CROWD POWER

CROWDFUNDING FOR CLEAN COOKING

ENERGY4IMPACT
POWERED BY MERCY CORPS

Contents

Authors
Davinia Cogan
Thomas Petex

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Header photo Jason Mulikita | Emerging Cooking Solutions

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Executive summary

Clean cooking-related debt crowdfunding volumes grew 64% year-on-year (YoY) from 2016 to 2023. There was a surge in clean cooking loans on platforms in 2021, when volumes tripled. From 2021 to 2023, funding levels held steady and an average of $3 million was raised for clean cooking each year via debt crowdfunding platforms.

In 2024, volumes decreased 40% from the previous year, dropping to $2.1 million. This can partly be explained by the increase in new clean cooking borrowers on platforms, which has decreased the median amount raised per unique borrower. In addition, this decrease is a result of reduced crowdfunding activity on the Charm Impact and Kiva platforms in 2024.

The number of unique clean cooking crowdfunding borrowers remained at nine in 2024 and however the median amount raised per borrower fell from $203,000 in 2023 to $108,000 in 2024. This is due to the increased presence of new clean cooking borrowers, such as Ugandan briquette manufacturer Bio-Innovations, on platforms. In 2024, more than half of borrowers were new to these platforms while only one-third of borrowers were new in 2023. Adding to these shifting dynamics, historically large crowdfunding borrowers like BURN, Sistema.bio and Greenway were not active on crowdfunding platforms in 2024.

Over the past four years, 20 clean cooking companies have utilised debt crowdfunding. In 2021, just four companies raised a median amount of $692,000 over the year, while in 2024 nine companies raised a median amount of $108,000. Campaigns by companies operating in Kenya amounted to $7 million from 2021 to 2024, accounting for nearly 60% of volumes.

Despite growth, clean cooking related campaigns continue to make up approximately 6% of all energy access related debt crowdfunding, which is now dominated by commercial & industrial (C&I) scale solar projects.

Carbon finance is playing a pivotal role in unlocking funding. When we published our previous report with Modern Energy Cooking Services (MECS) in 2021, platforms rarely considered carbon finance as a source of loan servicing income – something that has become much more common today. Currently, two-thirds of investments in the clean cooking sector are directed toward companies issuing carbon credits, a trend that is evident among clean cooking crowdfunding borrowers.

Overview of debt crowdfunding clean cooking volumes 2021 - 2024

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Introduction

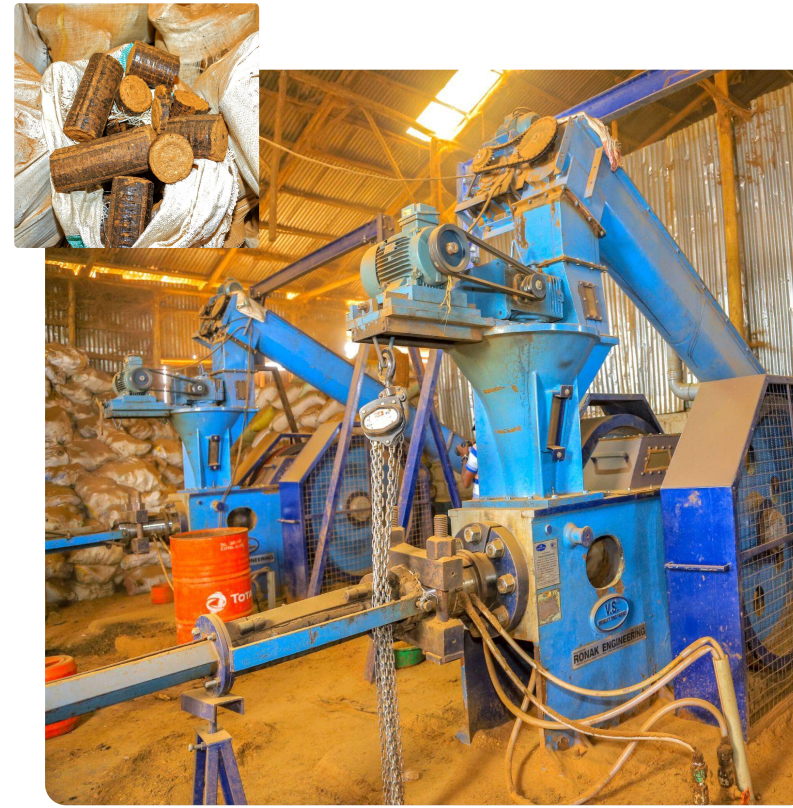
This paper seeks to build on the 2021 report by Energy 4 Impact and Modern Energy Cooking Services (MECS), Clean Cooking: Scaling Up with Crowdfunding, by providing new insights on clean cooking- and crowdfunding-related deals. This report focuses on market developments from 2021 to 2024 and focuses on debt-based crowdfunding.

Today, 2.3 billion people eat meals cooked on open fires and basic stoves. A lack of clean cooking contributes to 3.7 million premature deaths annually and accounts for 2% of global carbon emissions, equivalent to the aviation and shipping industries combined.

Women and girls are disproportionately impacted by a lack of access to and adoption of clean cooking technologies. Women and girls often experience gender-based violence when collecting firewood, whilst spending hours each day on the task. Women and children also account for the majority of premature deaths.

Globally, **progress towards clean cooking has been made** and the number of people practising 'dirty cooking' fell from 3 billion to 2.3 billion between 2010 and 2022. But while the number of households using dirty cooking fuels has declined in Asia and Latin America, usage has increased in sub-Saharan Africa over the same time period.

It is estimated that **$4 billion will be needed to wean households off incumbent fuels** such as firewood, charcoal and biomass by 2030. At the 2024 Clean Cooking Summit in Paris, governments, development finance institutions (DFIs) and several oil and gas companies **pledged $2.2 billion** to confront this complex and long neglected problem.



