
Global Distributors Collective

# Last Mile Distribution: State of the sector report

2025

# Contents



# About the Global Distributors Collective

The Global Distributors Collective (GDC) is a collective of over 250 last mile distributors (LMDs) around the world. GDC members operate across more than 50 countries, selling beneficial products such as solar home systems, improved cooking solutions, and water filters. The GDC is the world's only entity dedicated to supporting LMDs across a wide variety of sectors and geographies, to help them reach millions of underserved customers.

## Strategic goals

**To help distributors improve business performance and grow** by providing – and enabling others to provide – solutions and services that help save time, reduce costs, build capacity, and develop partnerships.

**To build a collective voice for the sector** by generating and sharing learnings, raising the profile of distributors, and helping the broader ecosystem to work effectively with distributors to achieve shared impact goals.

The GDC is hosted by Practical Action alongside strategic and implementing partner Bopinc.

Global Distributors Collective

bop inc

For more information about the GDC, please visit www.globaldistributorscollective.org or email GDC@practicalaction.org.uk

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## Abbreviations

| | |
|---|---|
| ATL | Above-the-line |
| BGFA | Beyond the Grid Fund For Africa |
| BTL | Below-the-line |
| CEO | Chief Executive Officer |
| COGS | Cost of goods sold |
| CRM | Customer relationship management |
| DFI | Development finance institutions |
| DMRV | Digital Monitoring, Reporting, and Verification |
| DRC | Democratic Republic of Congo |
| EaaS | Energy-as-a-service |
| FX | Foreign exchange |
| GDC | Global Distributors Collective |
| GGF | Green Genset Facility |
| KPI | Key performance indicator |
| LMD | Last mile distributors |
| MD | Managing Director |
| MEAP | Malawi Energy Access Project |
| MFI | Microfinance institution |
| NGO | Non-governmental organisation |
| NNNF | Ngwee Ngwee Ngwee Fund |
| NPS | Net Promoter Score |
| PAYG | Pay-as-you-go |
| PUE | Productive use of energy |
| PV | Photovoltaic |
| RBF | Results-based financing |
| REAL | Rural Energy Access Lab |
| SACCOs | Saving and credit cooperative organisations |
| SDG | Sustainable Development Goals |
| SHS | Solar home system |
| SoS | State of the sector |
| TA | Technical assistance |
| WASH | Water, sanitation, and hygiene |
| WP | Watt-peak |

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# 1 Executive summary

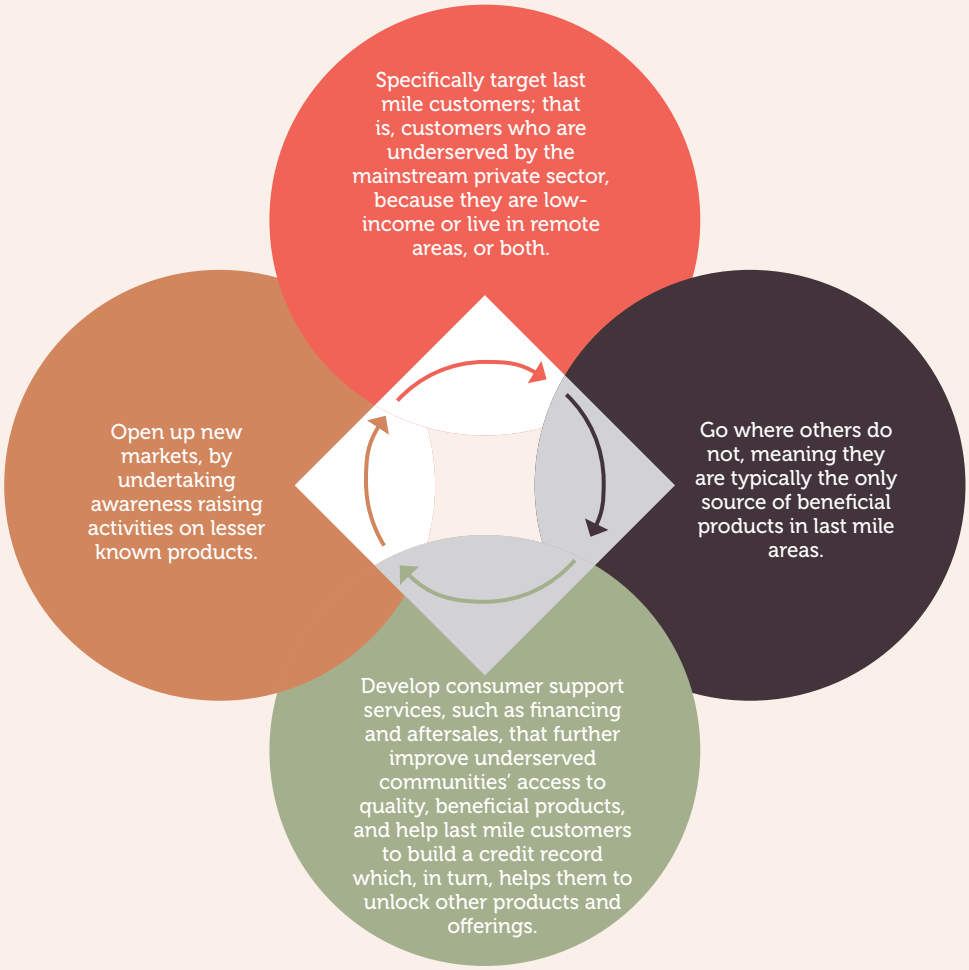
This is the third edition of the GDC's *Last Mile Distribution: state of the sector* (SoS) report series, following reports in 2019 and 2022. This edition explores the latest developments in the last mile distribution sector since 2022 – including the challenges, opportunities, and emerging trends – as well as providing an updated overview of GDC members, or 'last mile distributors' (LMDs). In particular, we explore LMDs' continued importance in creating markets for beneficial products around the world, the resilience and growth that they have demonstrated even in particularly challenging economic and political contexts, the difficulties they have faced in accessing finance and other kinds of support since 2021, the characteristics of resilient LMDs, and LMDs' aspirations for the future. The report draws on three main sources of information: (1) a survey of 114 GDC members carried out in 2024, (2) a literature review of key publications since 2022, and (3) over 40 interviews with LMDs, investors, and development partners.

## The 'access gap'

Globally, billions of people lack access to beneficial products including solar lights and home systems (SHS), water filters, improved cookstoves, solar water pumps, and other health, nutrition and agricultural products, with more than 4.5 billion people – over half the world's population – at high risk of climate shocks. For a significant proportion of those lacking access – particularly the poorest and most remote households - the most efficient way to achieve impact at scale and speed is through last mile distributors (LMDs).

At the GDC, we define LMDs as organisations that **sell beneficial products** such as solar lights, water filters, or improved cookstoves **to last mile customers** at the **household** level. LMDs may also undertake other activities - for example, product R&D or consulting - but their **primary focus must be on distribution**.

**LMDs are uniquely placed to address the access gap because they:**




## Trend 1: LMDs continue to play a critical market creation role

LMDs typically operate on the fringes of established commercial markets, creating trust and demand for beneficial products through sales agents, NGO partnerships, and below-the-line (BTL) marketing techniques, before pivoting to retail sales as demand grows. The demand they create attracts other types of companies, such as informal traders selling non-quality verified products, and off-grid solar pay-as-you-go (PAYG) companies. In the face of competition with better-capitalised firms, they often pivot to target new, underserved product categories, customer segments, or geographical locations. On average, 67 per cent of LMD customers live on less than $3.20 per day and 78 per cent live in rural areas. A high proportion are first-time purchasers, and 44 per cent of LMDs target refugees and host communities.

**88%**
Of GDC members are locally owned

**47%**
Of GDC members are women – owned

**>50%**
Of GDC staff and sales agents are women

The 114 members who provided data reported reaching around 24.5 million people to date, with the wider GDC membership and LMD sector likely to reach far more.

## Trend 2: LMDs have demonstrated resilience and growth in challenging conditions

LMDs faced challenging conditions between 2021 and 2023: inflation, currency depreciation, insecurity, political instability, reduced access to finance, and devaluation which reduced the value of local currency earnings, therefore stretching consumer affordability. Disasters caused by climate change exacerbated macroeconomic and political challenges, which made LMDs' revenue and profitability trajectories more unpredictable. Neverthless, 61 per cent of GDC members increased revenues between 2021 and 2023, showing resilience and growth. Distributors with revenues above $500,000 grew by 26% in 2023, while those below that threshold saw a 7% decline, indicating that scale makes a difference for resilience and growth potential.

## Trend 3: LMDs have found it harder to access finance and support since 2021

The number of LMDs reporting raising funding of all types dropped from 2021 to 2023, with a 40 per cent reduction in grants, 54 per cent reduction in debt, and 75 per cent reduction in equity. Of the 50 or so companies reporting raises in funding, just eight companies raised more than $500,000. 14 companies raised less than $100,000 — often relying on a single small grant.

**Grant:** Two thirds of the transactions reported in 2023 were grants and total grants volumes decreased by 70%. Grant funding is increasingly provided through Results Based Financing (RBF).

**Results Based Financing (RBF)** appears to enable LMDs to push further into remote areas, reach a greater proportion of low-income households, and serve more women customers. Whilst LMDs' experiences with RBFs are mixed, RBF programmes are increasingly adapting to meet LMDs' needs.

**Debt:** While the number of transactions has gone down, the median debt transaction has gone up, meaning the money that is flowing into the LMD sector is concentrated among a handful of companies.

**Equity:** All LMDs are struggling to raise equity, and when they do manage to raise it, the amounts are typically small.

In addition, women-owned LMDs raised less than half of their male counterparts - despite constituting 47 per cent of LMDs surveyed - while locally-owned LMDs are less likely to raise grants or debt compared to their international counterparts, but raise similar amounts when they do.

Despite a significant proportion of LMDs benefiting from technical assistance (TA), facilities are heavily oversubscribed and smaller/earlier-stage LMDs are under–supported.

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## Characteristics of successful LMDs

Resilient LMDs possess a strong, growth- and efficiency-oriented sales function, in combination with actively managing and improving performance across finance fundamentals, ensuring efficient operations, pursuing supply chain diversification, and adapting to the macro environment. They manage FX risk exposure and adapt to regulatory shifts and changes that impact their business model. Successful LMDs optimise company structure, prioritise lean operations, use benchmarking tools to identify improvements, and much more.

## LMDs' business aspirations

LMDs are committed to making products accessible to their customers through offering consumer financing, warranties, and repairs. They aspire to sell higher-tier SHS, improved cookstoves, and PUE products, but face affordability, consumer financing, and supply challenges. 72 per cent of LMDs provide consumer financing - mostly through partnerships with MFIs and SACCOs - while some are also offering PAYG and energy-as-a-service (EaaS). But many distributors lack the systems, working capital, and credit risk management capacity to implement these offerings at scale.

56 per cent of GDC members are now selling productive use of energy (PUE) products, which is an increase of 50 per cent since 2019. Sales are growing but volumes remain low, although, encouragingly, LMDs appear to have captured a significant share of PUE markets: a 27 per cent market share for solar water pumps and a 10 per cent share for refrigerators. Models remain costly and complex, and LMDs need funding and support to innovate to find the right business model for selling PUE.

