Sistema.bio

Mexico City, Mexico

Established in 2010, Sistema.bio makes durable, low-cost biodigesters that convert farm waste into clean energy in partnership with smallholder farmers in eight developing countries. With a regional focus in Latin America, East Africa, and Asia, the venture aims to address the challenges of poverty, food security, and climate change.

SUMMARY

To reduce energy consumption, chemical fertiliser use, and inefficient waste management practices, Sistema.bio delivers high quality waste-to-energy products, services, and financing. Their objective is to make smallholder farmers more productive, efficient, and resilient while lowering carbon emissions.

CHALLENGE

Approximately 22% of all anthropogenic greenhouse gas (GHG) emissions are linked to agriculture. To address global climate change, agriculture worldwide must adjust so as to significantly reduce energy consumption and chemical fertiliser use, as well as curb inefficient waste management practices.

Smallholder farmers grow approximately 80% of the food consumed in developing economies. However, they tend to suffer from an acute lack of climate-smart agricultural technologies and training.

The majority of rural households still use wood fuel to meet their energy needs. Thirty percent of this wood is harvested unsustainably and produces GHG emissions. In addition, agricultural waste and animal manure, if managed inefficiently, create significant GHG emissions while also contaminating local watersheds.

Aside from being GHG emitters, smallholder farmers are incredibly exposed to climate change, but lack strategies to increase their resilience at the required pace.

In the next 30 years, smallholder farms will need to grow 70% more food than they do today; more food than in the cumulative history of human agriculture. Farmers are unprepared, and face significant challenges to create local food system climate resilience.

SOLUTION

Sistema.bio offers a market-based approach to create climate-smart agricultural infrastructure for smallholder farms around the world. The company manufactures, sells, installs, and services a patented biogas technology that works for small farms. This leads to lower GHG emissions, improving productivity — and the economic situation — of smallholder farmers in a sustainable and scalable way. The technology, training, and financing model leverages digital and mobile technology. This allows the company to reach farmers around the world, to adapt to local conditions, and to ensure long-term adoption.

At the core of their work is the patented Sistema.bio technology: a waste-to-resources platform that converts organic waste into clean, renewable energy and organic fertiliser thanks to a biodigester. By converting waste into renewable natural gas, it creates fuel for cooking, heating, running productive agricultural activities, and the opportunity to produce off-grid electricity. A single unit can process as little as 20 kgs and up to 2 tonnes of waste per day, meeting the energy and fertiliser needs of a wide variety of farm types and sizes.

IMPACT

Sistema.bio’s pioneering and affordable system benefits smallholder farmers worldwide.

Farmers save money and time by eliminating fossil and biomass fuels. They improve household health conditions by replacing smoke-producing wood fires and charcoal. Access to organic fertiliser builds soil, improves yields, and increases the nutrient profile of crops. In parallel, the system reduces farm expenses and the majority of their GHG emissions.
COMPETITIVE ADVANTAGE

Sistema.bio’s offering is an advanced approach to waste management, viewing waste as a resource. It creates clean energy and fertiliser in an extremely efficient and cost-effective manner. This new technological platform for development not only creates value where there was once only waste, but also creates an innovative social engagement tool for smallholder farmers and indigenous groups.

SCALABILITY

The Sistema.bio technology and business model are built to reach millions of farmers. To facilitate this scale, the company has adopted a systematic approach to promotion, training, monitoring, and servicing. From operational hubs and field offices on four continents, the team focuses on localising all efforts (local farmer networks; local languages; local leaders; and local conditions). This flexibility allows their development team to provide packages that are adapted to local agricultural needs and practices. In addition, Sistema.bio offers financing plans to allow farmers to make payments from the savings that the platform generates.

ANNUAL REVENUE

- 2018: USD 2.9 million
- 2017: USD 1.3 million
- 2016: USD 1.0 million

EXPANSION PLAN 2019-2023

- Provide 250,000 people with clean energy technology by 2023, and sustain profitable, growing operations.
- Contribute to all 17 sustainable development goals (SDGs) and maximise GHG emission reduction efforts.
- Maintain a sustainable competitive advantage through product, service, and partnership innovations.

INVESTMENTS

Sistema.bio is looking for project financing, growth capital, and working capital. The company is also seeking innovative finance instruments that generate revenue from carbon credits, health outcomes, and other positive externalities.

PARTNERSHIPS

- KIVA, Lendahand Triodos Bank, EcoEnterprise, and AlphaMundi have been supporting Sistema.bio through working capital and the finance program.
- ENGIE RDE, EU-Electrifi, Dila Capital, and Endeavor Catalyst are equity investors providing technical and strategic support.
- USAID, DFID, Kellogg Foundation, Shell Foundation, Greater Impact Foundation, Kenya Climate Ventures, and AlphaMundi provide Technical Assistance funding and technical support for R&D, impact monitoring, and market growth.

AWARDS

- Ashden Award for clean cooking, Ashden (2019)
- Buckminster Fuller Challenge, Buckminster Fuller Institute (2017)
- Social Entrepreneur Mexico, UBS Visionaris (2016)

FOUNDER

Alexander Eaton, Mexico, CEO and co-founder.

Alexander Eaton has been addressing energy, sanitation, agriculture, and social justice issues for over ten years. His focus has been on low carbon development as well as the energy and sanitation nexus. As the director and technician for Sistema.bio, Alex has evaluated, developed, and managed small scale and industrial anaerobic digestion systems in Asia, Latin America, and the US. He has a MS in Environmental Engineering, and over 15 years of experience working in renewable energy and waste-to-energy projects.

CONTACT

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