
- **Maturing sectors.** While compatible with Symbiotics' investment criteria, many verticals are not mature enough. Forestry remains controversial, energy storage remains nascent, and most nature-based solutions do not offer returns yet that meet the risk-return profile of Symbiotics.
- **De-risking through FIs.** Investing through FIs enable de-risking through diversification. Some nature-based solutions verticals could be considered too risky for direct lending. Exposure to utility-scale projects require large tickets and can also be achieved via FIs.

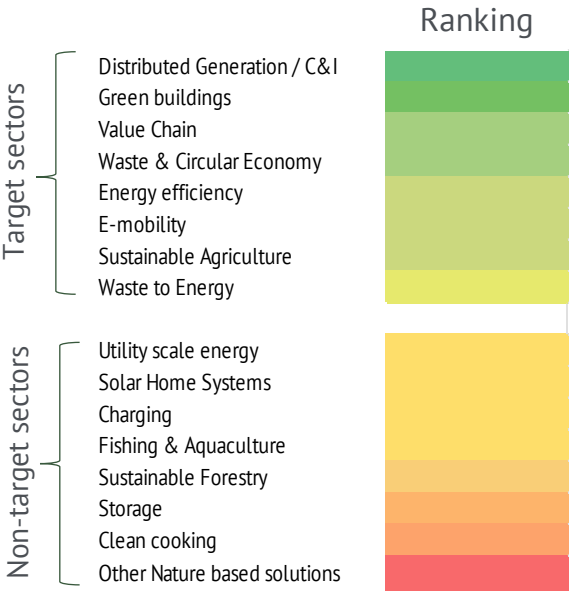


SCREENING MATRIX

Origination Potential Multibillion dollar market size Potential for top-ups	Sector Maturity 5+ years of track record of the sector	Financial performance Established profitability potential
Replicability Found across geographies	Pricing Pricing target of SOFR 6 M + 340 bps (Bond Pays)	Suitability Ticket sizes of USD 5–15 M Tenors of less than 7 years
Private sector led Independent from subsidy and government agencies	Controversy No bad press or strong ESG risk	Local currency Potential for local currency transactions

- Investment attractiveness determined by six main dimensions.** Attractiveness is based on nine dimensions that affect viability of a debt transaction with Symbiotics. These were selected to assess overall sectoral readiness and to align with Symbiotics’ product offering as well as investment objectives. The focus sectors described above consider six most important ones.
- Excluding carbon finance and adaptation.** Some verticals generate most of their revenue from the sale of carbon credits in voluntary markets. We were unable to assess the viability of this carbon finance and have therefore excluded it. Most adaptation measures are either not commercially viable, government-led, or lack a standardized business model for evaluation, and were excluded from consideration.

VERTICALS ATTRACTIVENESS RANKING



- Attractiveness matrix determines ranking.** Based on the nine dimensions, sectors were scored, resulting in the top targeted sectors.
- Target sectors to scale up.** The highest ranking sectors based on the matrix are generally within the clean energy vertical and can leverage Symbiotics’ expertise gained through the portfolio. Additional potential comes from e-mobility, waste management and sustainable agriculture.
- Poor financial performance affect access to energy.** While Symbiotics’ portfolio includes some solar-home-system companies, we believe this sub-sector is currently less attractive than other verticals due to its lack of profitability.



Source: Symbiotics internal analysis

CURRENT PORTFOLIO BY VERTICALS

The climate investment transactions arranged by Symbiotics demonstrate a level of diversification across both verticals and regions. Investing in climate through financial intermediaries offers further diversification and complements direct lending to companies, which, to date, has been primarily focused on clean energy verticals.

		Financial institutions	Corporates
Clean energy	Solar home systems		greenlight planet [™] BAOBAB+
	Utility-scale	Cifi	GEC
	C&I	TLF TUNISIE LEASING & FACTORING	spark ENERGY SERVICES candi. ecoligo FOURTH PARTNER ENERGY
	DG projects	Cifi EVN FINANCE SEYLAN BANK PLC	GEC
Sustainable cities & infrastructure	Green building	Grupo Promerica	
	E-mobility	Namdev Finvest Private Limited MUFIN Amk	
	Energy efficiency	TLF TUNISIE LEASING & FACTORING AraratBank AEB ARMECOMBANK crystal	spark ENERGY SERVICES
Nature-based solutions	Sustainable agriculture	Solidario conmigo PAN ASIA BANK Faces MICROFINANZAS crystal	Samunnati
	Fishing & Aqua culture	BANCO INTERNACIONAL BBVA CO	



SUB-SECTOR BRIEFS FOR CORPORATE LENDING

This section provides market insights into the sub-sectors of interest in the verticals Clean Energy, Sustainable Cities and Infrastructure and Nature-Based solutions.

We prioritize which verticals Symbiotics could address first, given the large number of opportunities available. We believe that the following have a strong potential for direct lending:

Priority 1

- C&I solar
- Distributed generation

Priority 2

- Waste & circular economy
- E-mobility

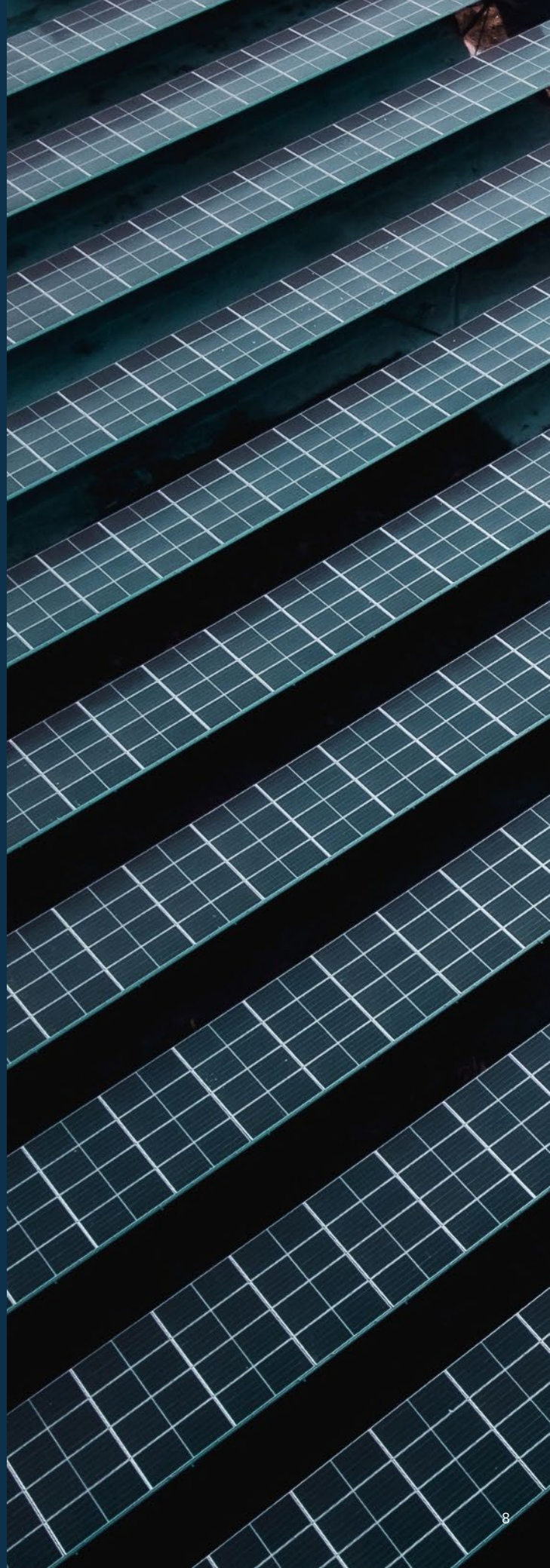
Priority 3

- Value chain
- Green Buildings
- Sustainable Agriculture

For each of these sectors, we propose an investment strategy based on the market environment and Symbiotics' context.

In certain sectors it may be more relevant for Symbiotics to engage through FIs due to the small size or relative risk of the sectors. This could be the case for fisheries, forestry, energy efficiency and utility-scale renewable energy projects.

Although other sectors may offer investment opportunities in the short and medium term, we have deliberately omitted them from the list as we do not believe they can generate achieve high origination volumes over the next 12 months.



COMMERCIAL & INDUSTRIAL SOLAR



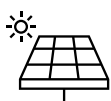
STAKEHOLDERS



Lender funds the construction costs



Developer builds and owns the projects



Project installed on clients' premises



C&I client with high energy demand

GEOGRAPHIES



Global business model.

Mainstream across regions. Key countries include **India, Vietnam, Turkey, Colombia, Chile, Kenya, and South Africa.**

IMPACT



Supporting the clean energy transition. C&I solar increases the share of renewables in the country's energy mix.

BUSINESS MODEL

- **Standardized product.** Product consists of solar systems of **up to 5 MWp** powering a business to access energy, reduce energy costs and hedge against energy inflation.
- **Project portfolios.** Sponsor builds and operates portfolios of projects with long-term contracts (PPA or leases for 10+ years) signed with C&I client for little or no upfront cost and offering immediate energy savings.
- **DevCo / AssetCo model.** Development companies seek to secure new clients and sign contracts allowing the construction of the projects. AssetCos are SPVs hosting the projects during construction and operation.

MARKET TRENDS

- **Sustained growth.** C&I solar has experienced robust annual growth and is projected to sustain an upward trajectory. (*Global Market Insights, 2025; NREL, 2024*)
- **Fuelled by energy inflation.** The global energy crisis following the Ukraine war pushed C&I customers to adopt rooftop solar to hedge higher electricity prices (*EIB, 2024*). In some countries, rooftop solar can also complement the grid where blackouts are frequent.
- **Increased support from local banks.** Growth of business model attracts local financiers, especially banks who can offer long-term and local currency debt.
- **Local players lack access to capital.** While top tier companies with institutional shareholders enjoy diversified funding sources, smaller local players face challenges in accessing capital.
- **Enabling regulation.** Emerging markets have seen the adoption of favorable policies, such as net metering and billing schemes, which, combined with tax rebates, are key enablers for the sector's development.
- **Diversification of product lines.** Innovation arises from combining battery storage to combat blackouts and creating flexible contracts that cater to clients' needs.

COMMERCIAL & INDUSTRIAL SOLAR

KEY PLAYERS



Regional developers. Most companies operate in a few key countries and a single region where they can have better pricing power through strong networks. A few companies operating across several regions and catering to global corporates.

ATTRACTIVENESS MATRIX

Priority 1 vertical
for Symbiotics

Origination potential	Sector maturity	Fin. performance
2-year expected deal volumes of USD 50 to 100M	Growth sector with 5+ year of track record	Developers are loss-making ; AssetCos are profitable
Replicability	Pricing	Suitability
Business model is mainstream across geographies	SOFR 6M + 250-500 bps	Tenor is a limitation for Symbiotics
<div> <div></div> very attractive <div></div> medium attractive <div></div> not attractive </div>		

SPOTLIGHTS

- India
- Corporate finance

- Mauritius
- Project finance

- Multi-country
- Project finance

- Multi-country (Chile, Costa Rica, Panama)
- Project finance

- Colombia
- Project finance

SYMBIOTICS INVESTMENT STRATEGY



Portfolio growth options through differentiated solutions

- **Diversify portfolio.** Add one investee in each key region to diversify exposure and position Symbiotics as a leading investor, especially for emerging mid-sized companies.
- **Support investees' growth.** Top-up current investees to support the growth of their portfolio as they demonstrate local leadership.
- **Focus on unattended segments.** Offer solutions which are scarce in the market such as refinancing to AssetCos and mid-term financing to holding companies.



DISTRIBUTED GENERATION



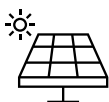
STAKEHOLDERS



Lender funds construction cost of one or two specific projects



Developer secures permits, owns, and operates the projects



Projects are installed away from urban centres and grid connected



Utility company purchases power at pre-agreed price

GEOGRAPHIES



Global business model.

Mainstream across regions. Key countries include **India, Vietnam, Colombia, Chile, Brazil, Kenya, and South Africa.**

IMPACT



Supporting the clean energy transition. Distributed energy projects increases the share of renewables in the country's energy mix.

BUSINESS MODEL

- **Standardized model.** Solar, wind, and hydro projects of 5 to 25 MWp powering either a corporate or selling electricity to a utility company via the grid.
- **Project portfolios.** Developer/Sponsor develops, owns and operates portfolios of projects with long-term contracts (Power Purchase Agreement of 15+ years) with corporate or utility company. Engineering Procurement Construction (EPC) company sources equipment and builds the project. Permitting and feasibility studies are lengthy.
- **DevCo / AssetCo model.** Development companies seek to secure new land and sign contracts allowing the construction of the projects. AssetCos are SPVs hosting the projects during construction and operation.