83 per cent of LMDs offer warranties but many would like to go further and offer repair services to extend product lifetimes and improve customer satisfaction, though commercial viability remains uncertain.

## Conclusions and recommendations

LMDs play a vital market creation role that raises awareness, educates consumers, enhances trust in technology, and creates demand for beneficial products – but doing so also incurs significant costs and puts pressure on LMDs' profitability. **LMDs are effectively delivering public goods,** yet they must pass those costs onto their customers. This often means that some of the poorest, hardest-to-reach households actually pay more for products than people in wealthier, urban markets. We call this the "**poverty premium".**

Encouragingly, there is an increasing recognition of LMDs' social impact and market creation role among donors, investors, and governments; and of the importance of supporting smaller, locally-owned, and women-owned companies, more broadly.

LMDs have been able to maintain or grow revenues despite challenging conditions, suggesting they are both lean and resilient. Yet, there remains an untapped opportunity to deliver impact at scale and accelerate the growth of markets for beneficial products through increasing funding and support to LMDs.

## Three key innovations are needed to unlock growth in the sector

1

### Embrace LMDs as market creators that enable sustainable development

Governments and development partners need to adopt a holistic market-building approach that recognises and values market creation alongside commercial performance, scale, and attracting investment. Such an approach would combine grants, RBF, small-ticket local currency debt financing, and TA.

2

### Build inclusive financing models with local currency and digital innovation

Stakeholders need to work together to develop local currency and small-ticket debt offerings, as well as risk-tolerant, low-return equity offerings that align with LMDs' needs. There is a need to unlock small-ticket debt financing, especially in local currency. Data-based and digital solutions to streamline lender due diligence processes, including the use of greater automation in credit assessment, can help to reduce transaction costs and more accurately appraise risk.

3

### Equip early-stage companies with tailored, scalable support

TA providers need to develop enhanced TA offerings, particularly for smaller and newer companies. This includes high-touch, long-term, one-to-one support, cohort-based training, peer-to-peer learning mechanisms, and light-touch guidance and tools. More needs to be done to assist smaller and earlier-stage companies that are currently unable to access any kind of finance or TA, because of high transaction costs and risks. These companies – who are often serving some of very hardest-to-reach households - can be.

# 2 Introduction

**This is the third edition of the GDC's *Last Mile Distribution: state of the sector* (SoS) report series, following reports in 2019 and 2022.**[1] The introduction outlines the challenges around last mile consumers' access to beneficial products and services, and how LMDs can help to address these challenges. Trend 1 explores the social impact of LMDs and the critical role they play in creating markets for beneficial products. Trend 2 captures and shares the strategies that have enabled LMDs to survive – and, in some cases, thrive – in challenging macroeconomic conditions. Trend 3 describes how LMDs' access to finance and support has changed since 2021. The trends are followed by two chapters on the characteristics of successful LMDs and their business aspirations. The report concludes with recommendations regarding how governments, donors, technical assistance (TA) providers, and investors can help unleash LMDs' full potential to contribute to the United Nations' Sustainable Development Goals (SDGs).

**A total of 666 million people worldwide lack access to electricity,**[2] **2.1 billion lack access to improved cooking,**[3] **2.3 billion face food insecurity,**[4] **2.2 billion lack access to safe water,**[5] **and more than 4.5 billion people – over half the world's population – are at high risk of climate shocks.**[6] This 'access gap' undermines progress towards the SDGs, climate adaptation and resilience, and gender equality.

**Figure 1: The global 'access gap'**


(Source: IEA, IRENA, UNSD, World Bank, and WHO, 2025; UNESCO 2024; World Bank 2025)

**Families and communities that lack access to beneficial products are increasingly likely to have low incomes and live in remote or conflict-affected areas, making them harder to reach.**[7] Events like COVID-19 and the wars in Ukraine and the Middle East[8] have disrupted supply chains, causing prices to rise and earnings to fall amongst the world's poorest people – exacerbating poverty and inequality.[9]

**Beneficial products such as solar lights and home systems, improved cookstoves, solar water pumps, refrigerators, water filters, and other health, nutrition, and agricultural products have a vital role to play in closing the access gap.** The gap can be partly addressed through building infrastructure and extending government service delivery, but this kind of solution takes time and requires long-term, large-scale public investment. For a significant proportion of those lacking access – particularly the poorest and most remote households – the most efficient way to achieve impact at scale and speed is through building markets that provide access to beneficial products.

**This report focuses on LMDs – which the GDC defines as organisations whose core business is the distribution and sale of beneficial products to remote and low-income households.** A wide range of companies engage in distribution, including retailers, multinational corporations, informal traders, microfinance institutions (MFIs), and manufacturers with proprietary distribution networks. However, most distribution occurs in mature commercial markets, in higher-income and more densely populated areas. As explored in more detail in Trend 1, LMDs are typically focused on reaching lower-income households and serving remote, rural communities by introducing beneficial products for the first time, and creating demand that helps to catalyse wider market growth.

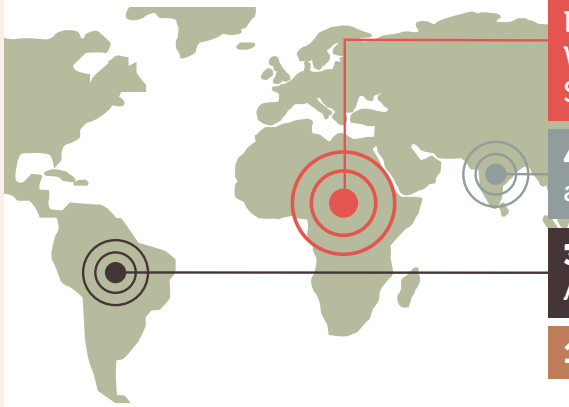
This report draws on three main sources of information: (1) a survey of 114 GDC members carried out in late 2024, (2) a literature review of key publications since 2022, and (3) over 40 interviews with LMDs, investors, and development partners. Where we refer to data about LMDs, the source is the 2024 survey, unless otherwise stated. Data from LMDs is presented using averages, where figures were reasonably consistent across respondents. However, in situations where outliers were distorting the averages – reflecting the diverse nature of the last mile distribution sector – 'median' figures (i.e. the middle value in a set of numbers) were provided to give a better sense of what LMDs typically look like. Not all respondents responded to all survey questions, leading to a variation in sample sizes, which are clearly stated throughout the report.

# GDC membership overview

## Survey conducted with 114 GDC members

### Geography

Members operate across **45** countries



**38%** operate in East Africa, **20%** in West Africa, **20%** in Southern Africa

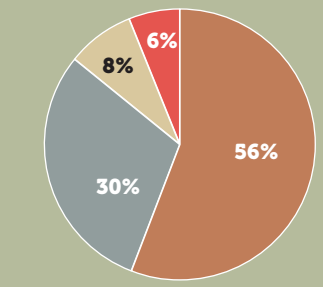
**4%** operate in Asia and Pacific

**3%** operate in Latin America

**15%** are multi-region

### Years of operation

On average, members have been operating for **8.5** years




< 2 years
> 10 years
5-10 years
3-4 years

### Impact

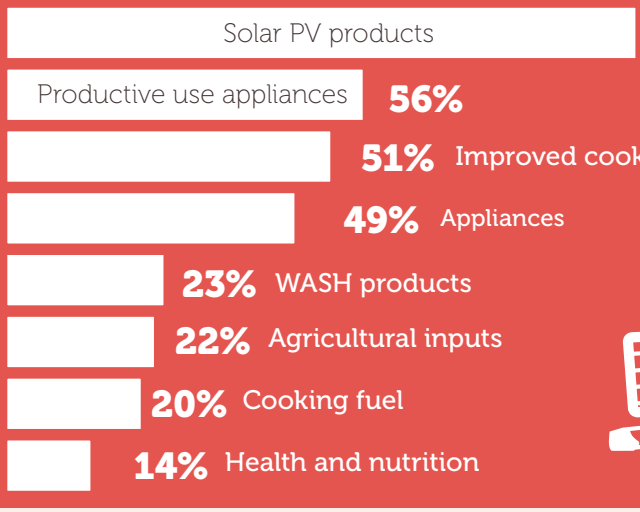
**215,000**

Average number of people reached to date by GDC members

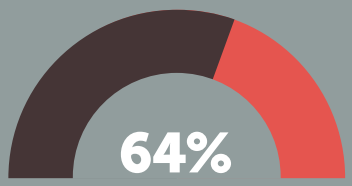
**67%** of customers earn less than **US$3.20** a day and **78%** of customers are rural

### Products

**89%** of members sell more than one product category




### Distribution Channels




Of members sell through more than one channel

- Sales agents (in house and commission based) – **88%**
- Retail – **48%**
- Partner organisations – **37%**

### Ownership

**88%**

Of companies are locally owned, where **> 50%** of shares are owned by citizens of the countries where the products are distributed

**93%**

Of companies are locally led, with a citizen of the country of operation as CEO or MD

### After-sales and consumer financing

**83%**

Provide after-sales services and warranties

**72%**

Offer consumer financing

**Notes:** [1] all graphics exclude non-responses to that questions – sample size for each question may be lower than the overall 114 responses, [2] customer numbers and poverty levels self-report

# 3 Trend 1. Last mile distributors continue to play a critical market creation role

**LMDs typically operate on the fringes of established commercial markets, creating trust and demand for beneficial products through sales agents, non-governmental organisation (NGO) partnerships, and below-the-line (BTL) marketing techniques,[10] before pivoting to retail sales as demand grows.** The demand they create attracts other types of companies, such as informal traders selling non-quality verified products, and off-grid solar pay-as-you-go (PAYG) companies. In the face of competition with better-capitalised firms, they often pivot to target new, underserved product categories, customer segments, or geographical locations. In addition to their social impact, LMDs have a profound – and often unrecognised - market creation impact, as Figure 2 presents.

**Figure 2: LMDs' market creation role**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## Reaching difficult-to-access customers with beneficial products

**LMDs serve a higher proportion of customers who have low incomes and live in remote or rural areas compared to other companies in the off-grid energy and agriculture sectors.** The income inclusivity ratio, developed by social impact measurement experts 60 Decibels, is a measure of the per centage of a company or sector's customers living below the US$3.20 poverty line, compared to national poverty rates. On average, 67 per cent of LMD customers live on less than $3.20 per day, giving an income inclusivity ratio of one, and indicating that they serve a proportion of low-income customers in line with sub-Saharan Africa's average poverty rate.[11] This compares to income inclusivity ratios of 0.81 in the off-grid energy sector, 0.64 in the agriculture sector, and 0.58 in the financial inclusion sector – indicating that these sectors serve higher-income customers compared to national poverty rates. On average, 78 per cent of LMDs' customers live in rural areas, compared to 50 per cent for the off-grid energy sector as a whole,[12] as Figure 3 presents. These figures are broadly consistent with our 2022 and 2019 data.