Photos by PFAN

The announcement of increased investment in clean cooking is a positive signal, however **it is unclear if pledged funding will reach the many small- and medium-enterprises (SMEs) working on-the-ground** to sell and distribute clean cooking products in sub-Saharan Africa, and parts of Asia and Latin American and the Caribbean. The current reality is that many companies selling clean cooking products face significant hurdles when raising capital from investors due to the lack of adequate and suitable capital available.

Over the years, **debt-based crowdfunding has emerged as an alternative form of capital raising, raising $12.5 million for clean cooking from 2016 to 2023**. Debt crowdfunding accounts for just 2% of overall investment in the clean cooking sector. However, debt-based crowdfunding has proven to be a helpful resource for several companies in the sector including Greenway Appliances, Sistema.bio and BURN Manufacturing, as well as smaller borrowers. This report draws on data from six debt crowdfunding platforms active in clean cooking: bettervest, Lendahand, Charm Impact, Kiva, Rockets and LendForGood.

Carbon finance is playing a critical role in mobilising investment capital. Two-thirds of all investment into the sector in 2022 and 2023 went to companies that either generate carbon credits or are in the process of certifying a Program of Activities (PoA) with a carbon registry. This trend is closely mirrored in the debt crowdfunding market with 70% of volumes raised between 2021 and 2024 going to companies with established carbon projects.

SOURCES

International Energy Agency (2023)
International Energy Agency (2024)
Clean Cooking Alliance (2023)

Photo by BURN

“To solve this problem, you don't need to discover new technology. You need financial resources and the right policies to implement.”

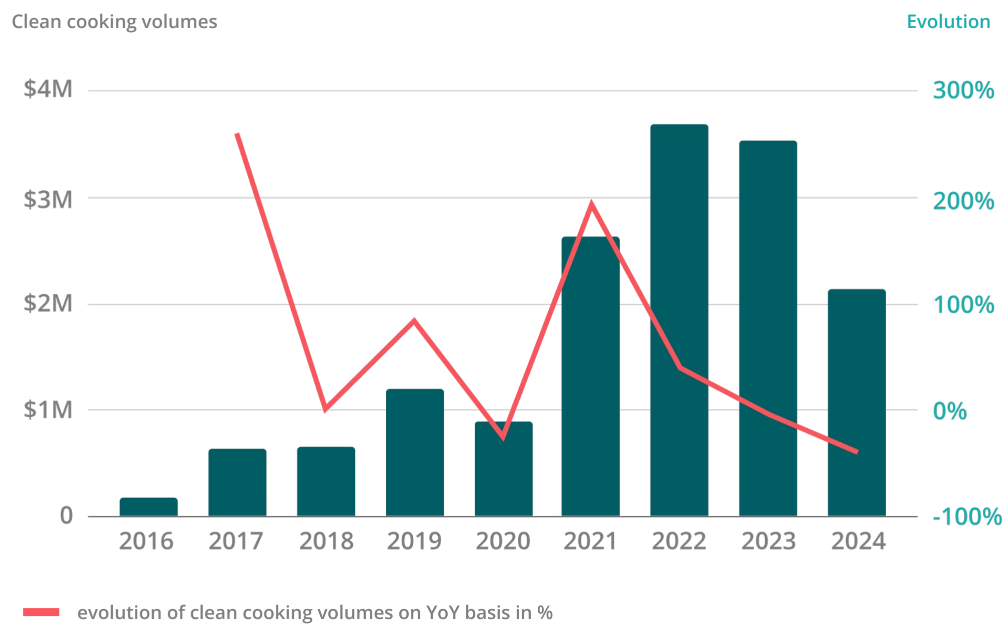
Dr. Fatih Birol, Executive Director at International Energy Agency

Deal snapshot

Volumes grew an average of 64% each year from 2016 to 2024

Clean cooking related debt crowdfunding volumes tripled from 2020 to 2021.

Clean cooking-related debt-based crowdfunding volumes 2016-2024



Note *data analysis based on clean cooking-related campaigns on debt platforms from 2021 to 2024. 2024 data is subject to variation as results are not yet consolidated.*

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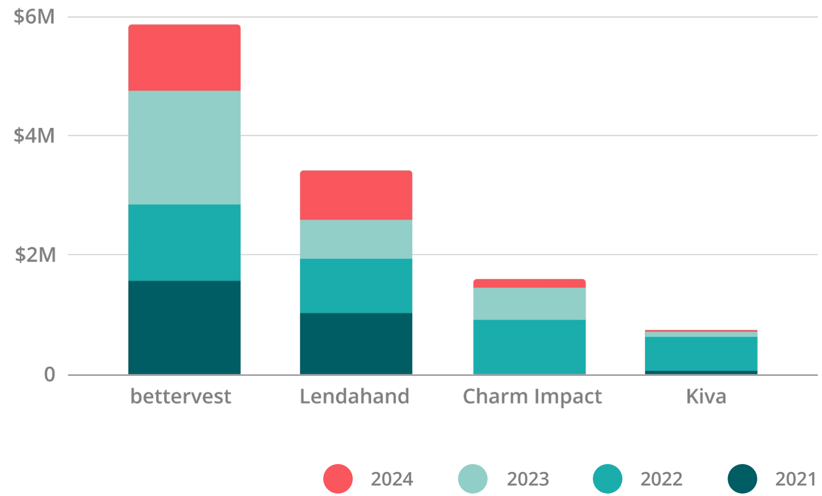
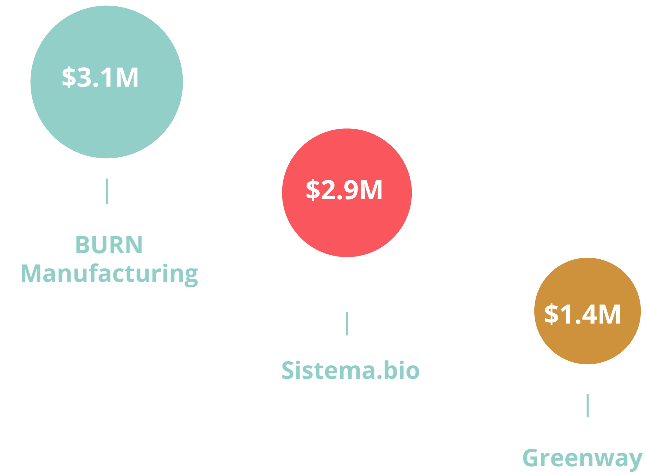
bettervest is the most active platform in clean cooking