MARKET TRENDS & OPPORTUNITIES

- **Strong growth projections.** The distributed generation market size was valued at USD 349 billion in 2024 and is projected to grow to USD 886 billion by 2033. The market is already mature in most key countries. (*Bothare, 2025*)
- **Dependent on energy policy.** Projects are typically part of a government effort to boost share of renewables in energy matrix. Regulators and local authorities are fundamental players in providing necessary licenses and permits and setting tariffs for projects to be bankable.
- **Increased support by local banks.** Local banks are becoming prime funding source for projects as they developed a project finance expertise, although they tend to avoid construction risk and new developers.
- **Competition from specialized infra funds.** Local, regional, and global infrastructure funds are increasingly active in funding the equity tranches of projects and often arrange the debt financing. (*Dimension Energy, 2023; Deloitte 2025*)
- **Increased bundling with batteries.** Projects are increasingly bundled with battery energy storage systems (BESS) that store electricity generated from projects and inject it into the grid when demand peaks. Funding remains rare for such projects.

DISTRIBUTED GENERATION

KEY PLAYERS



Regional asset managers. Most companies operate in a few key countries and a single region where they can have strong networks. A few companies operate across several countries with similar regulations and sectorial ecosystems.

SCREENING MATRIX*

Priority 2 vertical
for Symbiotics

Origination potential	Sector maturity	Fin. performance	
2-year expected deal volumes of USD 50 to 100M	Mature segment with over 15+ year of track record	AssetCos are typically profitable and cashflow positive	
Replicability	Pricing	Suitability	
Business model is mainstream across geographies	SOFR 6M + 250-400 bps; +400 bps hard to achieve for tenors < 10 years	Long tenors and large ticket sizes are limitations for Symbiotics	
	very attractive	medium attractive	not attractive

SPOTLIGHTS



SYMBIOTICS INVESTMENT STRATEGY



Portfolio growth opportunities through differentiated solutions & partnerships

- **Co-invest with local lenders and competitors.** Tenor and ticket restrictions make Symbiotics solutions unattractive to be the sole lender to a project. Local lenders can bundle Symbiotics' solutions with theirs.
- **Propose refinancing solutions.** The market for refinancing operating projects is relatively unattended due to mandate restrictions from competitors and DFIs. Refinancing can offer shorter tenors, but often comes at lower returns.
- **Support developers and asset managers with corporate finance.** Developers need funding to invest the equity tranche in the projects and fund working capital.



Clean energy

SOLAR HOME SYSTEMS



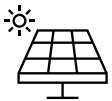
STAKEHOLDERS



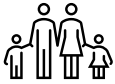
Lender funds the origination of Pay-as-you-go leases



Company distributes systems and collects payments



Systems installed on roofs and not connected to grid



Households benefit from clean and reliable energy services

BUSINESS MODEL

- **Standardized model.** Key product consists of a solar home system powering a set of consumer appliances, including lightbulbs, phone chargers, TVs, and fans.
- **Pay as you go portfolios.** Companies provide vendor financing to primarily unbanked consumers through lease-to-own programs, which require a down payment and offer terms of up to 4 years. Clients can top up their credit using mobile phone-activated codes.
- **Most players vertically integrated.** Market is dominated by players active across the value chain from design, assembling, to distribution, financing, and collection.

GEOGRAPHIES



Africa-specific business model. Key countries include **Kenya, Nigeria, Tanzania and RDC.**

MARKET TRENDS & OPPORTUNITIES

- **Lack of financial sustainability.** Despite having a track record of over 10 years, the sector has yet to define a clear path to profitability, raising concerns about the industry's sustainability, particularly for smaller players.
- **Slowing growth.** Sales volumes have just recovered from their pandemic lows, but growth is slower than pre-2020.
- **Lack of equity.** Rising interest rates and the failure of some leading players have raised doubts among equity investors. The lack of equity increases risks due to relatively high leverage and slows down sector growth.
- **Dominated by few diversified players.** Based on internal analysis, the top companies in the market concentrate sales and financing volumes, allowing them to achieve economies of scale and exert pricing power over smaller, country-specific companies.
- **Consolidation underway.** Financial woes have translated into acquisitions of smaller players and portfolio sales.
- **Diversification of product lines.** Most companies have introduced ancillary products by leveraging their large client base and payment history. These offerings include smartphones, e-bikes, clean cookstoves, solar water pumps, and coolers.

IMPACT



Universal energy access. Sector is aligned with SDG 7.1 providing universal energy access.



SOLAR HOME SYSTEMS

KEY PLAYERS



Multi-country companies. Most companies are vertically integrated, headquartered in developed markets, and operate in a few key countries or in a single region. A few companies only distribute systems manufactured by others.

SCREENING MATRIX*

Priority 3 vertical
for Symbiotics

Origination potential	Sector maturity	Fin. performance
2-year expected deal volumes of USD 10 to 20M	Maturing segment with about 10 year of track record	Loss-making companies with a few exceptions
Replicability	Pricing	Suitability
Almost exclusively in Sub-Saharan Africa	SOFR 6 months +350-500 bps	Tenors, local currency, and tickets suitable for Symbiotics
<div><div></div> very attractive</div> <div><div></div> medium attractive</div> <div><div></div> not attractive</div>		

SPOTLIGHTS

- United States
- Corporate finance

- Multi-country
- Corporate finance

- Nigeria
- Corporate finance

SYMBIOTICS INVESTMENT STRATEGY



Portfolio stabilization through existing investees and specialized companies

- **Focus on top tier companies.** Top-up of current global leaders as these companies grow, while carefully monitoring performance.
- **Finance clients via local FIs.** Funding via loan to local FI mitigates company specific risk and offers local currency option.
- **Focus on specialized funding platform.** Funding securitized portfolio of receivables or funding specialized lending companies might aid in mitigating concern over sustainability of the originators.



VALUE CHAIN



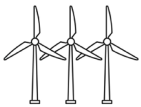
STAKEHOLDERS



Lender funds the working capital or capex for expansion.



EPC companies and manufacturers develop and build facilities and equipment.



