

**MITIGATION  
BLENDED**

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| <b>PROJECT NAME</b>   | <b>Sistema.bio<sup>1</sup></b>  |
| <b>COUNTRY/REGION</b>   | Latin America, East Africa, India   |
| <b>SECTOR</b>   | Waste and energy  |
| <b>PROJECT/INVESTMENT AMOUNT</b>  | <ul style="list-style-type: none"> <li>● <b>Grant:</b> \$3 million</li> <li>● <b>Equity:</b> \$17 million</li> <li>● <b>Debt:</b> \$5.5 million</li> </ul>  |
| <b>DEVELOPMENT PARTNER(S)/STAKEHOLDERS</b>  | Alpha Mundi; DILA Capital; Eco-Enterprises Fund; ElectriFI; Endeavor Catalyst Fund; ENGIE RDE; Factor[E] Ventures; Dutch FMO; Shell Foundation; Triodos Bank  |
| <b>BENEFICIARY MINISTRY/ INSTITUTION</b>  | N/A   |
| <b>INVESTOR(S) AND FUNDERS</b>  | Alpha Mundi; DILA Capital; Eco-Enterprises Fund; ElectriFI; Endeavor Catalyst Fund; ENGIE RDE; Factor[E] Ventures; Dutch FMO; Shell Foundation; Triodos Bank  |
| <b>GUIDEBOOK TAXONOMY FINANCIAL SYSTEM ACTOR</b>  | Corporate Expenditure<br>Philanthropy and Impact Investors<br>Private Equity<br>Venture Capital<br>Bilateral, Multilateral & Development Finance Institution  |
| <b>PROJECT OVERALL GOAL</b>   | Increase energy access for smallholder farmers by installing small-scale biogas digesters on farms.   |
| <b>PROJECT OUTCOMES</b>   | Achieving development and climate improvements by supporting smallholder farmers in installing biogas digestors.  |
| <b>ALIGNMENT WITH COUNTRY IDENTIFIED CLIMATE STRATEGIES, NDCs, ETC. (IF APPLICABLE)</b> | Biogas digestors are a climate-smart technology that can help meet country adaptation goals by providing smallholders with energy and fertilizer, and mitigation goals by installing a climate-safe technology that minimizes emissions (e.g. methane emissions) from animal waste and produces renewable energy.   |
| <b>CONTRIBUTION OF THE PROJECT TO THE UN SDGs</b>                                       | SDG 2: Zero Hunger<br>SDG 7: Affordable and Clean Energy<br>SDG 13: Climate Action  |
| <b>SOCIOECONOMIC IMPACT</b>   | <ul style="list-style-type: none"> <li>● Increased smallholder farmers' productivity and household incomes</li> <li>● Improved food security and reduced malnutrition in households owning biodigesters</li> <li>● Helping ensure sustainable food production</li> <li>● Increased access to clean and affordable energy, and improved reliability and sustainability of energy access</li> </ul> |
| <b>ENVIRONMENTAL IMPACT (ON CLIMATE MITIGATION AND/OR ADAPTATION)</b>                   | <ul style="list-style-type: none"> <li>● Reduced methane emissions from improved manure management</li> <li>● Reduced N2O emissions from fertilizers</li> <li>● Reduced deforestation linked to energy transmission and land-use changes</li> <li>● Displacement of GHG-emitting sources of energy</li> </ul>   |

<sup>1</sup> This case was provided by Convergence as a contribution to the Sharm El-Sheikh Guidebook for Just Financing

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| ENABLING ENVIRONMENT (SUPPORTING POLICIES)                                    | The company relies on rural social networks and other existing opportunities to demonstrate the success of its clients for its sales strategy.  |
| TECHNICAL ASSISTANCE (IF PROVIDED)  | Technical assistance has been a core part of Sistema.bio's strategy to ensure long-term adoption and customer buy-in. It focuses on education and capacity building for clients, funded via its general operational funding. Additionally, Sistema.bio has relied on technical assistance grant funding for R&D, developing its in-house financing program, and improving its gender strategy.  |
| FINANCING MODEL/APPROACH (EX: BLENDED FINANCE)                                | Blended finance   |
| RATIONALE FOR FINANCING MODEL/APPROACH  | Carefully blending concessional funding, including grants, with market-rate funding was crucial to supporting Sistema.bio, not only in its early years, but for international expansion. Sistema.bio had established itself well in Mexico during its first five years of operation, when it reached breakeven, but lacked the ability to cover the risk of international expansion. It carefully applied grant capital from Shell Foundation to enable its expansion to Kenya. |
| FINANCIAL INSTRUMENT(S) (LOANS (COMMERCIAL/ CONCESSIONAL), EQUITY, GUARANTEE) | Grant, loan, equity   |
| DIAGRAM OF THE FINANCING STRUCTURE  | Not included  |

### Executive Summary

Sistema.bio is an anaerobic biogas company that sells small-scale, affordable biogas digestors to smallholder farms. Biogas digestors convert animal waste into biogas, a clean and renewable energy source, and biofertilizer for crop production. While there had been previous attempts to develop biodigester systems suitable for smallholder farmers, few were successful due to challenges such as low-quality systems, inappropriate technology, insufficient training and client awareness, and high costs. Sistema.bio's business model was designed with these barriers in mind, and the solutions it developed helped it scale to a \$17 million in total revenue business and find success in Latin America, East Africa, and India.