**Figure 3: LMD customer profile compared to sector averages[13]**

| Sector | Income inclusivity ratio | Per centage of customers living in rural areas | Source |
|---|---|---|---|
| **LMDs** | 1 | 78% | GDC member survey 2024 |
| **Off-grid energy** | 0.81 | 50% | 60 Decibels |
| **Agriculture** | 0.64 | | 60 Decibels |
| **Financial inclusion** | 0.58 | | 60 Decibels |

**A high proportion of LMDs' customers are first-time purchasers of beneficial products.** Powerlive, a women-led social enterprise that distributes off-grid solar products and productive use of energy (PUE) products in rural Zimbabwe, found more than 90 per cent of its customers are purchasing a solar home system (SHS) for the first time. Meanwhile, renewable energy company Green Impact Technologies in Malawi estimates that 70 to 80 per cent of SHS customers were first-time buyers – reflecting their transition from kerosene and battery-powered torches. A 2021 study by 60 Decibels for Aqua Clara in Kenya revealed that 86 per cent of customers had never interacted with a water filter before, highlighting the company's role in expanding access to safe water solutions.[14]

**A striking 44 per cent of LMDs surveyed reported specifically targeting refugees and host communities.** For example, Fena Solar and Wana Energy Solutions are among a growing number of companies working to expand energy access in Uganda's refugee-hosting districts, including Rhino Camp, Bidibidi, Lubule, Adjumani, and Kiryandongo. Both companies see the humanitarian and business case for serving these communities, yet they face persistent barriers that limit scale.

Case Study

## Serving refugee communities in Uganda

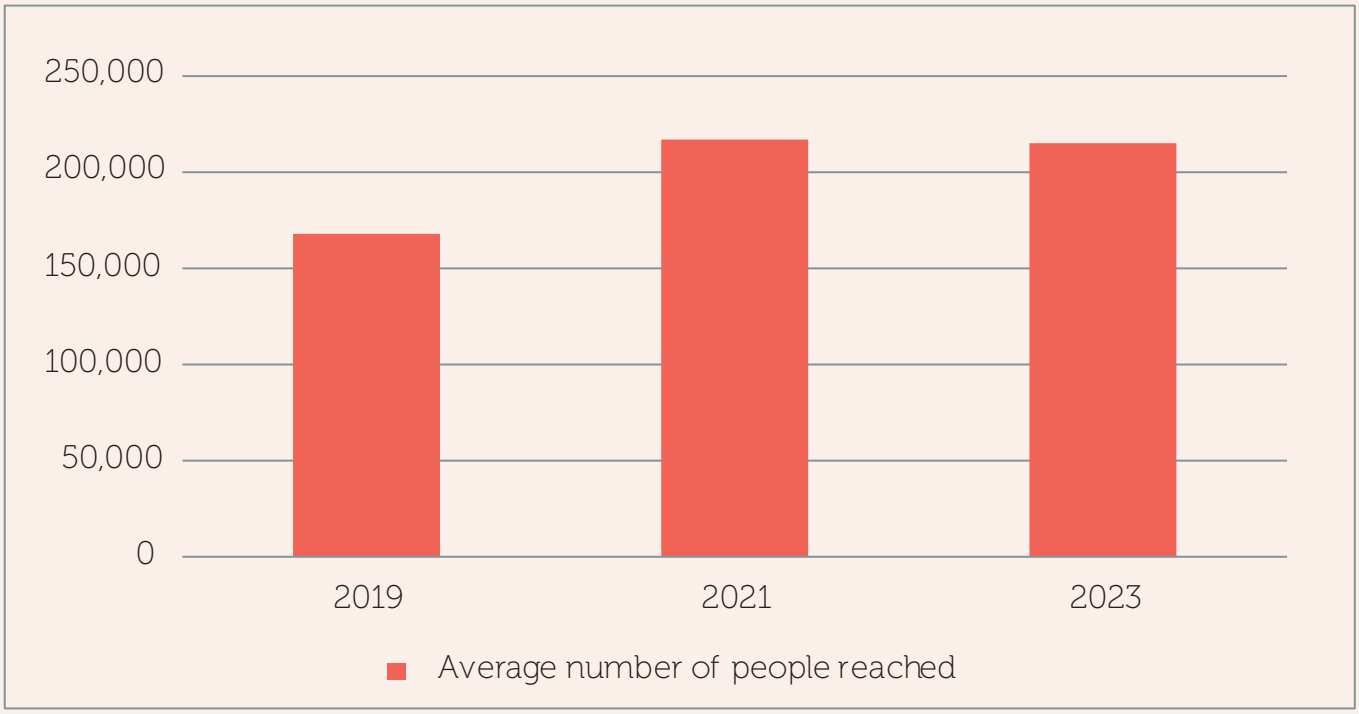
Wana Energy Solutions is motivated by environmental impact, noting that deforestation is especially acute in refugee areas. The company, which sells liquid petroleum gas, improved cookstoves, and electric pressure cookers, sees carbon credits as a potential revenue stream to support operations. Fena Solar, a women-led business, is driven by a mission to empower women and youth through access to SHS and PUE products like sewing machines.

Affordability remains a critical challenge for both companies. Refugee households often earn as little as $3 per month, making it difficult to repay PAYG loans, which average $10 per month. While results-based financing (RBF) helps increase access to new markets and revenue streams, both companies say it's still hard to make the business case work. Offering credit is risky due to high customer mobility and limited credit history. Their ability to offer consumer financing, and to participate in RBF, is also limited by working capital constraints.

To reach more customers, both companies highlight the need for upskilling refugees, especially women and young people, to build demand for PUE. For example, Fena Solar identified a strong interest in tailoring among refugee women but lacks the resources to provide vocational training, limiting the uptake of sewing machines. Wana Energy Solutions is experimenting with 'agent aggregators' (a regional agent who obtains stock for a network of local agents) to reach camps without high distribution costs. Both companies expressed an interest in shared retail models such as 'rent-a-shelf' kiosks. These approaches could help expand reach while supporting local livelihoods.

**The 114 members who provided data reported reaching around 24.5 million people to date, with the wider GDC membership and LMD sector likely to reach far more.** On average, those 114 members have reached 215,000 people each over 8.5 years of operation, with 60 per cent reaching less than 20,000 people and 10 per cent reaching an average of 1 million people. They represent less than half of GDC members, which in turn only represent a small proportion of all LMDs operating globally.

**Figure 4: Average number of people reached by LMDs**




**The 114 LMDs surveyed reported selling 0.88 million solar photovoltaic (PV) products in 2023, representing 10 per cent of the 8.9 million solar PV products sold by GOGLA affiliates.[15] That same year, they also sold 469,000 cookstoves, 273,000 water, sanitation, and hygiene (WASH) products, 112,000 domestic appliances, and 8.6 PUE products.[16]** Within the PUE category, the LMDs surveyed sold 6,170 solar water pumps – representing 27 per cent of total market share, and 742 fridges, or 11 per cent of the total market share. LMDs mainly sell smaller, lower-cost products because of affordability and consumer financing constraints (see the chapter on LMDs' business aspirations for more detail).

**Figure 5: Total PUE products reported sold by LMD in 2023 and per centage of market share**

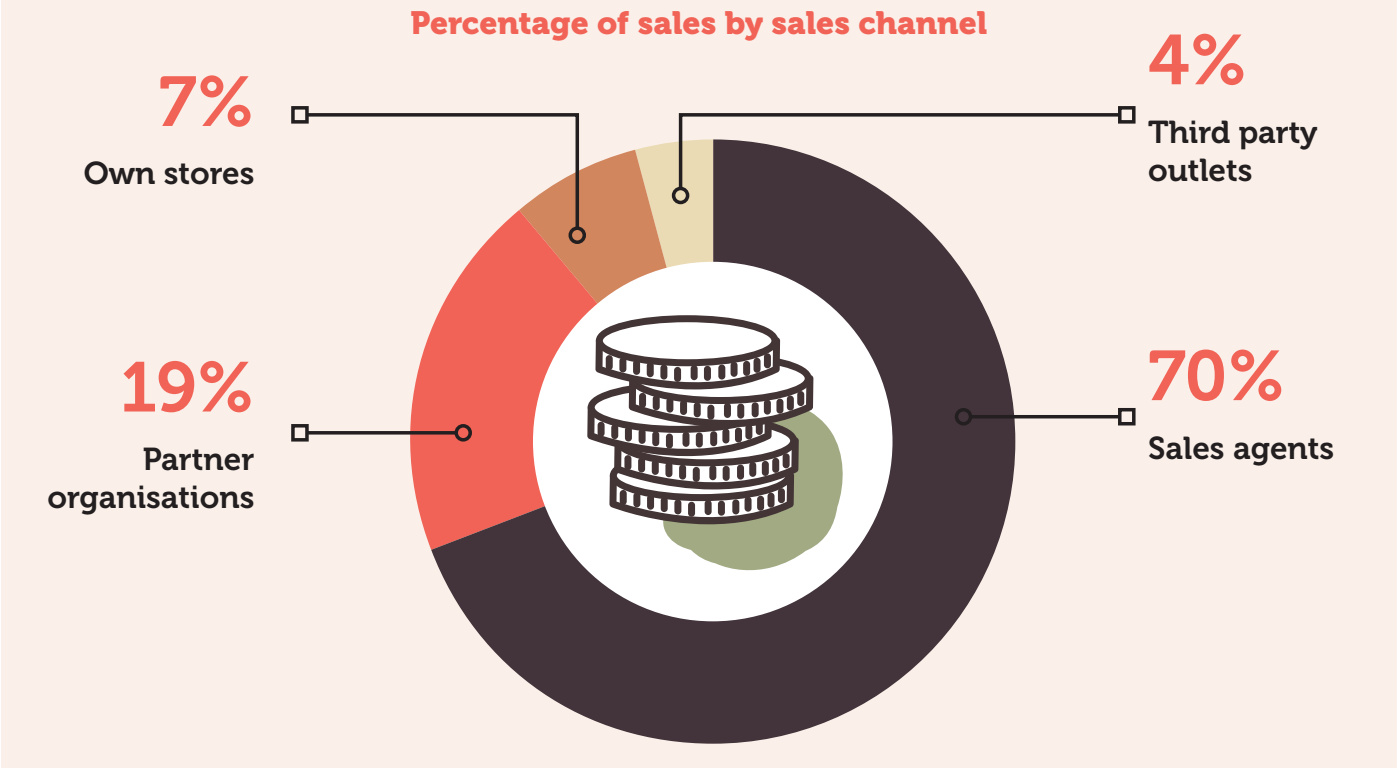
| Product | Total volumes sold 2023 | Market share |
|---|---|---|
| **Solar water pumps** | 6,170 | 27% |
| **Fridges** | 742 | 11% |

## Using sales agents and partner organisations to raise awareness and build trust

**LMDs continue to sell primarily through sales agents, so they can demonstrate products in-person to build trust and create demand.** Seventy per cent of sales come through agents, with 19 per cent coming through other channels – mainly partner organisations – and 11 per cent through retailers, as Figure 6 shows. Of the LMDs that sell through agents, 52 per cent use a mixture of commission-based sales agents and salaried agents, 38 per cent use solely commission-based sales agents, and only 11 per cent use a primarily salaried sales agent network. Salesforce management – recruiting, training, remunerating, and retaining both staff and agents – remains a key challenge for LMDs.