Evolution of clean cooking-related debt crowdfunding volumes by platform 2021-2024



Top 3 clean cooking borrowers 2021 - 2024



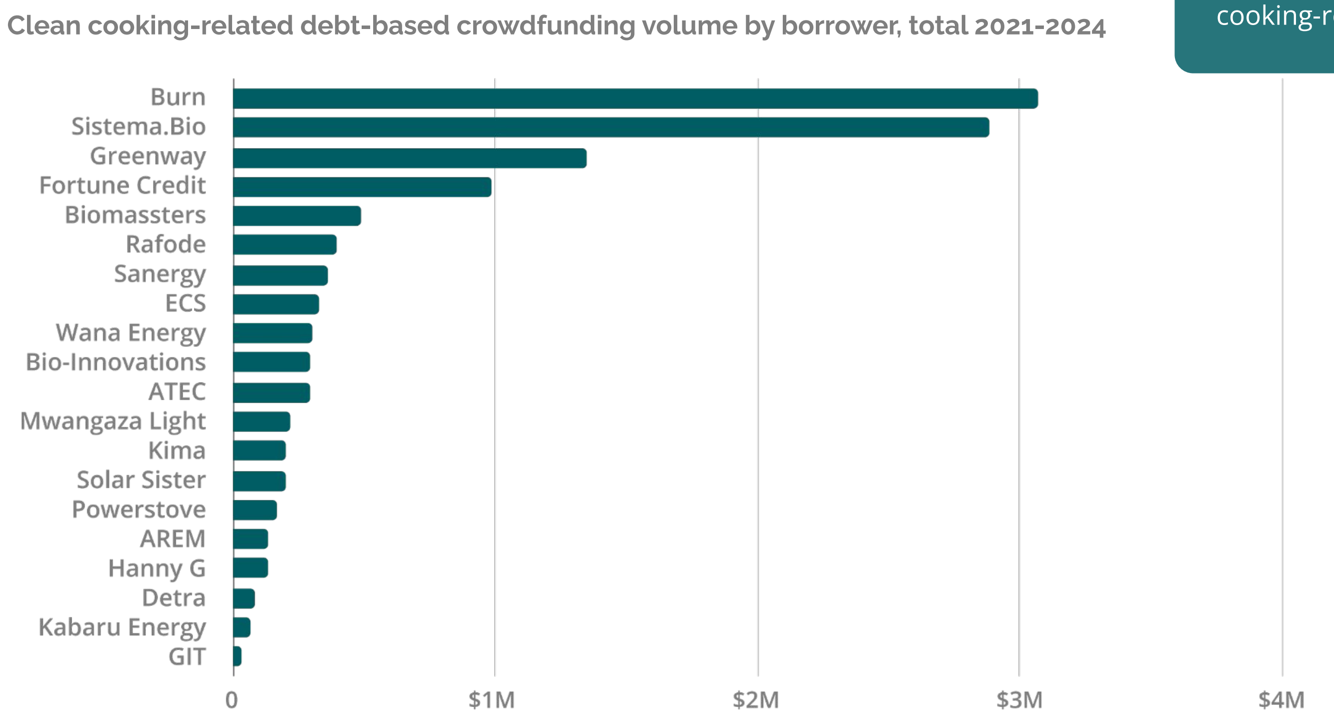
19 CLEAN COOKING CAMPAIGNS EACH YEAR ON AVERAGE

20 CLEAN COOKING BORROWERS ACROSS FOUR PLATFORMS

Only four out of 11 debt crowdfunding platforms active in the energy access sector lend to clean cooking companies.

BURN and Sistema.bio are the most active borrowers

$571,000 raised on average per borrower over 2021 - 2024 period, with a $171,00 average campaign size for clean cooking-related debt campaigns



***Note** data analysis based on clean cooking-related campaigns on debt platforms from 2021 to 2024*

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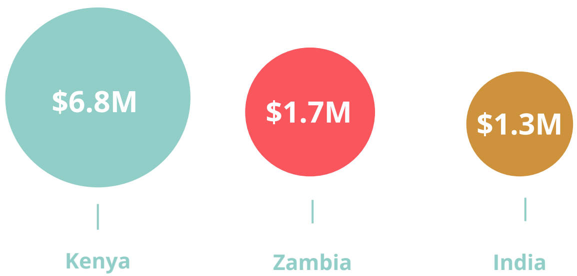
Activity is concentrated in Kenya, Zambia and India. These three countries alone account for 82% of debt raised for clean cooking.