Customers like Developers and Operators buy facilities/ equipment

BUSINESS MODEL

- **Diverse players.** This market encompasses various segments and business models including manufacturing, supply chain logistics, project development and installation, operation and maintenance (O&M), and end-of-life recycling of renewable energy technologies.
- **Developers & EPC companies.** Developers handle the early stages of clean energy projects up to contract signatures, while EPC companies manage design, procurement, and construction.
- **Manufacturers.** Companies manufacture and assemble equipment used in clean energy projects.

SPOTLIGHT

Priority 3 vertical
for Symbiotics

ecozen

- India
- Corporate finance

MARKET TRENDS & OPPORTUNITIES

- **Growth prospects aligned with energy trends.** All clean energy projects involve these key stakeholders. The growth of stakeholders in terms of size and numbers is aligned with the growing volumes of projects that are seeking funding.
- **Underleveraged segment.** Developers and EPC companies use equity or short-term loans from local banks to fund their working capital. Manufacturers have access to short and mid-term funding from local banks to fund their operations.
- **Greening the renewable value chain.** Oftentimes the clean energy value chain such as material extraction and processing and equipment manufacturing has negative environmental effects. Hence there are arising opportunities to reduce the environmental footprint along the value chain.

IMPACT



Supporting the clean energy transition. Value chain projects can increase the share of renewables.

ELECTRIC MOBILITY



STAKEHOLDERS



Lender funds the purchase of electric vehicles or infrastructure



Government develop enabling policies and rules



Operators and distributors source vehicles distributed to consumers



Consumers purchase vehicles on financing, or use vehicle and pay per use

GEOGRAPHIES



South Asia and Africa.

Demographics and increased connectivity drive adoption of electric vehicles. Key countries include **India, Vietnam, Kenya, Nigeria.**

IMPACT



Cutting carbon from transport sector. E-Mobility contributes to SDG 7.3 on energy efficiency and has direct impact on health, well-being and mobility of low-income populations.

BUSINESS MODEL

- **2 and 3 wheelers.** Companies source vehicles from manufacturers and distribute to consumers through dealers. Distributors may also provide financing and maintenance.
- **Electric buses.** Operators of electric bus lines have a government license, and generate revenue from ticket sales, advertising and partnerships.
- **Charging & battery swap.** Companies operate charging infrastructure and battery swap stations, partnering with fleet operators on a pay-per-use basis or leasing model.
- **Ride hailing.** Companies manage fleets of electric vehicles and employ drivers on a commission-based system through digital platforms.

MARKET TRENDS & OPPORTUNITIES

- **Concentration in urban environments.** E-mobility technologies cater to the growing middle class and dependence on charging stations translate into concentration in dense urban centers.
- **Rapid Growth in E2W and E3W Adoption.** Demand for E2W and E3Ws are expected to continue growing at c.14% p.a., with electric buses poised to grow c.18% p.a. as well; driven by government initiatives, rising fuel prices, and increasing concerns about air quality. (*Fortune Business Insights 2025; McKinsey & Company 2020*)
- **Localization of Supply Chains.** Strong push for localizing supply chains of batteries and auto components in to reduce dependency on imports.
- **Government Policies and Incentives.** Strong support from governments through subsidies for charging infrastructure, tax exemptions, and incentives for local manufacturing. (*Africa E-Mobility Alliance, 2025; Mehta, 2024*)
- **Nascent and fragmented market.** Numerous venture start-ups and small players are competing, with technologies that are sometimes incompatible. Consolidation is expected.

Sustainable cities & infrastructure

ELECTRIC MOBILITY

KEY PLAYERS



Multi-country companies. Most companies have less than 5 years of operating track record, focus on a single segment and operate in a few key countries and a single region.

SCREENING MATRIX*

Priority 2 vertical for Symbiotics

Origination potential 2-year expected deal volumes of USD 20 to 50M	Sector maturity New segment with under 5 years of track record	Fin. performance Loss-making companies with a few exceptions
Replicability Business model is present across geographies	Pricing SOFR 6M +350–450 bps	Suitability Tenors, local currency, and tickets suitable for Symbiotics'
<div> <div></div> very attractive <div></div> medium attractive <div></div> not attractive </div>		

SPOTLIGHTS

- Kenya
- Corporate finance

- Multi-country (Rwanda, Kenya)
- Corporate finance

- Multi-country (Kenya, Rwanda, Benin, Nigeria etc.)
- Corporate finance

- India
- Corporate finance

SYMBIOTICS INVESTMENT STRATEGY

Enter nascent segment via local FIs and co-investments

- **Complementing nascent equity investments.** In addition to equity, deploying targeted debt to finance working capital and CapEx, with maturities aligned to asset lives. Supporting proven businesses with strong, verifiable unit economics to enable efficient and prudent scaling
- **Finance clients via local FIs.** Funding via loan to local FI mitigates company specific risk and offers local currency option.
- **Co-invest with competitors.** Join forces with competitors to offer competitive solutions to leading companies and learn from others.

WASTE & CIRCULAR ECONOMY



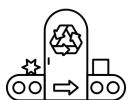
STAKEHOLDERS



Lender funds the purchase of machinery and facilities



Government develop enabling policies and rules



Operators source input and sell output via short to mid-term contracts.



Corporate purchase waste output, either recycled material, biogas, or biochar

GEOGRAPHIES



Global business model.

Countries with dynamic demographics and fast urbanization are especially active. India, **Brazil**, **South Africa**, and **Vietnam** have enacted favourable legislations.

IMPACT



Waste reduction potential.

Sector is aligned with SDG 12.5 reduce waste generation through prevention, reduction, recycling and reuse.

BUSINESS MODEL

- **Recycling.** Firms convert waste materials into reusable raw materials for manufacturers using efficient collection methods and chemical processing.
- **Waste to energy (W2E).** Solid or liquid waste from municipal and C&I is converted into electricity or biogas or heat via combustion. Revenue streams include fees from waste disposal and energy sales to the grid or to corporate clients via long term contracts.
- **Biochar.** Organic waste is converted into biochar or pellets through pyrolysis in bio-refineries. Revenue is generated from sales of biochar, its byproducts (i.e syngas and bio-oil) and carbon sequestration credits.