**As highlighted in previous GDC SoS reports, agents are increasingly equipped with tablets and smartphones to allow them to present virtual product catalogues, play demo videos, or register potential customers in customer relationship management (CRM) systems.** For example, Frontier Markets has been pioneering rural e-commerce solutions in India,[17] while Rafode in Kenya and Zonful Energy in Zimbabwe developed similar models with support from the GDC's Innovation Launchpad.[18] COVID-19 led to a surge in the use of digital solutions – for sales, CRM, staff training, and stock management – and this trend has continued post-pandemic.[19] LMDs are now in a better position to adopt digital Monitoring, Reporting, and Verification (dMRV), which is increasingly a prerequisite for participating in RBF facilities and other public funding schemes.

**Figure 6: LMD sales channels**




(Source: GDC member survey, 2024)
(Note: self-reported by GDC members in survey responses, 40 respondents)

**Thirty-seven per cent of LMDs work with community partners such as NGOs, schools, clinics and government agencies to help build trust.** For example, Aqua Clara's partnership with county governments in Kenya enables community health promoters to educate families on how water filters prevent waterborne diseases. They then connect interested families with sales agents so they can buy water filters.

**As demand grows, LMDs switch to selling through in-house and third-party retailers.** Selling through retailers typically incurs a lower cost compared to sales agents – especially if retailers are third party rather than in house – but only works once demand is established.[20] LMDs are also more likely to establish retail networks to sell more complex products, such as PUE products, so that retailers can provide consumer education, support, and after-sales services.

## Using below-the-line marketing to create demand

**The main marketing techniques used by LMDs continue to be targeted, local, and BTL, where audiences are reached directly through personalised, trusted, and measurable strategies, rather than traditional mass media advertising.** Community demonstration by individual LMDs is the most popular technique, used by 80 per cent of LMDs, followed by door-to-door demonstrations, used by 68 per cent. Door-to-door and community demonstrations are particularly effective when seeking to create trust and demand in low-income, rural communities, giving agents the opportunity to physically demonstrate products to risk-averse customers who may have concerns about quality, durability, and reliability.

**LMDs reinforce these targeted BTL efforts with low-cost above-the-line (ATL) strategies such as flyers (69 per cent), social media (58 per cent), company websites (54 per cent), and referral schemes (39 per cent).** LMDs rarely use high-cost ATL strategies such as billboards (8 per cent), TV (12 per cent), or print advertising (12 per cent) (see Figure 7). Natfort Energy, an LMD selling solar lights, SHS, and PUE products in Zimbabwe, uses targeted local radio advertisements to inform communities about its product portfolio and share information about where customers can access the products. Tieme Ndo, a company based in Ghana that sells agricultural inputs, complements its community demonstrations and farm visits with text message campaigns. It also engages in radio advertising in partnership with its suppliers.

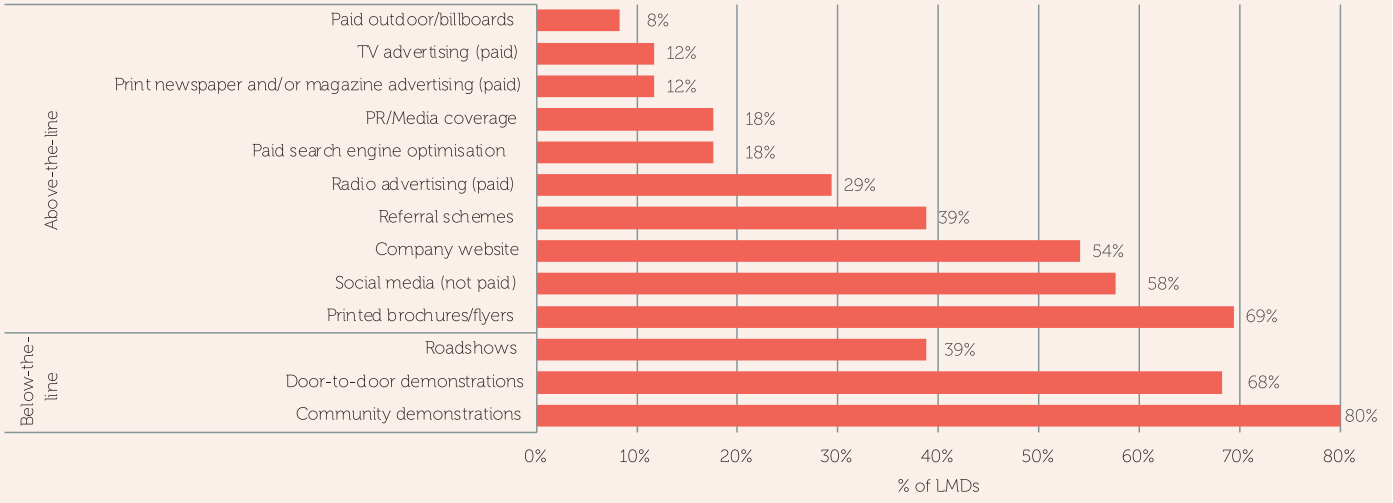
Case Study

### Reaching rural customers through community networks

Powerlive,[21] based in Zimbabwe, uses a decentralised, community-led model to reach off-grid rural households with SHS, biomass cookstoves, and PUE products like solar water pumps. The company engages local leaders in rural districts, whose approval is essential. Once trust is built, Powerlive runs product demonstrations to raise awareness and interest. The company then works with leaders to identify women and young people as sales agents and installers.

This approach aligns with local norms – women are more often at home, and customers feel more comfortable buying from them. Women often discuss the products informally at church or in community groups. To support distribution and after-sales services, Powerlive has set up district-level centres, where agents collect stock and report faults. These hubs bring services closer to rural communities and improve efficiency.

**Figure 7: Marketing channels used by LMDs**




(Source: GDC member survey, 2024)
(Note: self-reported by GDC members in survey responses, 85 respondents)

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## Pivoting to new, underserved customer segments, product categories, and locations

**As trust in and demand for technologies grow, LMDs typically see increased competition from informal retailers and traders selling low-cost, non-quality verified products, as well as vertically integrated companies offering higher-tier products with PAYG financing.** LMDs employ a range of strategies to compete with new entrants, but competition often leads them to pivot to new, underserved customer segments, product categories, and locations, beginning the market creation cycle once more.

**LMDs face competition in the market for basic solar lights from low-cost, non-quality verified products without warranties, sold by informal traders and retailers.** LMDs respond by educating customers about the importance of buying quality-verified products, which are longer lasting and sold with warranties, but competition can still significantly reduce sales volumes forcing them to pivot. Companies such as Green Impact Technologies, a renewable energy company based in Malawi, highlighted that they overcome competition because their strong after-sales support and robust warranty offerings set them apart from others.

**LMDs also face competition from larger, better-capitalised companies offering larger products on PAYG.** LMDs benefit if suppliers make stock available in-country for LMDs to purchase, shortening their working capital cycle significantly. However, if suppliers establish proprietary distribution networks in areas where LMDs operate, they are often able to undercut them on retail price as they typically have lower cost of goods sold (COGS), lower cost of capital, and greater economies of scale. LMDs respond by choosing to source products from suppliers under exclusivity or non-competition agreements, or from suppliers that do not run their own proprietary agent and retail networks. Some also seek to develop their own-branded products through partnerships with 'white label' or original equipment manufacturers. If LMDs are unable to compete, they are forced to pivot.

Case Study

## Staying competitive through trust, technology, and tailored services

Tieme Ndo, which sells agricultural inputs such as fertiliser and seeds in Ghana, seeks to compete by building deep customer relationships based on advice, quality, and trust. Rather than focusing solely on sales, Tieme Ndo agents first ensure they fully understand a farmer's needs before recommending a product or service. This customer-first approach has helped the company establish a strong local reputation and differentiate itself from informal retailers offering cheaper, low-quality products.

To deepen engagement, Tieme Ndo is developing a membership model, issuing cards that allow customers to earn points for future discounts, such as 10% off tractor services. It has also adopted a CRM system to track each farmer's transaction history and build digital identities. This enables the company to provide tailored follow-ups and explore partnerships with third-party providers to meet additional needs. These strategies – grounded in local knowledge, digital tools, and long-term customer value – have helped keep Tieme Ndo relevant and resilient in an increasingly competitive market.

## Targeting women customers with a gender-inclusive workforce

**LMDs are focused on serving women, who make up 66 per cent of customers.** In contrast, women constitute just 33 per cent of customers in the wider energy access sector. This may be linked to the products LMDs sell, as research suggests that cheaper products are more likely to be bought by women, while more expensive products are likely to require a joint decision or the man in the household signing up to a financing contract.[22]

**Forty-seven per cent of LMDs are women owned and 88 per cent are locally owned.** Evidence from 60 Decibels shows that women-led, locally owned companies are 'impact all-stars' because they reach more women customers and people living in poverty, report higher satisfaction levels, and score better on consumer protection compared to the wider off-grid energy sector.[23]

**The 80 GDC members that shared workforce data employ over 15,000 people**, including full-time employees and sales agents, suggesting that the wider LMD sector has a significant job creation impact. On average, the 80 LMDs employ 1,700 people directly – about 20 per LMD. In addition, they work with close to 14,000 sales agents, or around 170 agents per LMD that sells through agents.

**Women are strongly represented in LMD workforces, comprising 50 per cent of staff, 57 per cent of agents, and 56 per cent of senior and middle management positions (see Figure 8).**[24] This compares favourably with the wider energy access sector, where just 27 per cent of jobs are filled by women, and 90 per cent of companies have more men working for them than women.[25,26] Women are also less likely to occupy middle management and senior positions in the wider energy access sector – for example, one leading off-grid solar company has 45 per cent women agents, but just 10 per cent of regional sales managers are women.[27]

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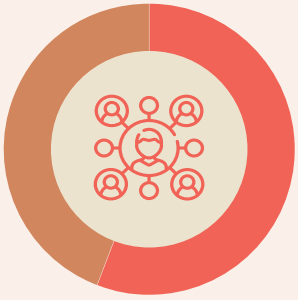
**Figure 8: Representation of women in GDC members' workforce**

## Towards a Gender-Inclusive Workforce

### Enabling equity across last mile customers, agents, staff, and leadership

**57%**

Of agents are women

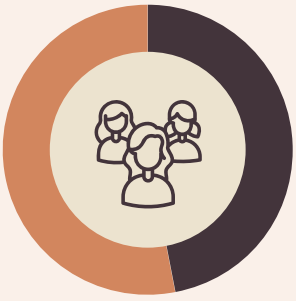


**56%**

Of senior and mid-management are women

**50%**

Of staff are women



**47%**

Of GDC members are women owned

**Gender-Inclusive Policies and Practices**

- Equal pay and benefits
- Leadership training for women
- Gender-sensitive recruitment
- Flexible work policies
- Safe reporting mechanisms

**Support Needed from Wider Ecosystem**

- Access to finance and credit
- Policy advocacy and enforcement
- Mentorship and networks
- Infrastructure (digital, childcare)
- Community engagement

(Source: GDC member survey, 2024)
(Note: self-reported by GDC members in survey responses)

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## Target women recruitment practices

1. **Increased sales**: one pilot saw a 41 per cent boost in sales after women sales agents were provided motorbikes, enabling them to reach customers more efficiently.
2. **Social media engagement:** a targeted advertising campaign that catered to women's interests led to a 115 per cent increase in Facebook page followers – growing from 422 to over 1,000.
3. **Women talent recruitment:** by implementing new practices that made their workplace more attractive to women, a business experienced an 8.5 times increase in women sales agents – from just 11 women in 2019 to 94 in 2020.