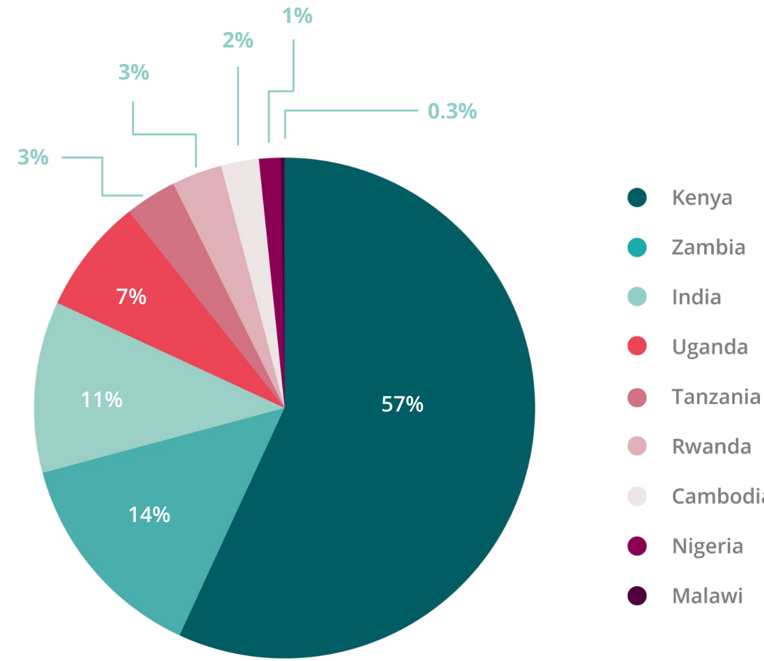
Kenya accounts for 57% of funds raised for clean cooking
Clean cooking-related debt-based crowdfunding transaction volume by country 2021-2024, USD

Top 3 Countries 2021-2024



$571,000 raised on average per borrower over 2021 - 2024 period, with a $171,00 average campaign size for clean cooking-related debt campaigns

Debt crowdfunding volumes per country 2021 - 2024



***Note** data analysis based on clean cooking-related campaigns on debt platforms from 2021 to 2024*

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Platforms

There are currently 11 debt platforms actively lending in the energy access sector. Of these, four platforms lent to clean cooking borrowers between 2021 and 2024.

While the majority of debt platforms are open to clean cooking borrowers, clean cooking remains a small part of overall energy access-related crowdfunding volumes. Between 2021 and 2024, clean cooking campaigns made up just 6%, on average, of all debt raised for energy access via platforms focused on energy access.

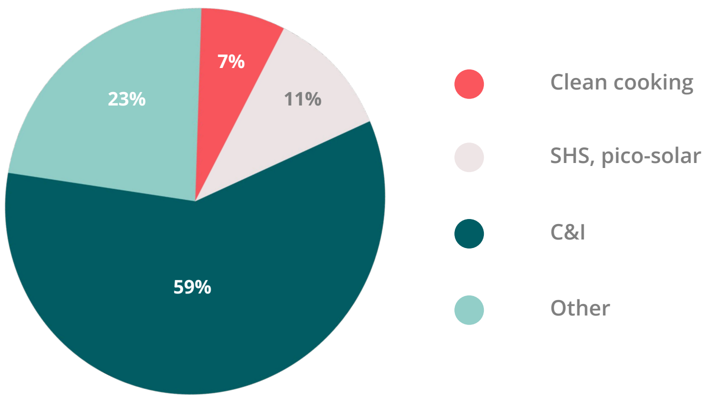
However, for the most active platforms in clean cooking – bettervest and Charm Impact - these loans make up a significant portion of their portfolios. Clean cooking loans accounted for 60% of Charm Impact's loans, on average, in 2022 and 2023, and 44% of bettervest's energy access-related loans over the same time period.

In 2024, impact investor SIMA Funds announced the launch of a new US-based debt crowdfunding platform in 2025. The opening campaigns include BURN.

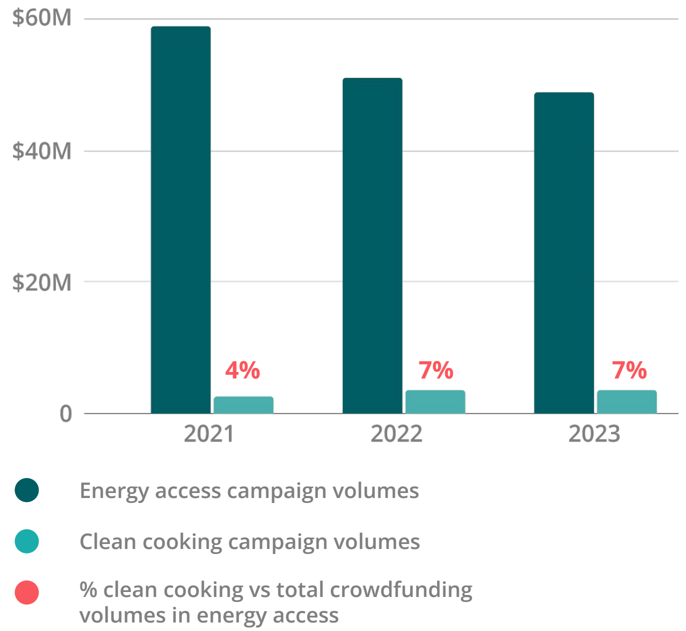
Clean cooking loans accounted for 60% of Charm Impact's loans and 44% of bettervest's energy access-related loans in 2022 and 2023. So far, no defaults have been experienced among clean cooking borrowers by these two platforms.

Despite growth, clean cooking related debt accounts for 6% of all energy access related debt crowdfunding between 2021 and 2024.

Debt crowdfunding volumes by sector in 2023



Share of clean cooking volumes compared to total energy access volumes 2021 - 2023



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Debt platforms in energy access sector	Open to clean cooking loans	Clean cooking campaign *(in USD)*		Clean cooking borrowers			
		2023	2024	Company		Country	
bettervest	✓	385,000	111,000	AREM Bio-Innovations Greenway Appliances	Sanergy BURN Emerging Cooking Solutions	Uganda Kenya Zambia	
Charm Impact	✓	107,000	75,000	AREM BioMassters Detra GIT	Hanny G Powerstove Kima FSA (FI) Rafode (FI)	Uganda Rwanda Kenya	Malawi Nigeria Kenya
Ecoligo	X	-	-	-		-	
Energise Africa	X	-	-	-		-	
Goparity	X	-	-	-		-	
Kiva	✓	62,500	50,000	ATEC Mwangaza Light Solar Sister		Cambodia Kenya Tanzania	
Klimja	X	-	-	-		-	
Lendahand	✓	216,000	104,000	Sistema.bio		India, Kenya	
Trine	X	-	-	-		-	
Solylend	X	-	-	-		-	
Sow Good Investments	✓	-	-	*Not launched yet*		*Not launched yet*	

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Borrowers

Debt crowdfunding has been an important source of bridge financing for companies such as BURN, Sistema.bio, ATEC and BioMassters from 2021 to 2023. Among the 14 clean cooking borrowers we tracked, the largest borrowers, such as BURN and Sistema.bio, used debt crowdfunding alongside a diverse mix of debt and equity. The amount raised represented a small portion of overall financing.