MARKET TRENDS & OPPORTUNITIES

- **Support from regulators.** Many governments are adopting bans of single use plastic and extended producers' responsibility for corporations, thereby generating a business opportunity for recyclers. However, recyclers are also dependent on municipal licenses for licenses and concessions.
- **Strong demand for recycled products.** Regional and international demand for recycled material, especially plastic, glass, and aluminum, is pushing prices higher and warranting. (*European Commission, 2019; FEVE 2024*)
- **Rise of carbon finance.** Companies can earn carbon credits, as waste is an emission intensive sector and biochar can sequester carbon in soils for hundreds of years. Carbon credits can be a complementary but often unstable source of revenue as supply-demand is highly sensitive to policy changes and shifting corporate buyer sentiment.
- **Increase adoption in agriculture and forestry.** Biochar and pellet production technologies are driving growth in adoption due to higher efficiency and cost-effectiveness.

WASTE & CIRCULAR ECONOMY

KEY PLAYERS



Global conglomerates and local companies. Some global companies operate large scale facilities across markets. Yet, most companies operate one or several facilities in a single country.

SCREENING MATRIX*

Priority 2 vertical for Symbiotics

Origination potential	Sector maturity	Fin. performance
2-year expected deal volumes of USD 20 to 50M	Growth segment with 5+ years of track record	Companies are generally profitable
Replicability	Pricing	Suitability
Business model is present across geographies	SOFR 6M +250-400 bps	Tenors, local currency, and tickets suitable for Symbiotics'
<div><div></div> very attractive</div> <div><div></div> medium attractive</div> <div><div></div> not attractive</div>		

SPOTLIGHTS

- Kenya
- Corporate finance

- Kenya
- Project finance

SYMBIOTICS INVESTMENT STRATEGY

Enter nascent segment via W2E and co-investments

- **Focus on W2E.** The Waste to Energy sector is similar to the C&I solar, but less attended due to more technology risk and less predictability on the cash flows.
- **Finance clients via local FIs.** Funding via loan to local FI mitigates company specific risk and offers local currency option.
- **Co-invest with others.** Join forces with DFIs, local lenders, and competitors to offer competitive solutions to leading companies and learn from others.



This does not constitute investment advice, an offer to sell, or the solicitation of an offer to buy any investment product of SYMV or on behalf of Symbiotics Group SA or its subsidiaries. See our disclaimer.
* based on internal analysis

GREEN BUILDINGS



STAKEHOLDERS



Lender funds the working capital or construction of new projects.



Government develops enabling policies like energy efficiency standards



Real Estate Developer oversees construction.

SPOTLIGHT

Priority 3 vertical for Symbiotics



- Costa Rica
- Corporate finance

IMPACT



Green infrastructure, resilient to climate change. Green building can reduce GHG emissions, improve resilience against climate change, allow for resource conservation and create jobs.

BUSINESS MODEL

- **Property Developers.** Developers secure land, oversee building design and construction for green certification (LEED or EDGE), then operate or sell the property.
- **Energy services companies.** ESCOs provide services related to the operation of the buildings, including lighting, heating, insulation, cooling, and ventilation (HVAC) and are contracted to implement cost-cutting measures for a fee.

MARKET TRENDS & OPPORTUNITIES

- **Driven by urbanization and government incentives.** Rising demand for resilient and efficient infrastructure stems from economic growth and is supported by government tax incentives and mandates for developers. (IFC, 2025)
- **Green building materials.** Enabling policies increase the demand for global green building materials (circular and bio-based solutions).
- **Funding opportunities.** Real estate developers of certified green buildings, across commercial, industrial and residential, require direct on balance sheet working capital loans and direct project finance to SPVs for construction.
- **Lending via FIs.** Another financing tool for green buildings is indirectly via local FIs offering loans to developers or green mortgages to consumers.

SUSTAINABLE AGRICULTURE



STAKEHOLDERS



Lender funds the working capital of Agri inputs and commodities



Agri firms support farmers sust. food production with inputs, know-how and market access



Regulatory involvement via subsidies, import/export policies etc.

BUSINESS MODEL

- **Sustainable Farming.** To support farmers in transitioning to sustainable practices, companies provide farmers with access to advanced agricultural inputs and trainings for smart farming practices.
- **Comprehensive Service Offering.** Agricultural companies provide a range of complementary services, including financing, inputs, technical assistance (e.g., protocols for seeds, irrigation etc.), and market access.
- **Leveraging agronomist expertise.** Agricultural firms collaborate with agronomists who offer region-specific knowledge to promote sustainable and efficient farming practices.

GEOGRAPHIES



Global business model. Countries with large agricultural land and many smallholder farmers have emerging players like **India, Brazil, Kenya.**

IMPACT



Reducing environmental footprint of agriculture. Smart farming practices can foster restoration of degraded soil and reduce GHG emissions. Corporates can also reduce food losses and improve food availability.

MARKET TRENDS & OPPORTUNITIES

- **Regulatory Support.** Many EM governments are strongly involved in the agricultural sector, driven by priorities such as food security and employment generation.
- **Growing ESG Transparency Demand.** International interest in transparent value chains has prompted agri-businesses to increasingly monitor their environmental and social impact.
- **Enhanced agricultural productivity and efficient use of resources.** Emerging markets, particularly in Sub-Saharan Africa, hold significant potential to boost productivity through high-quality inputs and advanced farming techniques (Fuglie et al. 2020). Improved knowledge of agricultural inputs can minimize chemical overuse, conserve resources, and reduce costs.

SUSTAINABLE AGRICULTURE

KEY PLAYERS



Many smaller companies across value chain. Agriculture firms across a variety of crops and value-chain stages arise to make agriculture more sustainable. Most of them are rather nascent.

SCREENING MATRIX*

Priority 3 vertical for Symbiotics

Origination potential	Sector maturity	Fin. performance
2-year expected deal volumes of USD 20 to 30M	New segment with under 5 years of track record	Some profitable players, others still loss making
Replicability	Pricing	Suitability
Business model is present across geographies	SOFR 6M +350-550 bps is achievable	Tenors, local currency are interesting, but tickets can be small for Symbiotics'
<div><div></div> very attractive<div></div> medium attractive<div></div> not attractive</div>		

SPOTLIGHTS

- Indonesia
- Corporate finance

- Zambia
- Corporate finance

- Ghana
- Corporate finance

























SYMBIOTICS INVESTMENT STRATEGY

Enter nascent segment with some first corporate loans and via FIs

- **Focus on profitable businesses for initial corporate transactions.**
- **Finance clients via local FIs.** Funding via loan to local FI mitigates company specific risk and offers local currency option.