**Looking beyond hiring, many LMDs have put in place gender policies, flexible working arrangements, and workplace safety measures that facilitate the recruitment, retention, and motivation of women staff.** These measures come at a cost but help to address gender-related challenges. For example, Wana Energy Solutions found that women sales agents tended to be less mobile because they were less likely to own or use motorbikes.[28] After they were provided with motorbikes, sales increased by 41 per cent in the first month.[29] While more research is needed to understand the impact of specific gender-inclusivity measures on companies' bottom lines, gender-inclusivity measures that enhance commercial performance need to be promoted through awareness campaigns, training, and TA, while those that detract from commercial performance might warrant subsidy if their impact is profound.

**Funder rhetoric around supporting gender equality in energy access is often not backed up by concrete interventions to enable companies to achieve gender outcomes, leaving LMDs to bear the brunt of the costs and risks that come with being gender inclusive.** There is still limited recognition of the additional costs and risks LMDs face when targeting women customers or building a gender-inclusive workforce. The barriers to women's full participation in the energy access workforce are real and can only be addressed through targeted funding and support.

**Research by Value for Women and Acumen and others is helping to identify the most effective ways to address barriers to gender inclusivity.** The GDC and Value for Women's toolkit, 'Gender in Business: Lessons Learned for Last Mile Distributors', provides a wealth of best practice, exploring five key case studies that demonstrate how prioritising gender inclusivity can drive both business profits and social impact.

Acumen's research found that gender inclusivity can also enhance organisational growth. After providing unconscious bias and diversity training to investment officers and business developers, Acumen saw a significant increase in their pipeline of women-led companies.[30]


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Case Study

## Building a profitable, scalable enterprise in a challenging environment

Altech was founded in 2013 by Congolese entrepreneurs with a deep understanding of the complexity of the DRC's market. Without early access to capital, the company prioritised lean operations, unit economics, and portfolio quality. Altech expanded from solar lantern sales to a portfolio of energy products including SHSs, induction cookers, refrigerators, and charcoal stoves. Products are offered through an affordable credit model, and the company now operates 165 shops, 3,000 agents, and six regional offices supported by 150 staff.

Growth has been gradual, with lanterns dominating sales from 2013 to 2019, and SHS sales growing from 2020. Altech gradually brought on external investors with an initial $200,000 loan from energy investor Persistent in 2018, as well as grant support from Shell Foundation and Swiss Re. Alongside capital, Persistent provided support to professionalise Altech's accounting and finance systems, including the development of pitch materials and a robust financial model. Altech's founders have managed to keep equity rounds to a minimum (raising <$1 m), retaining 75% ownership.

Since 2019, the company has raised $50m in debt and repaid $27 m, working with Spark+, Trine, SIMA Funds, Kiva, Lendahand, and Rabobank. It has also received support from the World Bank and USAID. The success of Altech illustrates that last mile distribution in fragile contexts can be both commercial and scalable when founders possess deep local market expertise and operational discipline, whilst utilising external capital and TA strategically.

## Conclusion

**In addition to supporting companies improve commercial performance, attract investment, and achieve scale, governments and development partners need to recognise and value LMDs' market creation role.** The work LMDs do to engage consumers – creating trust and demand that attracts new market entrants – needs to be recognised as a public good. If LMDs are forced to pivot because of intensifying competition, that often means they have succeeded in catalysing a market, even if they have not achieved significant scale and margins remain thin. Suppliers have long understood this, which is why many sell through LMDs for a period before establishing their own proprietary distribution, making their eventual market entry easier and more cost-efficient.

**A handful of LMDs have grown to become 'national champions', able to achieve scale and impressive commercial performance in challenging markets that others consider too risky.** Examples of such pioneering companies include Altech in the Democratic Republic of Congo (DRC) and Yellow in Malawi. These companies drive national market growth forward and deliver impact at scale in difficult environments that would otherwise remain severely underserved.


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# 4 Trend 2. LMDs have demonstrated resilience and growth in challenging conditions

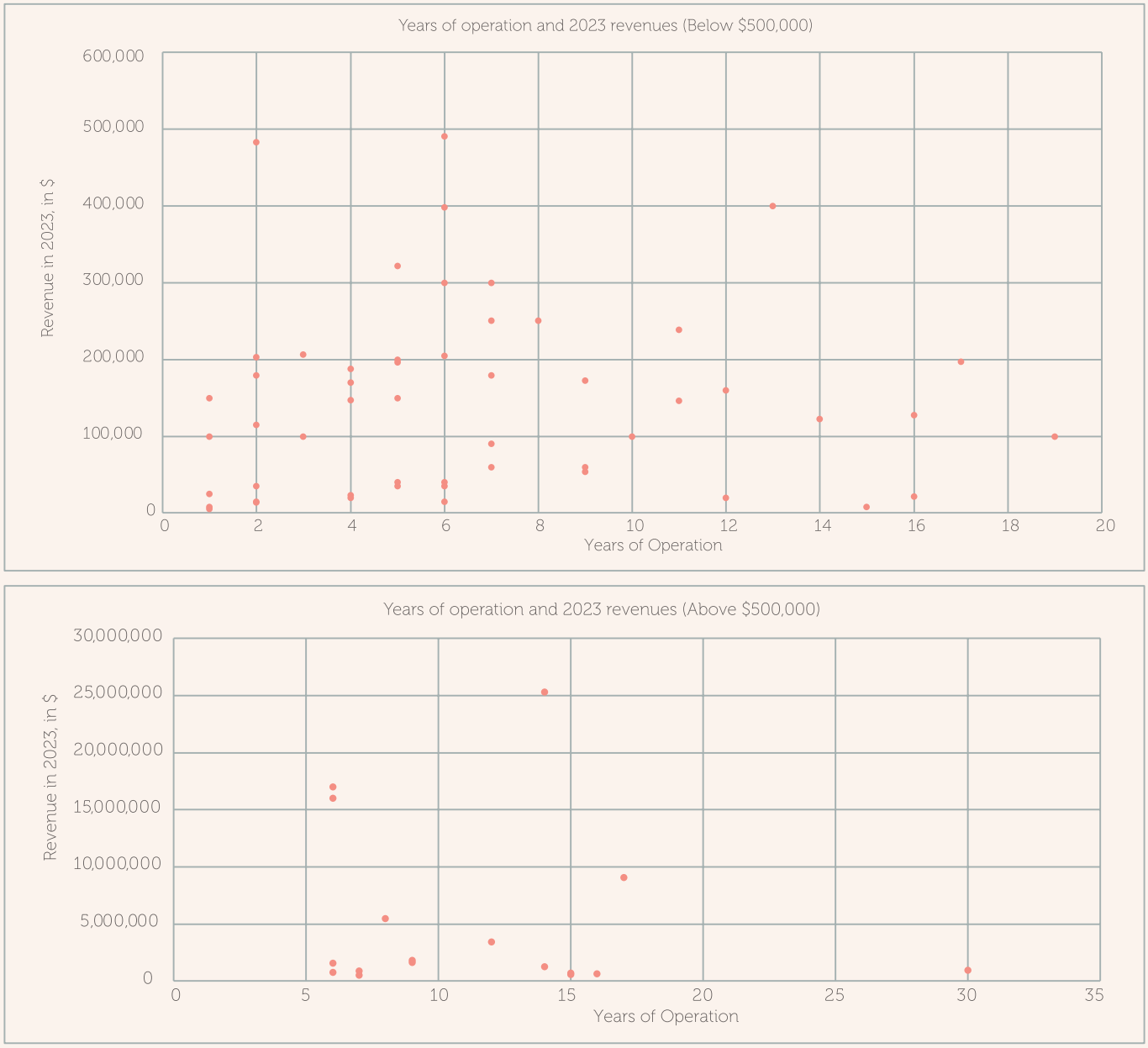
**LMDs faced challenging conditions between 2021 and 2023. Inflation, currency depreciation, and devaluation reduced the value of local currency earnings, stretching consumer affordability.** LMDs had to increase local currency prices to cover their hard currency costs, while consumers faced higher local currency prices on all imported goods. Foreign exchange (FX) risks were elevated, with currency devaluations in key markets, as well as broader challenges around volatility and convertibility. For example, the Malawian Kwacha was devalued by 25 per cent by the central bank in May 2022, and by a further 44 per cent in November 2023. In addition, key markets in Africa and Asia have experienced increased insecurity and political instability, further complicating operations. LMDs' access to finance and support worsened significantly, as grant funders faced cuts to their budgets, while debt and equity providers became more risk averse in the face of challenging conditions (see Trend 3 for more detail).

**The increasing frequency and intensity of disasters caused by climate change exacerbated macroeconomic and political challenges.** East Africa experienced droughts and locust plagues that hit agricultural outputs, farming revenues, and household incomes. South Asia experienced extreme heat and flooding, while Southern Africa experienced cyclones and tropical storms, causing disruption and damage.[31] Zambia also experienced one of its worst-ever droughts.[32]

**These challenges have made LMDs' revenue and profitability trajectories more unpredictable.** In previous analyses, we organised members into 'fast-growth' and 'small and stable' categories based on the relationship between annual revenue and company age,[33] but our most recent dataset suggests these archetypes do not hold up over time. External factors beyond LMDs' control can have a profound negative – or positive – impact on their revenue and profitability trajectory. Looking at the same dataset on two different scales, there is little correlation between years of operation and revenues among the vast majority of LMDs surveyed with revenues of less than $1 m (see Figure 9). Five GDC members report revenues of $5 m or more: Altech, Sistema.bio, Yellow, Ecofiltro, and Easy Solar. These companies have built lean and robust business models in market segments and countries that are less attractive to the largest international players.

> We had gross margins of 30 per cent to 40 per cent, but that disappeared overnight because of FX depreciation. Costs have gone up enormously – it becomes mathematically impossible to survive unless you have very deep pockets and can go into hibernation mode to ride it out.
>
> **GDC member**

**Figure 9: Years of operation and 2023 revenues**




**The GDC's 2022 SoS report segmented LMDs into 'dedicated salesforce' and 'local livelihood' archetypes.** We explored how different business philosophies led to different operating models, growth trajectories, and financing needs, with two archetypes emerging.[34]

- **Dedicated salesforce (e.g. Zonful Energy, Altech):** LMDs that work with dedicated sales agents who sell a wide range of products to large numbers of customers over a wide area. They typically have higher risk appetite and growth ambitions.
- **Local livelihood (e.g. Solar Sister):** LMDs that train and support village-level entrepreneurs to sell a narrow range of beneficial products to a smaller number of customers over a limited area. They typically exhibit lower risk appetite and growth ambitions.