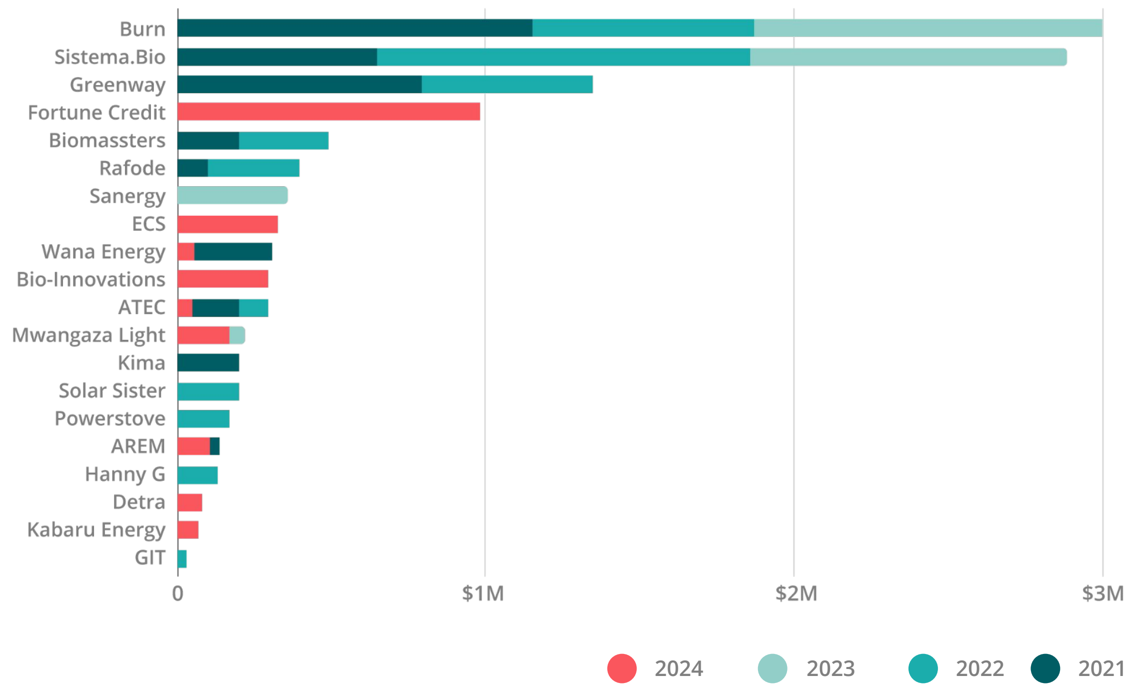
For other companies such as BioMassters and ATEC, debt crowdfunding provided a catalytic capital injection prior to raising pre-Series A and Series A rounds, respectively. For many smaller borrowers, such as Hanny G and Arem, debt crowdfunding is their main source of debt.

Debt crowdfunding played a significant role for several borrowers during the uncertainty of the Covid-19 pandemic in 2020 and 2021 and provided vital bridge financing prior to securing larger sources of debt and equity.

BURN raised $1.2 million on bettervest in 2021, prior to closing a $7.5 million round in 2022. Similarly, Sistema.bio raised $1 million on Lendahand in 2021 before securing a $15 million investment round in 2022. ATEC raised $100,000 on Kiva in 2021 and 2022, providing a financial buffer, prior to raising a $3.75 million round in 2024. BioMassters raised $490,000 of debt through Charm Impact in 2022 and 2023, and in late-2024 Acumen announced an investment in the company (the amount was undisclosed).

For companies like BURN, debt crowdfunding offers a flexible source of financing alongside significantly larger investments from other debt providers. Debt crowdfunding accounted for just 7% of the total project costs outlined in their 2023 bettervest campaign. Greenway, on the other hand, used debt crowdfunding to finance 26% of the costs associated with their first carbon project, in Zambia.

Funds raised per borrower and per year on debt crowdfunding platforms in the clean cooking sector 2021 - 2024



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It is intriguing that both BURN and Sistema.bio have continued to use debt crowdfunding platforms – bettervest and Lendahand respectively - to raise small amounts of debt even after raising multi-million-dollar investment rounds. One of the major benefits of debt crowdfunding for larger companies is the speed and flexibility of the fundraising process. As funds are raised in tranches (through individual campaigns) there is a high level of flexibility and an ability to raise funds as needed, up to an approved amount.

The clean cooking-related crowdfunding market is concentrated. Just three companies – BURN, Sistema.Bio and Greenway - have raised 55% of all funds raised via crowdfunding for clean cooking.

Interestingly, these companies did not raise funds via crowdfunding in 2024. This is partly due to the availability of other funding sources as well as concerns over the ability of platforms to mobilise funds during large campaigns. This highlights the challenge debt platforms face in retaining borrowers as they scale. Securing a large amount of funds from the crowd within a few weeks can be a challenge and this has encouraged some platforms to target institutional investors with greater funding capacity.

Despite this challenge, debt crowdfunding is flexible enough to offer a first step towards commercial finance among small companies, while also giving large companies such as BURN an option to further diversify their funding mix.