IMPACT & ESG MEASUREMENT

VERTICAL	IMPACT NARRATIVE	KPIs		ESG RISKS
C&I Solar	Rooftop solar installations enable C&I clients to save on energy costs.	 CO ₂	 MWp	<ul style="list-style-type: none"> ▪ Ethical sourcing of equipment ▪ Health and safety incidents ▪ Corruption during permitting process
		 Jobs		
Distributed Generation	Distributed renewable energy projects increment the share of renewable energy in the country's mix and generate local jobs.	 CO ₂	 MWp	<ul style="list-style-type: none"> ▪ Ethical sourcing of equipment ▪ Health and safety incidents ▪ Corruption during permitting process
			 Jobs	
Energy Access	Solar home systems provide reliable, cost-effective, and clean energy to households, thereby cutting reliance on fossil-fuel based alternatives, and generating local jobs.	 CO ₂	 MWp	<ul style="list-style-type: none"> ▪ Ethical sourcing & recycling of equipment ▪ Health and safety incidents ▪ Corruption and sales practices
			 Jobs	
E-mobility	Adopting electric transport enable clients to save on transport costs, prevents pollution, and generates local jobs.	 CO ₂	 MWp	<ul style="list-style-type: none"> ▪ Ethical sourcing & recycling of equipment ▪ Health and safety incidents ▪ Corruption and sales practices
			 Jobs	
Waste & circular economy	Waste management solutions reduce landfill waste, conserve natural resources, prevent pollution, and generate local jobs.	 CO ₂	 MWp	<ul style="list-style-type: none"> ▪ Working conditions ▪ Health and safety incidents ▪ Corruption ▪ Impact on community local and environment
			 Jobs	
Renewable energy value chain	EPC and developers support the rise in clean energy projects in the country's mix and generate local jobs.		 MWp	<ul style="list-style-type: none"> ▪ Ethical sourcing of equipment ▪ Working conditions ▪ Health and safety incidents ▪ Corruption
		 Jobs		
Green building	Green building cut carbon footprint, generate energy savings, conserve natural resources, and generate local jobs.	 CO ₂	 Jobs	<ul style="list-style-type: none"> ▪ Working conditions ▪ Health and safety incidents ▪ Corruption
			 Jobs	
Sustainable Agriculture	Sustainable agriculture practices reduce harmful agri-inputs and food losses. They can generate jobs and improve farmer's income.		 Jobs	<ul style="list-style-type: none"> ▪ Working conditions ▪ Health and safety incidents ▪ Effects on biodiversity
			 Jobs	

CO₂

GHG emission reduction in tons of Co2 equivalent

MWp

MWp installed and MWh generated of clean energy



USD million savings for clients/ improved income

Jobs

direct jobs created



Tons of input reduced or recycled (waste or water)



Products & solutions

The following section outlines Symbiotics' investment solutions to address climate finance opportunities in emerging markets. While investments through FIs play a key role in Symbiotics' climate finance strategy, they are deliberately excluded from this section, which is limited to direct lending to projects and corporates.

Symbiotics' direct lending solutions revolve around two key structural solutions, project and corporate finance, which we describe and analyze in this section. We could envision an opportunistic approach to leverage these solutions and grow the investment portfolio.

General lending conditions are presented in this section and are based on primary and secondary research through origination and interviews with market participants. They highlight a wide range of investment features which enable the investor to build a diversified portfolio of climate finance opportunities.



PRODUCTS & SOLUTIONS: PROJECT FINANCE

DEFINITION

- Off-balance sheet financing in special purpose vehicle holding projects and/or contracts with lender having no-recourse on project sponsor
- Repayment relies solely on projects' cash flow
- Secured: Lender's security consists of asset, contracts, and SPV's shares

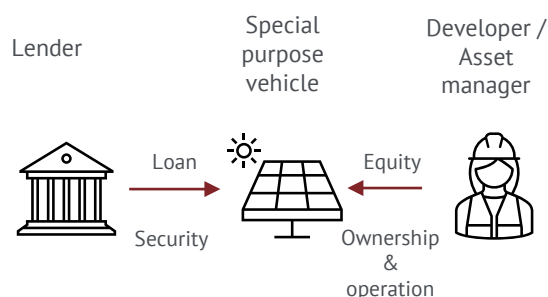
ADVANTAGES

- **Collateralization.** Ease of collateral execution and low LTV with senior leverage ranging from 60% to 70% of capital.
- **Predictability.** Good visibility on cash flow generation ability through contract-base revenues and OpEx
- **Indirect control.** Contractual arrangement limits the involvement of the company with the SPV and warrants lender's interest over payments.

RECOMMENDATIONS

- » **Optimize transaction costs.** Only use when transaction volumes sufficient, arranger can streamline documentation, and sponsor is experienced.
- » **Portfolio financing.** Fund a mix of operating and new assets to mitigate construction risk.
- » **Mitigate refinancing risk.** Symbiotics is often uncompetitive due to short tenor constraint. Focus on refinancing prior loans or offer "mostly bullet" loans.

STRUCTURE & STAKEHOLDERS



DRAWBACKS

- **Potential for duration mismatch.** Longer tenors are required to finance long-term assets, otherwise resulting in refinancing risk.
- **Complexity and transaction costs.** Extensive legal, financial, and technical due diligence resulting in longer closing times.
- **Construction and operating risks.** Delays in project completion, lower technical or payment performance threaten the repayment ability.

SPOTLIGHT



Multi-country
(Chile, Costa Rica,
Panama)

- Ecoligo is a global developer of C&I solar projects with over 60 MWp in operation
- Latam are markets of expansion for Ecoligo
- Funding raised refinanced some projects and funded constructions of new ones



PRODUCTS & SOLUTIONS: CORPORATE FINANCE

DEFINITION

- On balance sheet financing of a company with lender having recourse to all assets and revenues streams.
- Repayment relies on company's cash flows, growth, and ability to raise funding
- All asset's floating charge possible to be shared with other lenders

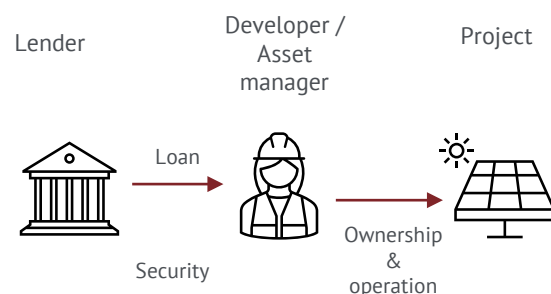
ADVANTAGES

- **Simpler and faster structure.** Ease of transaction execution and documentation
- **Lower single risk exposure.** Potential access to more assets as security, diversifying risk, especially for creditworthy corporates.
- **Flexibility.** Shorter tenor loans available and use of proceeds are varied including working capital, refinance projects, or bridge capital rounds

RECOMMENDATIONS

- » **Focus on creditworthiness.** Only use for companies with established performance, high growth, and support from shareholders.
- » **Short-term solutions.** Fund short-term assets such as working capital, bridge loans, vendor financing.
- » **Cashflow upstream and fundraising.** Focus on ability to upstream cash from AssetCos or on access to debt and equity to refinance the debt.