**Although LMDs remain hard to categorise, segmenting our latest dataset into LMDs with 2023 revenues above and below $500,000 provides tentative evidence in support of the above archetypes.** Larger LMDs are more likely to sell a broader range of product categories, achieve higher revenue per customer, and generate higher revenue per sales agent through a salesforce consisting of a higher proportion of salaried sales agents. The salesforce is likely to be more professional, better trained, and mobile enough to operate across a wider geographical area – in addition to being better paid with a more predictable income. Larger LMDs are more likely to align with the dedicated salesforce archetype, and smaller distributors are more likely to align with the local livelihoods archetype, as Figure 10 shows.


| Figure 10: Key differences between larger and smaller LMDs | | |
|---|---|---|
| **Category** | **LMDs with revenue greater than $500,000 in 2023** | **LMDs with revenue less than $500,000 in 2023** |
| **Number of product categories sold, median 2023** | 3 | 2.2 |
| **Revenue per sales agent, median 2023** | $12,415 | $2,875 |
| **Percentage of salaried sales agents, median 2023** | 45% | 18% |

(Source: GDC member survey, 2024)
(Note: number of respondents with revenue greater than $500,000 = 11; respondents with less than $500,000 = 51)

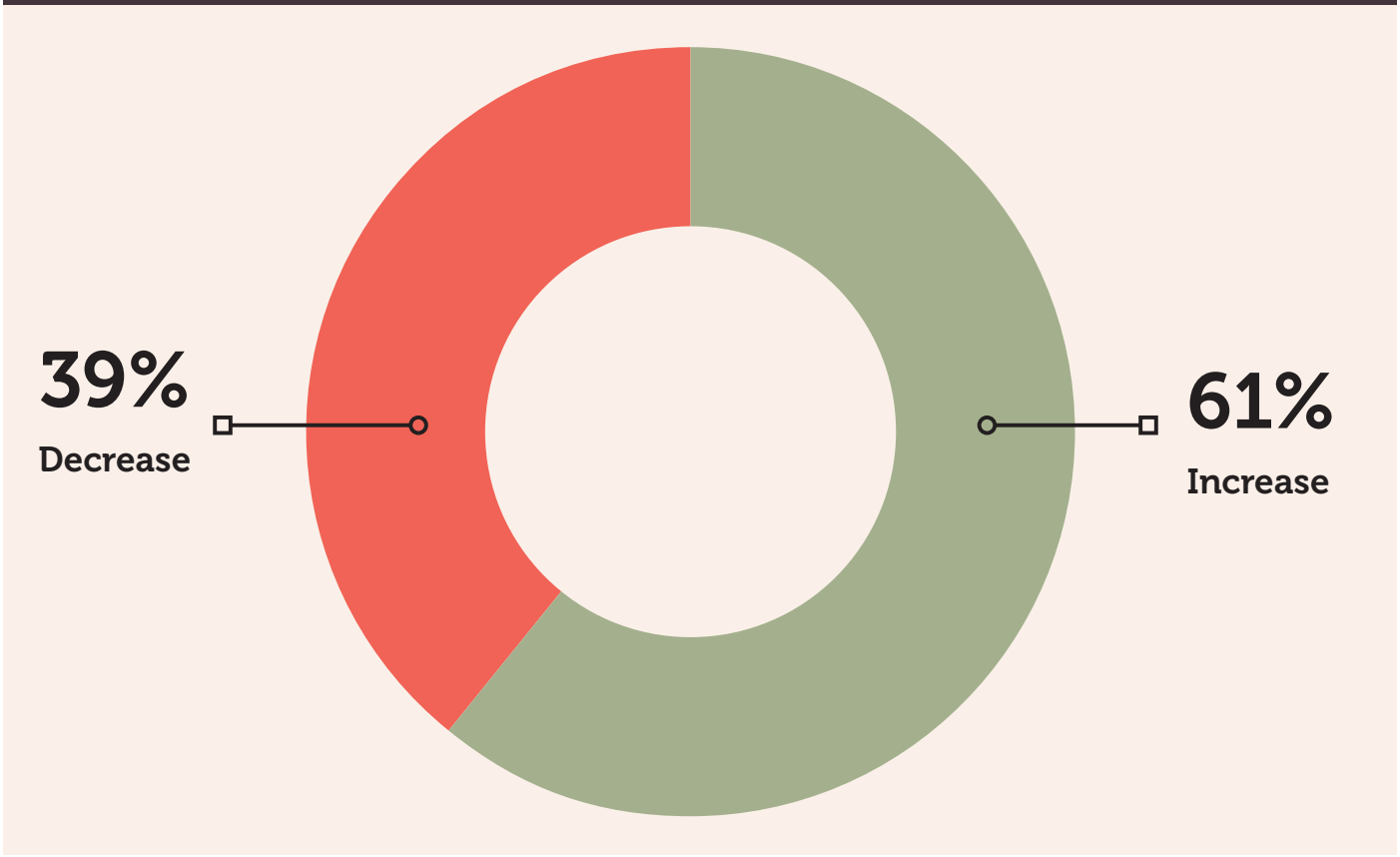
## Last mile distributors have demonstrated resilience and growth despite challenging conditions

**Since 2021, the number of GDC members has increased to 246- up from 152 in 2022 This increase in membership suggests that many entrepreneurs are interested in establishing an LMD business or diversifying into beneficial products to better serve low-income households.** New members tell us the LMD model is attractive for aspiring entrepreneurs who want to help their communities. Selling beneficial products is also a way for established businesses to diversify revenue streams, reach new customer segments, and have a sustainable and positive impact.

**The members that have left the GDC since 2021 are either unresponsive, no longer meet membership criteria, have closed, or have been acquired. Anecdotal evidence suggests that more LMDs have been acquired since 2021 than in previous periods.** LMDs have been acquired by companies such as Ignite Energy Access (Mwezi, Pawame), EDF (UPOWA), Bboxx (Oolu Solar), and Solar Panda (Vitalite). Most acquisitions are likely to have taken place because LMDs were unable to raise sufficient financing to continue as independent companies, while some may have provided founders with successful 'exits'. Acquisitions demonstrate the value that bigger companies see in LMDs' customer relationships, brands, staff, systems, and processes. Acquisition remains far preferable to closure since it ensures the continuation of customer service and honouring of warranties. It also means that LMDs' assets – including skilled and experienced teams – are more likely to continue being used to deliver access to beneficial products.

**A longitudinal dataset of 36 LMDs shows that most LMDs experienced growth in revenues between 2021 and 2023.** Sixty-one per cent of GDC members saw an increase in annual revenue between 2021 and 2023, with median annual revenue growing by 7 per cent, as shown in Figures 11 and 12. Of those experiencing revenue growth, the median increase was 167 per cent over two years. Of those experiencing revenue decline, the median decrease was 39 per cent. Overall, the data suggests LMDs were resilient, and that most were able to grow despite challenging conditions. Given reduced access to finance (see Trend 3), the data also suggests LMDs became more efficient at converting funds raised into sales and revenues.

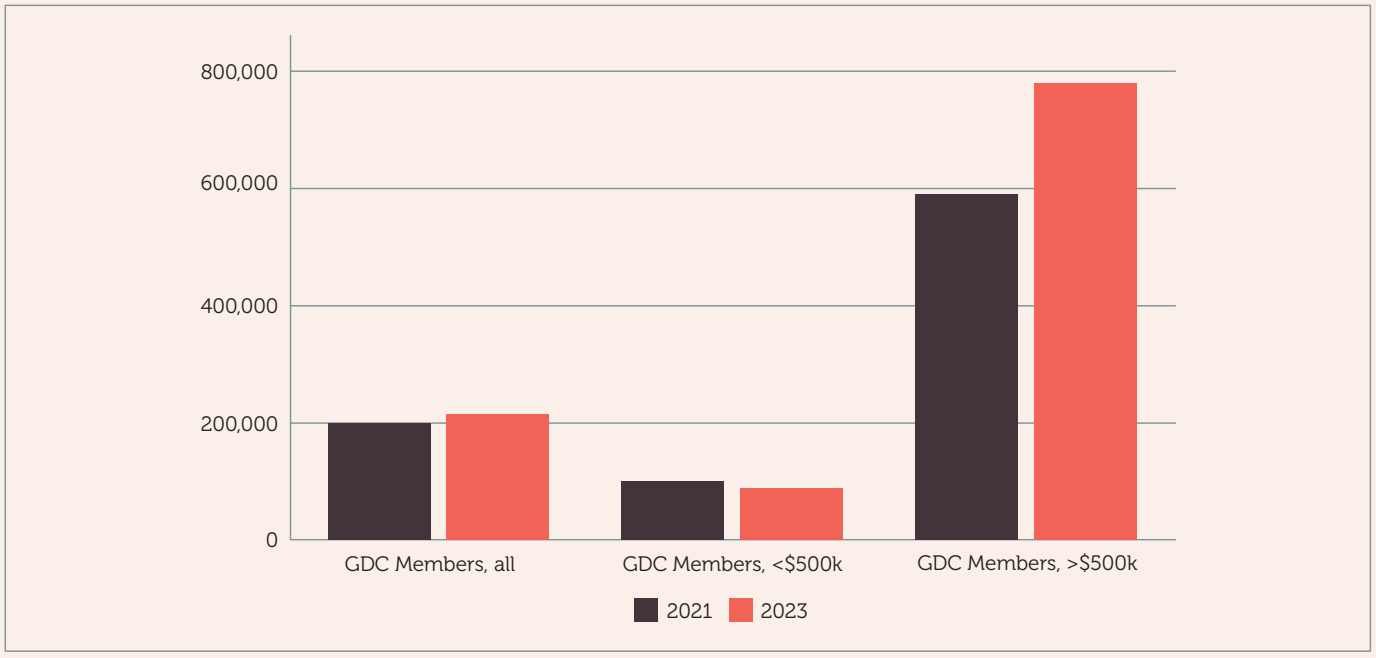
**Figure 11: Percentage of LMDs experiencing revenue growth or decline between 2021 to 2023**




(Source: GDC member survey, 2024; n = 51)


**Larger LMDs with revenues over $500,000 experienced higher rates of revenue growth than LMDs with revenue below $500,000, as shown in Figure 12.** LMDs with revenues above $500,000 saw median annual revenue rising 32 per cent, from $589,000 in 2021 to $778,000,000 in 2023. Smaller LMDs with revenues of less than $500,000 experienced a 7 per cent decrease in median annual revenue between 2021 and 2023.

**Figure 12: Median annual revenue in 2021 and 2023 for LMDs above and below $500,000**




(Note: LMDs revenue >$500,000, n = 13; LMDs revenue <$500,000, n = 23)

## Last mile distributors' commercial performance presents a mixed picture, both in aggregate and at company level

**LMDs' self-reported operating profits suggest that the sector compares favourably with the PAYG sector where profitability remains elusive, but the data must be treated with caution as interviewed investors cited concerns around LMD profitability as a key constraint for investment[35].** 54 per cent of LMDs reported a positive operating profit, and, overall, the median operating profit margin was positive at 5 per cent. Of those with revenues above $500,000, LMDs reporting the lowest operating profit margins (i.e. losses) had established carbon projects. This may reflect the high upfront costs associated with carbon project set-up, along with the lag in revenue generation from these projects, which is typically two to three years. For LMDs with revenues of less than $500,000, members reporting the lowest operating profit margins are typically impact-focused, non-profit social enterprises that may not be seeking to achieve profitability. The GDC is commissioning further research into the Drivers of LMD Profitability in 2026.