Greenway, India's largest biomass stove manufacturer, used debt crowdfunding to co-finance their first carbon project, in Zambia. The parent company in India provided a significant equity cushion, guarantee and co-financing to help secure the loan.

Greenway had raised a $2.5 million pre-Series A round in 2016 and has distributed over 3 million stoves. Greenway secured a $6.5 million investment from the Asian Development Bank in 2023 to increase access to cookstoves in India through carbon financing.

FOUNDED 2011

BURN

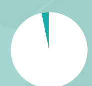
Av. raised via debt crowdfunding p.a. **$934,000**

$27.9M Est. revenue 2022

1.6M+ Est. units sold *(cumulative 2022)*

CARBON FINANCE ✓ | **PRODUCT COSTS $10 to $110**

Debt crowdfunding to revenue ratio in 2022



FOUNDED 2010

Sistema.bio

Av. raised via debt crowdfunding p.a. **$863,000**

$6.9M Est. revenue 2022

50,000+ Est. units sold *(cumulative 2022)*

CARBON FINANCE ✓ | **PRODUCT COSTS $500+**

Debt crowdfunding to revenue ratio in 2022

FOUNDED 2011

Greenway

Av. raised via debt crowdfunding p.a. **$688,000**

$5.9M Est. revenue 2022

1.4M+ Est. units sold *(cumulative 2022)*

CARBON FINANCE ✓ | **PRODUCT COSTS $1 to $2.50**

Debt crowdfunding to revenue ratio in 2022

**Greenway established an SPV for the purposes of raising debt for the carbon project in Zambia in 2022*

SOURCES

bettervest, BURN, 2024
bettervest, Greenway, 2024
Sistema.bio, 2023
PitchBook, 2024

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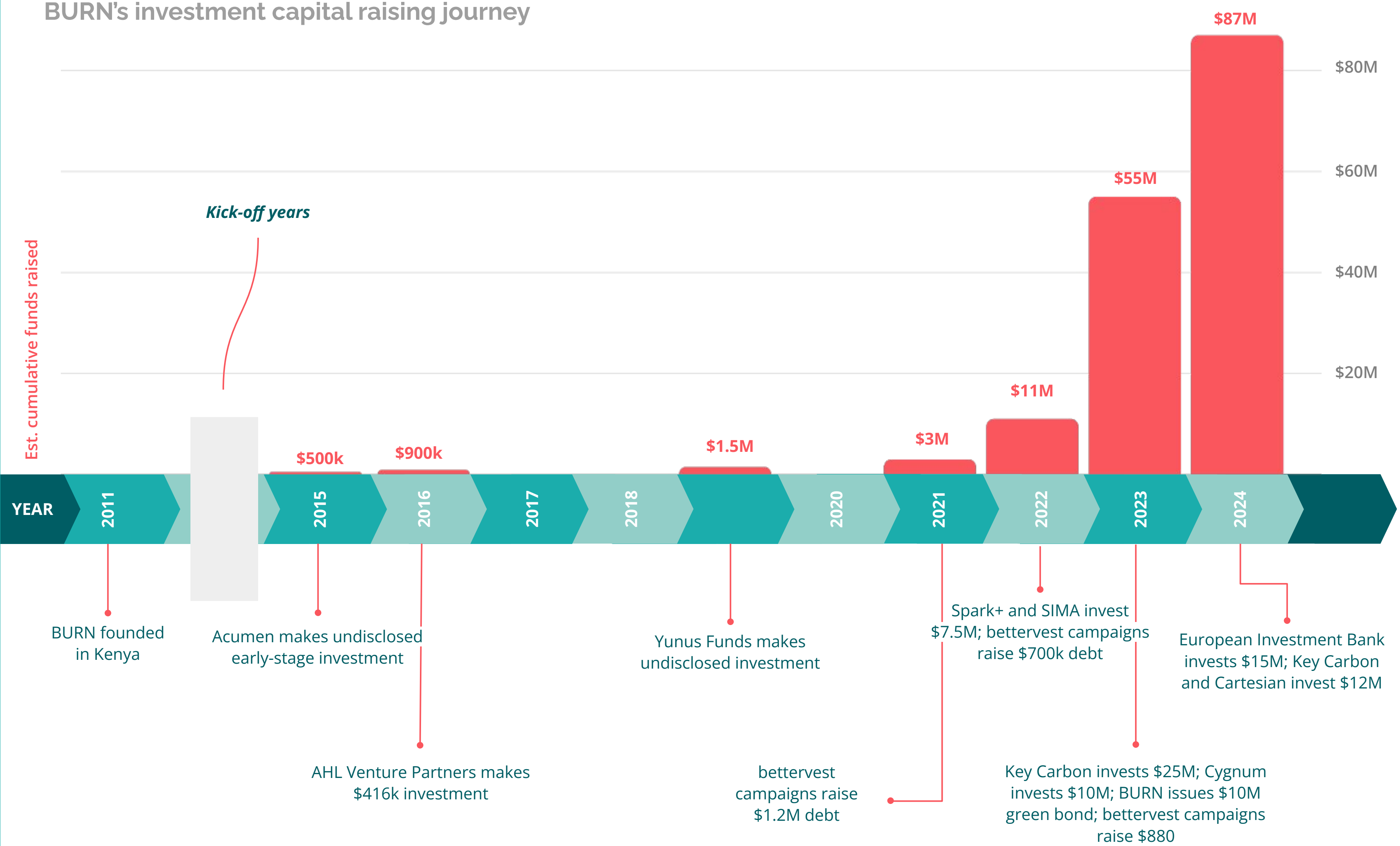
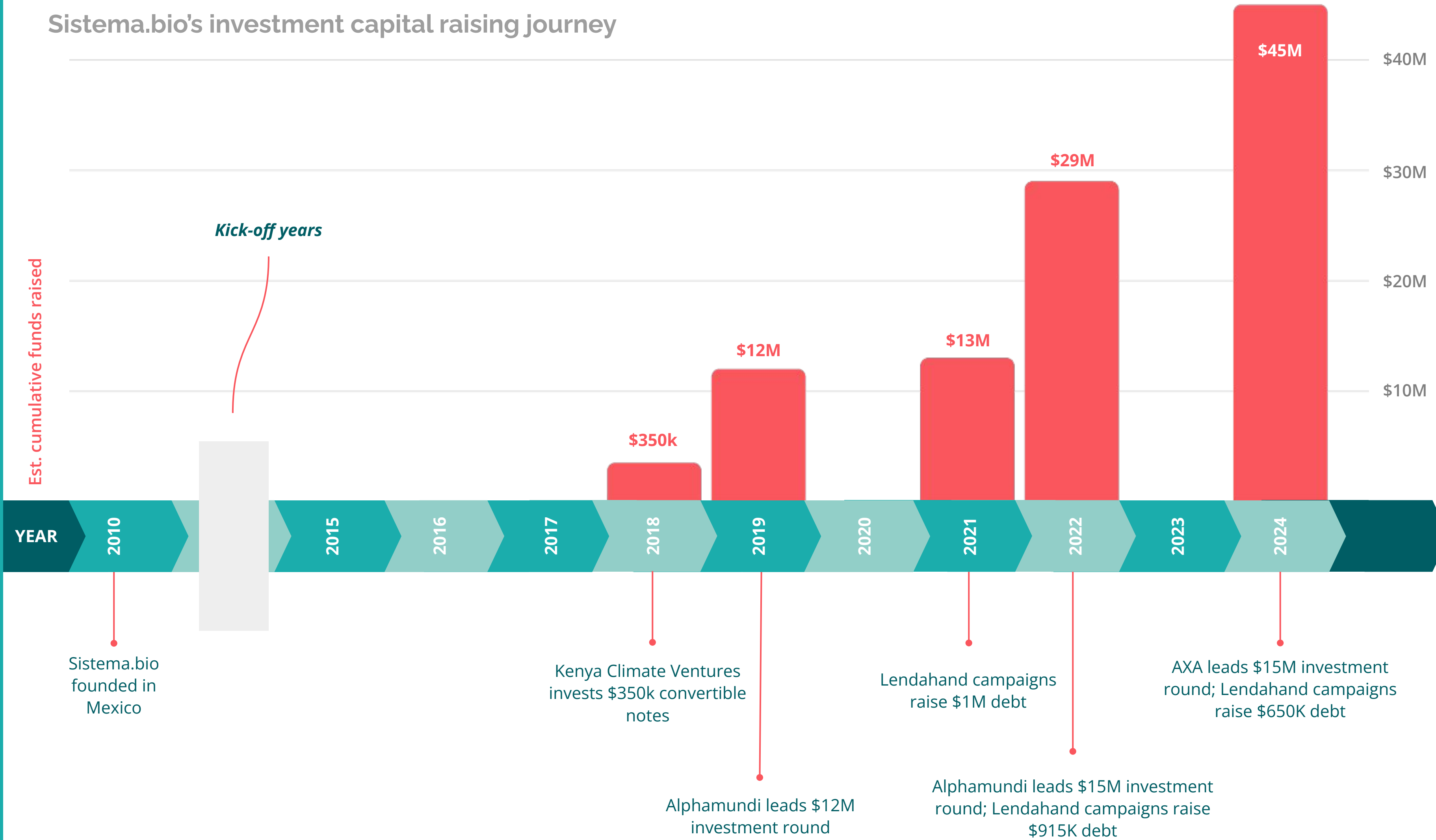
BURN's investment capital raising journey