To address the cost of installation, which ranges from \$600-900, and lack of access to credit, key barriers for its target customer, Sistema.bio developed an in-house financing program. It provides 0% interest loans for up to 12 months that is used by over 85% of its customers. The full lifecycle of the loan, from origination to recovery or repayment, is managed by Sistema.bio through its field offices. To address another key barrier, lack of customer capacity and awareness, the company uses a high-touch B2C sales approach consisting of 5 steps. The approach begins with a demonstration event led by an existing farmer, on-site visit and financing for interested clients, installation by local technicians, monitoring on scheduled visits 30, 90, and 180 days post-installation, and on-going technical assistance. This approach is effective because it relies on peer-to-peer validation by using existing farmers to explain and validate the product to others, custom financing based on clients' individual needs, and comprehensive customer capacity building and technical assistance.

In 2022 Sistema.bio closed a Series B round for \$15 million. Sistema.bio used various types of blended capital – grants, concessional finance, and commercial debt and equity – to support its expansion. Founded in 2010 in Mexico on founder equity and angel funding, Sistema.bio spent its early years developing its biodigester technology and financing solution, and its presence on the Mexican market. In 2014 it reached breakeven at \$1 million in sales as well as international recognition with an Ashoka Fellowship Award. In 2015, as it was scaling operations to other Latin American countries, it received a loan from ENGIE RDE. However, it was looking to expand into other regions but lacked the first-loss finance to take the risk. A 2017 partnership with Factor[E] Ventures and the Shell Foundation was its turning point in international expansion. In the partnership, Factor[E] Ventures provided \$395,000 in seed funding to develop the technology, while the Shell Foundation provided a three-tranche grant to fund expansion to Kenya and diversify the product base. This was an appropriate risk-sharing arrangement, as Factor[E] was familiar with this technology space and could manage technology risk and Shell Foundation in a position to manage risks associated with new market entry. As a result, within one year, Sistema.bio owned over 70% of the Kenyan market. Based on its growing track record and Shell Foundation's global brand recognition, the company closed a Series A round in 2019 and, most recently in 2022, a Series B from seven investors.

### Analysis

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| WHAT MADE THIS PROJECT SUCCESSFUL? | <ul style="list-style-type: none"> <li>The Sistema.bio business model was designed with lessons learned from prior small-scale biogas projects in mind and ex ante addressed barriers to scale, i.e. poor ROI to customers due to low-quality systems, installation cost and complexity, lack of financing options, lack of availability of compatible appliances, consumer awareness, feedstock variation.</li> </ul> |
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|   | <ul style="list-style-type: none"> <li>● Sistema.bio focused early on on improving the affordability of its product by developing a financing program that spread out the cost of installation over 9-12 months with 0% loans</li> <li>● Grant-based support from impact funders was crucial to supporting the startup's early stage and expansion to other markets</li> <li>● Sistema.bio's ability to demonstrate steady growth at each stage was helpful in obtaining further funding, finally leading to an official Series A equity round</li> </ul>             |
| TO WHAT EXTENT IS THIS MODEL SCALABLE?  | The company's business model was specifically designed for scale, based on lessons learned from prior experiences with biogas digester projects. The founders of Sistema.bio addressed the major barriers to scale for this type of business, including developing a tailored in-house financing solution to address cost of installation, a leading constraint for smallholders.   |
| WHAT ARE THE NECESSARY CONDITIONS TO MAKE IT REPLICABLE IN OTHER COUNTRIES/REGIONS? | The model was also designed to be replicable across geographies. The company began operations in Mexico, but has since scaled to other Latin American countries, East Africa and India.   |
| CONSTRAINTS/DRAWBACKS OF FINANCING MODEL  | N/A   |
| LESSONS LEARNT  | <ul style="list-style-type: none"> <li>● Fit-for-purpose fundraising can enable success for blended finance structures</li> <li>● Grant capital is most effective when structured to address specific risks. Well-structured grant capital that gives donors a specific purpose can provide the groundwork for blended finance structures seeking commercial capital.</li> <li>● Technical assistance can bolster both financial returns and development impact</li> <li>● A compelling and consistent impact narrative can lead to successful fundraising</li> </ul> |