> Vertically integrated or pure play distributor: in both business models, we've seen the good, the bad, and the ugly. Both business models work, but unit economics need to be managed carefully'
>
> **Financier**

**Figure 13: Sales revenue, gross profit margin, and operating profit margin for LMDs with less than $500,000 revenue in 2023**

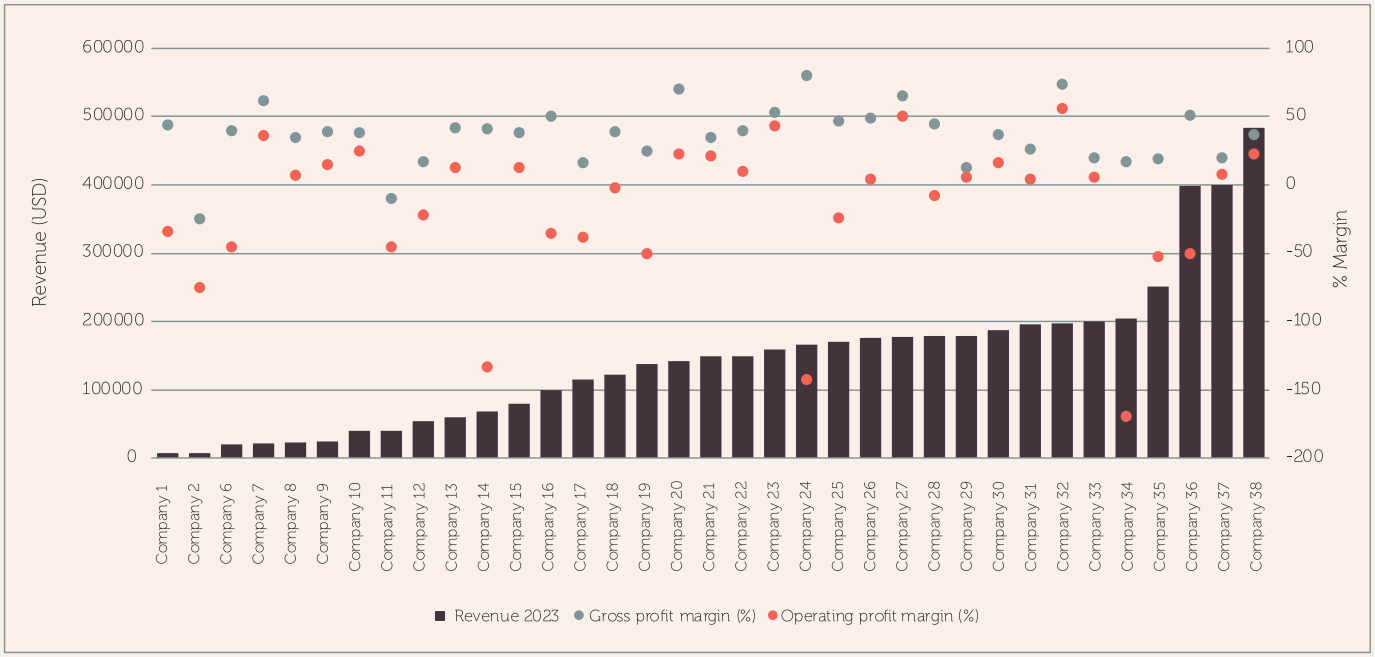
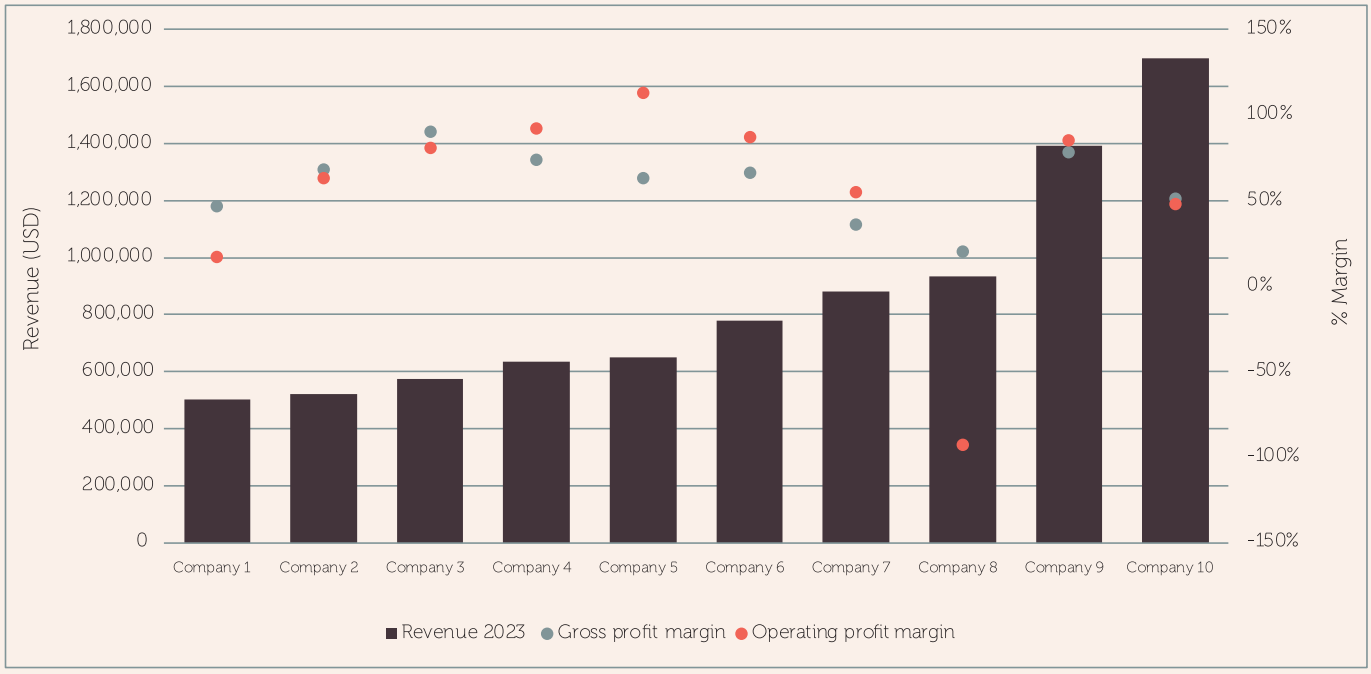



**Figure 14: Sales revenues, gross profit margins, and operating profit margins for LMDs with more than $500,000 revenue in 2023**

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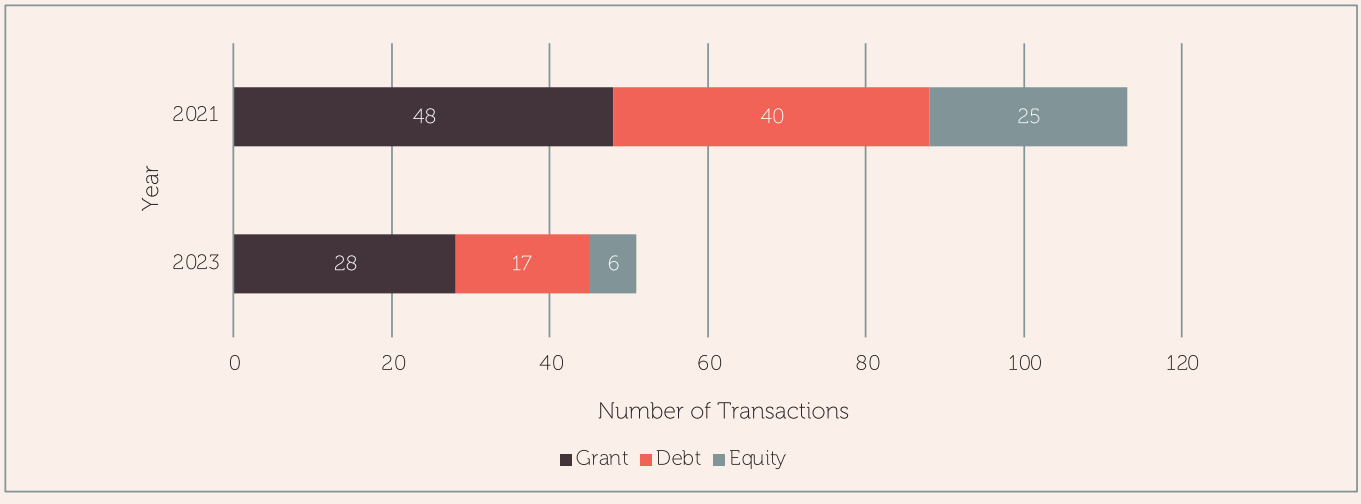
# 4 Trend 3. LMDs have found it harder to access finance and support since 2021

**The number of LMDs reporting raising funding of all types dropped from 2021 to 2023, with a 42 per cent reduction in companies raising grants, a 58 per cent reduction in those raising debt, and a 76 per cent reduction in those raising equity, as shown in Figures 1 and 15.**[36] This is likely because many grant funders have faced cuts to their budgets, while debt and equity providers have become more risk-averse in the face of a continued lack of proof points around profitability and exits in the sector. This funding squeeze is compounded by challenging macroeconomic conditions and poor loan performance among PAYG companies. In response, many funders have shifted their focus to PUE products and mini-grids. Grant, debt, and equity capital are interdependent, and a reduction in one type of capital (e.g. grants) impacts investor appetite to lend as well as LMDs' borrowing capacity.

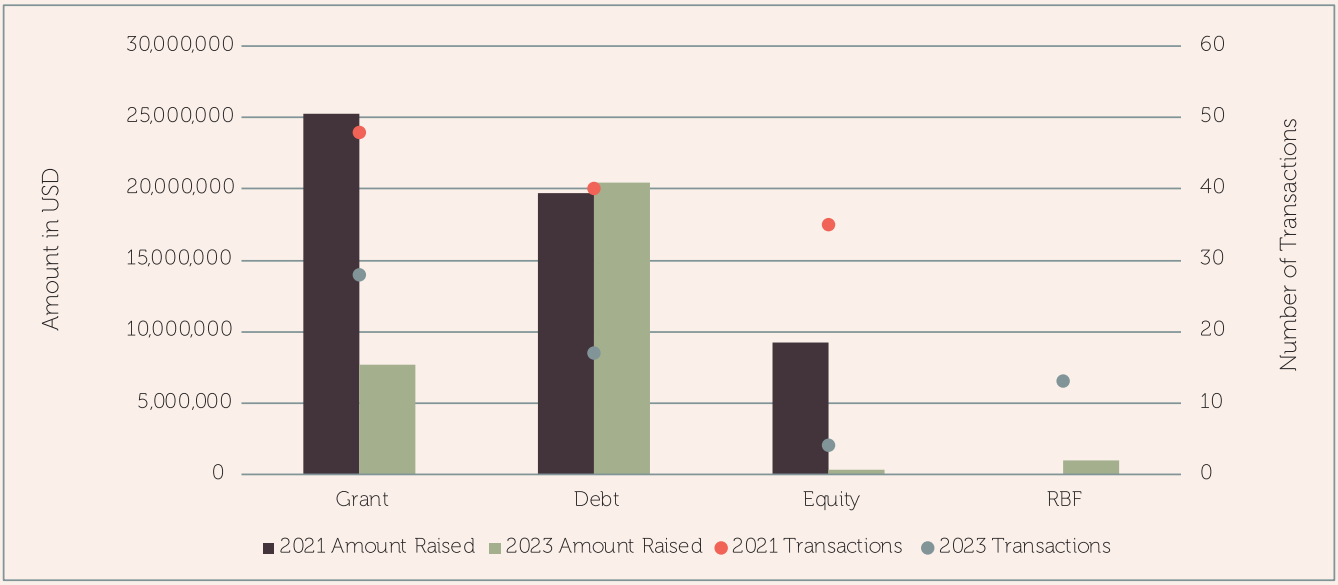
> If we keep knocking on the doors of funders, we will just die a natural death
>
> **Zonful Energy**

**Figure 15: Number of LMD transactions by capital type**



**Between 2021 and 2023, the median transaction size remained roughly the same for grants, increased for debt, and decreased for equity. However, there was a significant drop in the number of grant, debt, and equity transactions reported by LMDs, as shown in Figure 16.** In contrast, GOGLA investment data on companies with under $3 m in historical investment shows steady grant, debt, and equity volumes and a stable number of transactions from 2021 to 2023. The reduction in transactions by GDC members – which are typically smaller and more likely to be locally owned or women-led – is likely driven by a range of factors, including a reduction in grant capital, less risk-tolerant debt investors, and equity investors pivoting away from the LMD sector. The increase in median debt transaction size is driven by an increasing preference for larger ticket-size loans among investors, a tightening of lending criteria, and reduced risk tolerance. Some impact-oriented equity investors have ended their investment periods (e.g. Venture Builder), while others have pivoted away from smaller-scale LMDs and PAYG providers, leaving most LMDs to rely on family, friends, and angel investors that typically offer smaller ticket sizes. Among larger LMDs, however, large-ticket debt and equity transactions appear to have continued.