Sistema.bio's investment capital raising journey



Greenway's investment capital raising journey

Carbon finance

Carbon finance is transforming the clean cooking sector. For clean cooking companies that monetise carbon credits through high quality projects, carbon finance plays a catalytic role in securing investment capital. Two-thirds of investment in the clean cooking sector now goes to companies issuing carbon credits.

Clean cooking projects account for 6% of credits issued globally and around 15% of carbon projects. Of the 1,500-plus clean cooking related carbon projects globally, 60% are in Sub-Saharan Africa.

When borrowers establish a carbon project using higher quality methodology like the Gold Standard, the value generated by carbon credits can be used for loan servicing calculations, while carbon certificates can collateralise loans. This approach represents a shift as several years ago crowdfunders did not consider carbon revenue in their calculation of debt capacity. Now, debt crowdfunding can even be used to finance the set-up costs of carbon projects before carbon revenues begin.

Carbon revenue is also attractive to lenders as it offsets forex risk. Carbon credit revenue is typically in hard currency, while sales revenue is often in local currency. In addition, carbon finance is increasing customer affordability and shifting customer payment models.

Carbon finance is increasing customer affordability and shifting payment models.

Certified, high-quality carbon projects that demonstrate additionality and impact sell carbon credits on the voluntary carbon market (VCM). Carbon credit buyers have a strong preference for higher quality and higher rated credits. Projects that demonstrate strong SDG-related co-benefits and utilise respected methodologies are considered higher quality.

Higher quality projects that employ respected methodologies such as Gold Standard and have demonstrable co-benefits have a much easier time raising capital to finance carbon project set-up costs as these credits can be sold at a premium with greater certainty.

Photos by Energy 4 Impact

Lower quality projects pose reputational risks that result in lower pricing and there is often more payment uncertainty. This impacts capital raising as investors are less confident in project success.

While carbon finance is helping larger companies unlock an additional revenue stream and raise investment capital, the upfront costs and ongoing resource needs can be prohibitive to smaller players. Current estimates suggest carbon project set-up costs fall between $150,000 and $250,000. Carbon finance practitioners are working to increase carbon finance accessibility through the aggregation of smaller projects under a single project to reduce costs, however this model has not been proven.