STRUCTURE & STAKEHOLDERS



DRAWBACKS

- **Dilution of collateral.** Lower level of access to collateral and seniority of payments in a liquidation scenario
- **Growth and performance.** Repayment depends on company's stable creditworthiness during loan life tied to its growth and financial performance.
- **Lack of risk mitigation.** All credit risk is being borne by the company outside the lender's control which is exposed to many adverse events.

SPOTLIGHT



Country: India

- 4PEL is a leading Indian developer of C&I solar projects with over 1.5 GWp in operation
- 4PEL operates both as an EPC and as an asset manager
- Funding raised funded the equity portion of newly built projects via shareholder loans.



PRODUCTS & SOLUTIONS: OPPORTUNITIES

Amid growing competitive pressure, Symbiotics could capture market share by providing debt solutions that other investors overlook due to mandate limitations. Both refinancing and holding finance present compelling risk-return opportunities and are essential for the growth and sustainability of the climate finance ecosystem.

PROJECT FINANCING

Clean energy

Sustainable cities & infrastructure

Nature-based solutions



Definition

Financing of a portfolio of projects fully contracted and ready to be installed. Funding covers installation and equipment costs



Opportunity

Project developers require financing to pay for installation costs which make up most of the project costs. Most competitors focus on this segment.



Pros/Cons

Pros: exposure to a selected number of projects
Cons: Construction risk (delays or cost overrun)



Track record



REFINANCING PROJECTS

Clean energy

Sustainable cities & infrastructure

Nature-based solutions



Definition

Refinancing of existing loans or equity with a new loan, typically post-construction, warranting track record of assets



Opportunity

Project developers require refinancing to exit projects. DFIs and most impact investors exclude refinancing from their mandates



Pros/Cons

Pros: reduced risk profile of operating projects
Cons: Limited impact as no new projects, yet releasing equity enables new projects. Pricing is lower.



Track record



CORPORATE FINANCING

Clean energy

Sustainable cities & infrastructure

Nature-based solutions



Definition

Financing of a holding or an operating company



Opportunity

Companies require flexible debt financing to fund working capital or CAPEX.



Pros/Cons

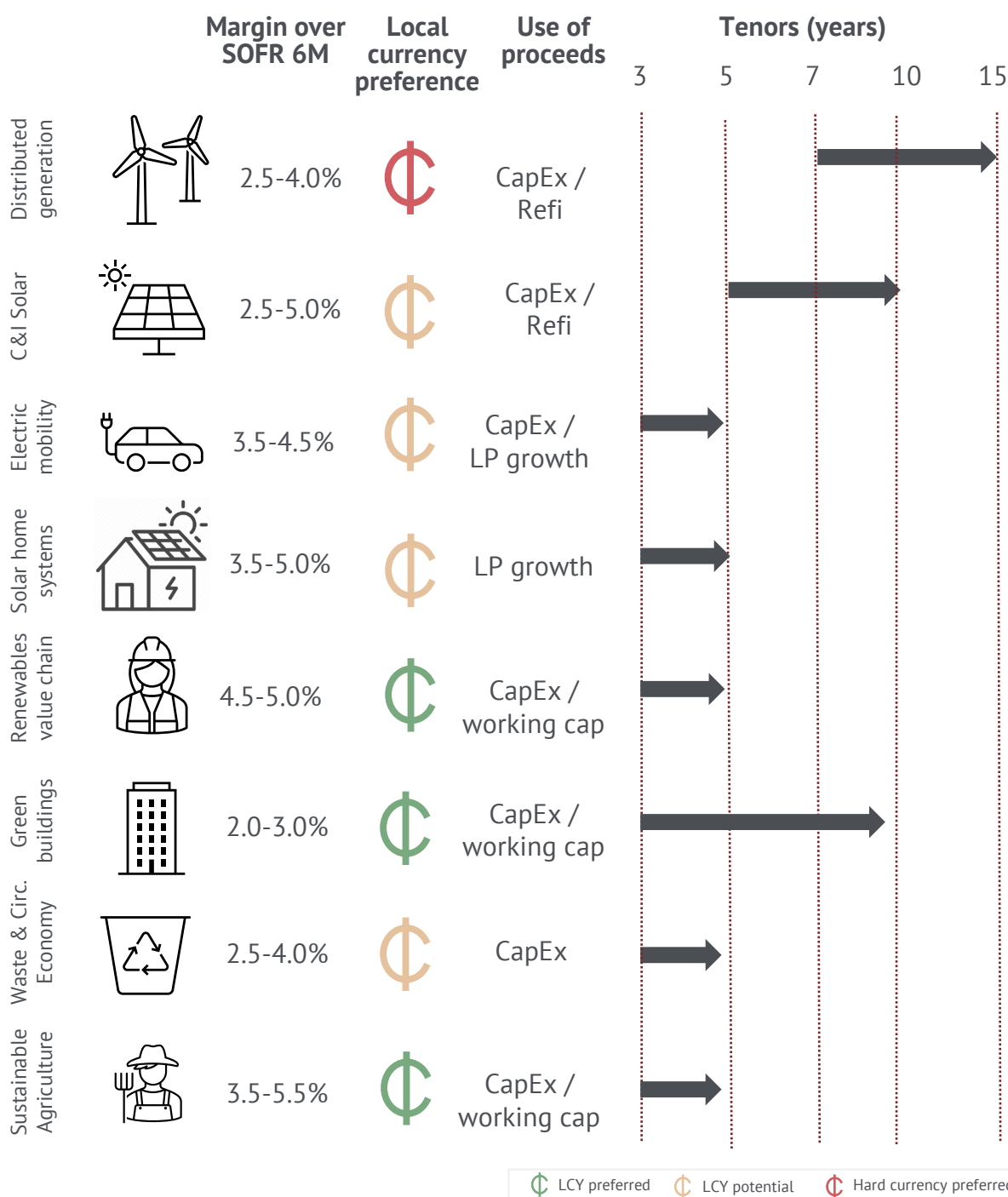
Pros: Higher pricing and shorter tenors
Cons: Case-by-case analysis