Additionally, companies considering setting up a carbon project must consider the time lag between project set-up costs and revenue generation, which may be at least two years. Project developers should also consider the payback period and consider the longevity of the VCM for avoided emission credits, which are the types of credits sold by clean cooking companies as demand for carbon removal credits increases.

Carbon finance transforms customer payment model

Borrower Spotlight: BioMassters

BioMassters began in 2020 in Rwanda, manufacturing and selling wood pellets made from local waste, alongside biomass gasification stoves from their partner Mimi Moto. BioMassters later established a carbon project to monetise credits through the FairClimateFund.

Revenues generated from the project have allowed BioMassters to shift from a pay-as-you-go model to a low-cost stove subsidised by carbon revenue and margins generated from the sale of pellets. In the pioneering initiative, BioMassters' 5,000 customers benefit from cashbacks ($2 per 100 kg of pellets purchased) as part of the carbon credit initiative.

Charm Impact provided debt finance at a critical juncture for the company, providing $490,000 in financing in 2022 and 2023. In late 2024, Acumen announced an investment in BioMassters pre-Series A round. Since then, the company has secured a mix of grant, equity and debt funding totaling nearly $1.7 million. In addition, they pre-sold carbon credits worth $315,000, which enabled them to reduce the purchase price of their cookstoves, putting them in a better position to establish pellet cooking in the mass market.

SOURCES
Acumen, 2024
GET.invest, 2024
Energy 4 Impact blog post

Platform spotlight
bettervest

Why did you expand into the clean cooking sector?

We expanded into clean cooking because there is both strong demand and critical need for such projects. These initiatives align with several UN sustainability goals and diversify the range of projects we offer to our crowd. We've also observed that our crowd finds these projects particularly appealing.

Which technologies and business models do you find most attractive as an investor?

From our perspective, we believe that the installation of clean cooking stoves that replace traditional wood burning stoves are the most effective technologies, with direct and concrete impact. Although not 100% perfect, they offer an effective alternative to traditional methods of wood burning.

07

How many of the clean cooking projects generate carbon financing?

In our experience this is an under-utilised opportunity. Those projects that have access to carbon certificates are always willing to pledge them as security, but not all project owners know how to obtain these credits, nor use them as security. There is an opportunity to run a few workshops with clean cooking associations in various countries where we could educate more project owners and associations on the possibilities of using carbon certificates.

For companies with carbon finance, how did they finance the upfront costs of setting up a carbon project?

It is true that the upfront costs remain a challenge, especially for small project holders. The appropriate financing structure must still be found, and we strongly believe that crowdfunding can play a significant role in providing upfront financing needs or working capital to project holders prior to generating carbon revenues.

How have you facilitated smaller transactions to different company profiles than you've lent to in the past?

At bettervest, we aim to finance projects and companies in need of finance and are too small for usual funding channels, including other crowdfunding platforms. In 2022 we launched a pilot to finance smaller companies operating in the clean cooking sector in East Africa. Fundraising starts at $100,000 compared to $300,000 usually.

How do you handle differences in terms of credit assessment and risk?

Smaller projects are indeed riskier. To make them attractive to our crowd, we always seek a set of guarantees to reduce the risk profile. This can be anything from mortgage over land or the pledging of shares or carbon certificates. The other issue is cost. Our due diligence costs are not significantly different between a €1 million project and a $109,000 project. This is where donor contributions are still necessary. Crowd Power and RVO’s Strengthening the Entrepreneurial Ecosystem for Clean Cooking (SEE Clean Cooking) have been an important source of support for us.

08

Conclusion & recommendations

Clean cooking-related debt crowdfunding is playing an important role for smaller companies seeking debt finance. The decrease in median campaign size from $692,000 in 2021 to $107,000 in 2024 demonstrates the shifting market, which is now working to finance smaller players. Debt crowdfunding is a critical source of capital for smaller companies trying to access commercial debt.

Debt crowdfunding can also play an important role in increasing carbon finance accessibility as platforms like bettervest look to support companies finance carbon project set-up costs. Helping smaller companies to establish additional revenue streams from carbon finance will be key to creating a diverse and competitive clean cooking market that can truly leave no one behind. Increasing access to carbon finance will also ensure local founders, which typically operate smaller companies, can remain competitive with larger international players.

Debt crowdfunding has long been the first step for companies accessing commercial financing. Funder support for platforms and borrowers will remain vital, especially if platforms can continue to support smaller borrowers.

Note: *Equity and donation-based crowdfunding is out of scope for this report as the volumes are extremely low; a total of $70,000 was raised over 9 years.*

Key recommendations to funders supporting clean cooking

01 Provide platforms with support for origination, due diligence and technical assistance.

Investors often need to spend more time with smaller companies to understand their business and obtain relevant information. Providing funding to debt crowdfunding platforms to support their origination and due diligence process, coupled with funding for technical assistance provision, will allow platforms to spend more time with potential investees, providing valuable feedback and advice. This approach offers a highly cost-effective solution for delivering technical assistance compared to traditional models. By automating aspects of the due diligence and sales processes, operational costs may also be significantly reduced. This opens further opportunities to fund smaller companies, and where donor programmes such as Crowd Power can bring support.

02 Provide specialised funding to support carbon project set-up costs and explore aggregation.

Ensuring smaller, locally-led companies can benefit from carbon finance revenue through their own projects, aggregation or revenue-sharing with manufacturers is critical to building a competitive clean cooking market. Funders can look to support part of the carbon project set-up costs through a collaboration with debt crowdfunding platforms to increase accessibility and minimise over-indebtedness.

Authors

Davinia Cogan
Senior Advisor
dcogan@mercycorps.org

Thomas Petex
Programme Manager
tpetex@mercycorps.org

www.energy4impact.org

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