Track record



PRODUCTS & SOLUTIONS: LENDING CONDITIONS



LOCAL CURRENCY AND CLIMATE FINANCE

- **Structural demand for hard currency.** Despite local currency contracts, most borrowers prefer hard currency, except where hard currency financing isn't standard (e.g. India, Brazil).
- **Consumer-Centric Demand:** Local currency is preferred for short-term consumer financing, especially in solar-home systems, green buildings, and electric mobility.
- **Local FI Channels:** Local currency is also relevant for climate finance via local financial institutions for on-lending as they tend to avoid open currency exposures.



Source: Internal analysis by Symbiotics, based on a sample of prospects and portfolio companies

Market dynamics

The following section presents the current context of the market for private debt used in climate finance transactions.

In emerging markets, we observe a concentration of opportunities in a limited number of typically middle-income countries that have created a favorable ecosystem through regulatory support. We observe different dynamics in the three regions, with Asia offering the most opportunities but with a high degree of competition, and Africa lagging behind with the fewest opportunities given the high number of private debt providers.

We have deliberately excluded Eastern Europe, Central Asia and the Middle East and North Africa, as we have not seen many opportunities for private impact lenders in these markets.

We propose a stakeholder strategy for Symbiotics to engage with other players and increase its origination capacity across geographies and verticals, partnering with competitors where appropriate and avoiding geographies and verticals that we believe are too crowded.



REGIONAL TRENDS

GENERIC COMMENTS



▪ **Concentrated opportunities.** Most opportunities are concentrated in 15 emerging markets globally. Large countries, especially India, are over-represented due to their strong markets for climate finance solutions across various sectors.



▪ **Middle income countries.** A strong industrial base, a growing middle class, and integration to international trade drive businesses and consumers' preferences for climate-friendly products, and availability of such products.



▪ **Crucial role played by policy support.** Supportive and stable public policies from local governments are enabling factors for sectors to emerge and thrive through the design of tax incentives, climate plans, and the setting of norms and standards (e.g. transport, construction, recycling).



LATIN AMERICA

▪ **Key countries.** Brazil, Mexico, Chile, Costa Rica, Panama, Peru, Colombia concentrate most opportunities. Hard currency funding is the norm, except in Brazil and Colombia.

▪ **Growth opportunities across verticals.** Due to rich natural capital and export-oriented agro-industries, the region offers strong opportunities in nature-based capital. While clean energy verticals are established, they are growing at a stable pace. Sustainable cities and infrastructure verticals are emerging, but e-mobility remains underdeveloped.

▪ **DFIs and regional funds as key players.** Private impact investors are less active in the region, leaving regional DFIs to provide affordable financing for medium to large projects.

▪ **Growing network of active local banks.** Local mid to large size banks are increasingly active in climate finance, often supported by DFIs through green lending programs. They constrained by capital adequacy rules offer hard and local currency funding at competitive rates but are constrained by capital adequacy rules.

Peers & partners





SUB-SAHARAN AFRICA

Peers & partners



- **Key countries.** South Africa, Kenya, and Nigeria concentrate most opportunities, with Tanzania, Rwanda, Ghana, and Ivory Coast being secondary markets. Both local and hard currency options are available.
- **High competition for scarce opportunities.** Low level of industrialization and income coupled with a lack of policy support often limits demand for climate-friendly technologies. High level of competition for small number of transactions result in a relatively low risk-return profile.
- **Attended by DFIs and impact investors.** High volume of earmarked funding from European DFIs put pressure on pricing, with increased activity across verticals. The region is also crowded with impact investors with regional mandates, and difficulties to deploy funding have been reported.
- **Emerging commercial lenders.** Regional investment banks start to be active for large transactions and local banks have a growing interest in clean energy transactions.



ASIA

Peers & partners



- **Key countries.** India dominate the region across verticals, with Vietnam, the Philippines, Thailand, and Nepal being secondary markets. Both local and hard currency options are available, except in India.
- **Leadership across verticals.** All verticals presented can be found in Asian countries which are spear-leading the adoption of climate-friendly technologies. Support from local government, developed local lending markets, deep-markets, and growing industrial base are key contributors.
- **Impact investors and regional funds.** International and regional private impact investors are very active across segments, with DFIs focusing on larger transactions.
- **Mature local lending markets.** Local banks and specialized regional funds very active across segments and offering competitive conditions in local currency.

LIST OF ABBREVIATIONS

C&I	Commercial and industrial
CapEx	Capital Expenditure
DFI	Development Finance Institutions
DG	Distributed Generations
E2W	Electric two-wheelers
E3W	Electric three-wheelers
EM	Emerging markets
E-mobility	Electric mobility
EPC	Engineering Procurement & Construction companies
ESCO	Energy services company
FI	Financial institutions
FX	Foreign Exchange
GHG	Greenhouse gases
HVAC	Heating, ventilation, air conditions.
LCY	Local Currency
LTV	Loan to Value
MWh	Megawatt hour
MWp	Megawatt peak
OpEx	Operating Expenses
SSA	Sub-Saharan Africa
SDG	Sustainable Development Goals
SHS	Solar Home Systems
SOFR	Secured Overnight Financing Rate
SPV	Special Purpose Vehicles
USD	United States Dollar
W2E	Waste to energy

ABOUT THE AUTHORS

This white paper has been prepared by members of Symbiotics' Investment Analysis and Structuring teams that engage directly with financial institutions and enterprises in emerging and frontier markets. The Financial Analysis team conducts credit assessments and monitors financial and ESG performance across a broad range of counterparties, while the Structuring team identifies and implements optimal transaction structures. The insights presented in this document are based on the authors' professional experience and internal analysis. This is non-independent research and has not been prepared in accordance with legal requirements designed to promote the independent investment research. This document is provided for informational purposes only. Readers should conduct their own due diligence and consult with qualified financial advisors before making any investment decisions.



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Version September 2025