**Figure 16: Grant, debt, and equity raised in 2021 and 2023**




(Source: GDC member survey; 2024; GDC member interviews, 2024)
(Note: while six GDC members indicated they had raised equity in 2023, only two disclosed the amount raised)

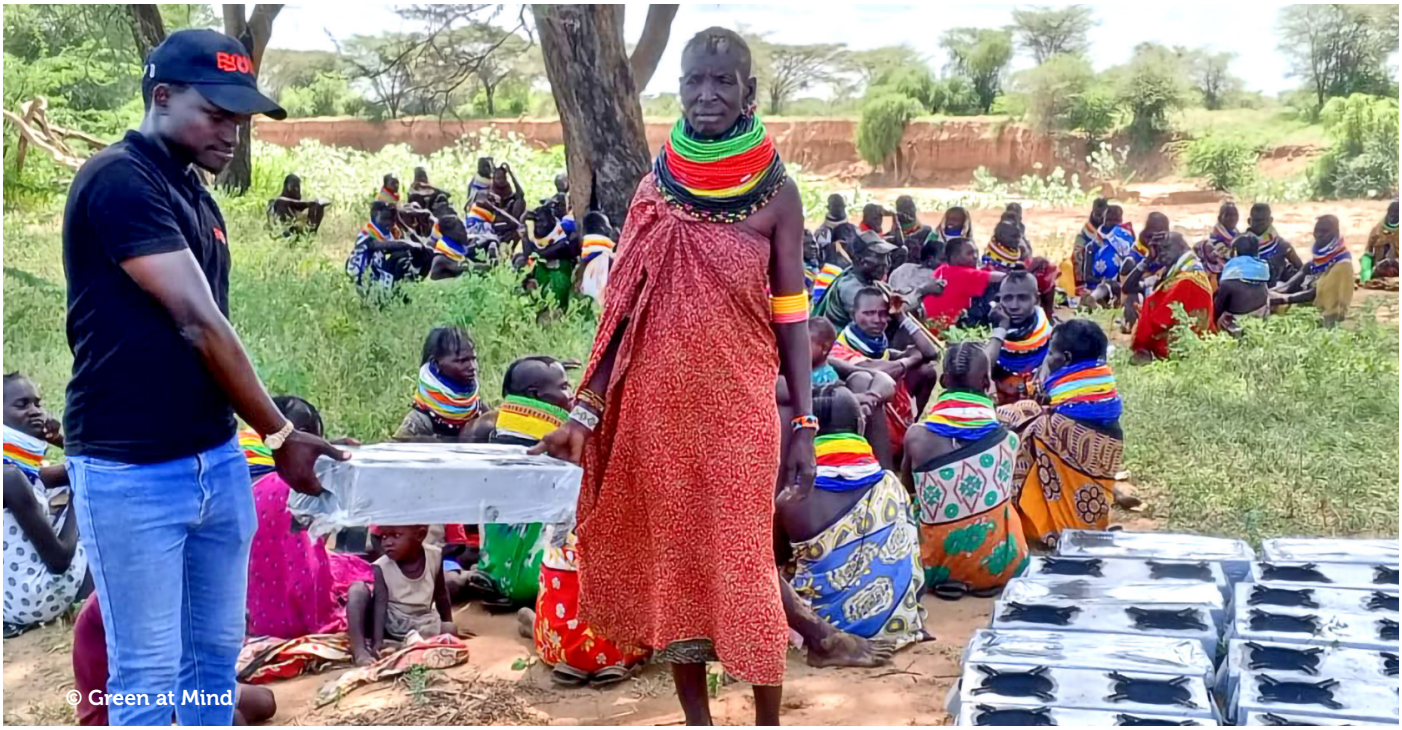

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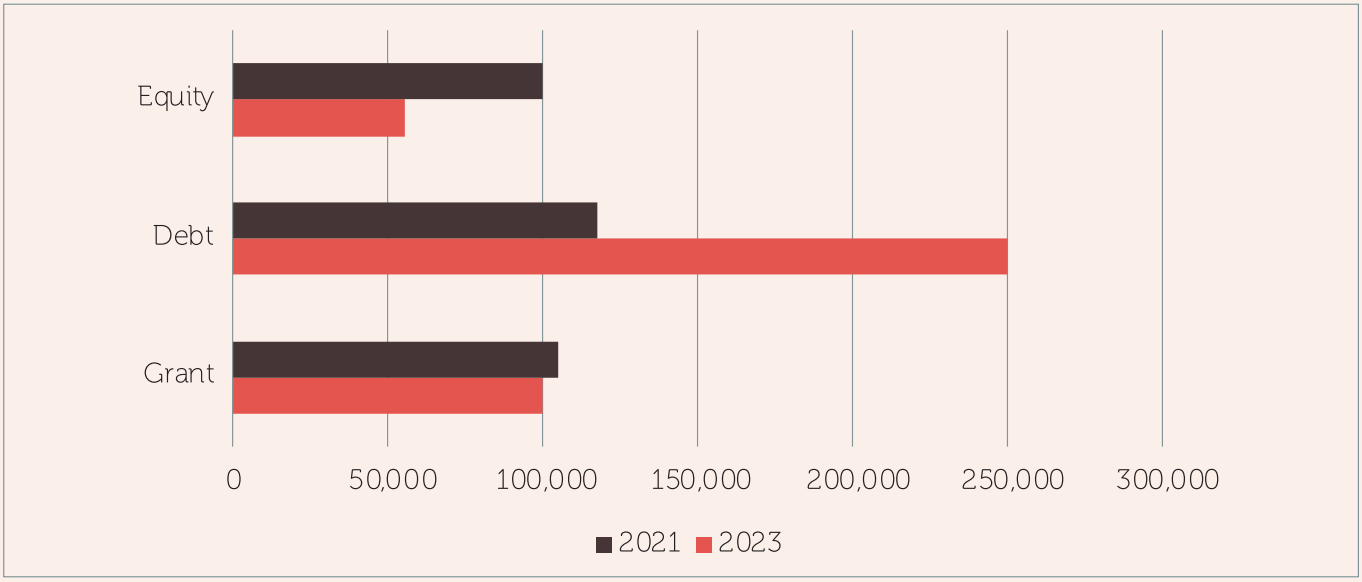
**Figure 17: Median transaction size comparison 2021 and 2023**

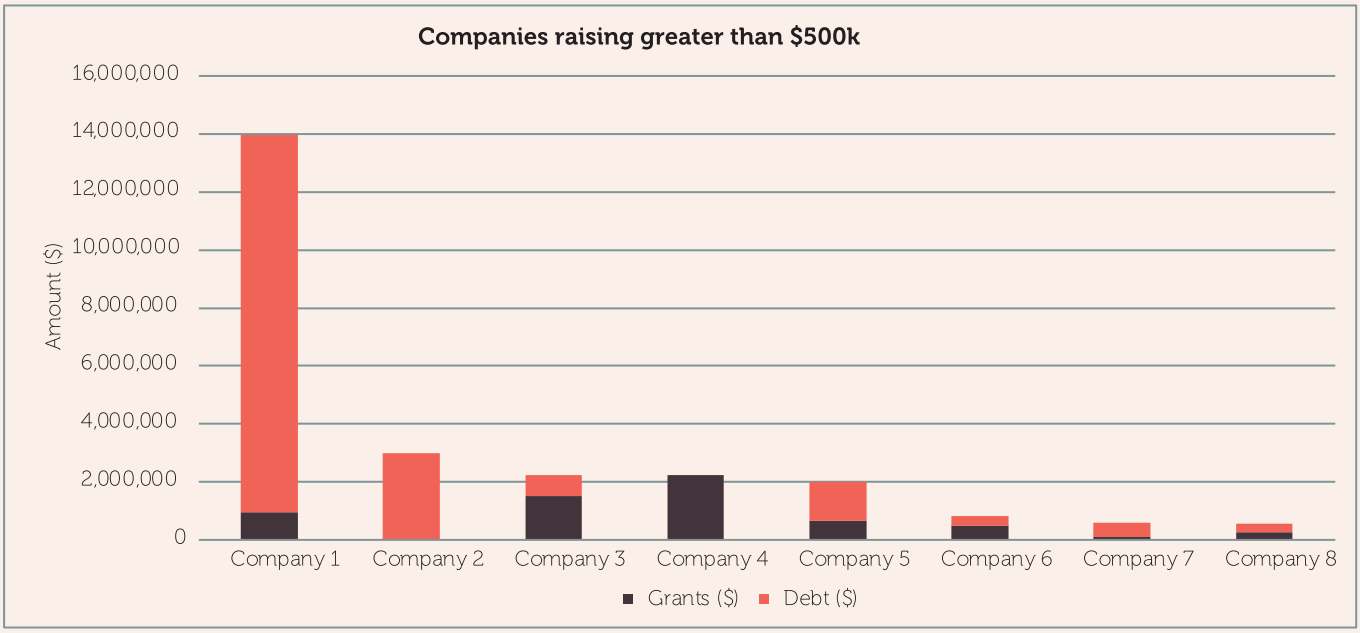



(Source: GDC member survey, 2023; GDC member survey, 2021)
(Note: while some LMDs reported raising capital of various types in 2023, this dataset only captures the transactions for which we have the value of the transaction)

**Figure 18: Grant, debt, and equity transaction sizes 2023**

| | Grant | Debt | Equity |
|---|---|---|---|
| **Lowest value** | 10,000 | 10,000 | 2,000 |
| **Highest value** | 2,240,000 | 13,000,000 | 250,000 |
| **Median** | 100,000 | 250,000 | 55,660 |
| **Average** | 274,075 | 1,200,551 | 90,830 |

**Figure 19: Grant, debt, and equity raised by company in 2023, $**





(Source: GDC member survey, 2023; GDC member survey, 2021)
(Note: while some LMDs reported raising capital of various types in 2023, this dataset only captures the transactions for which we have the value of the transaction)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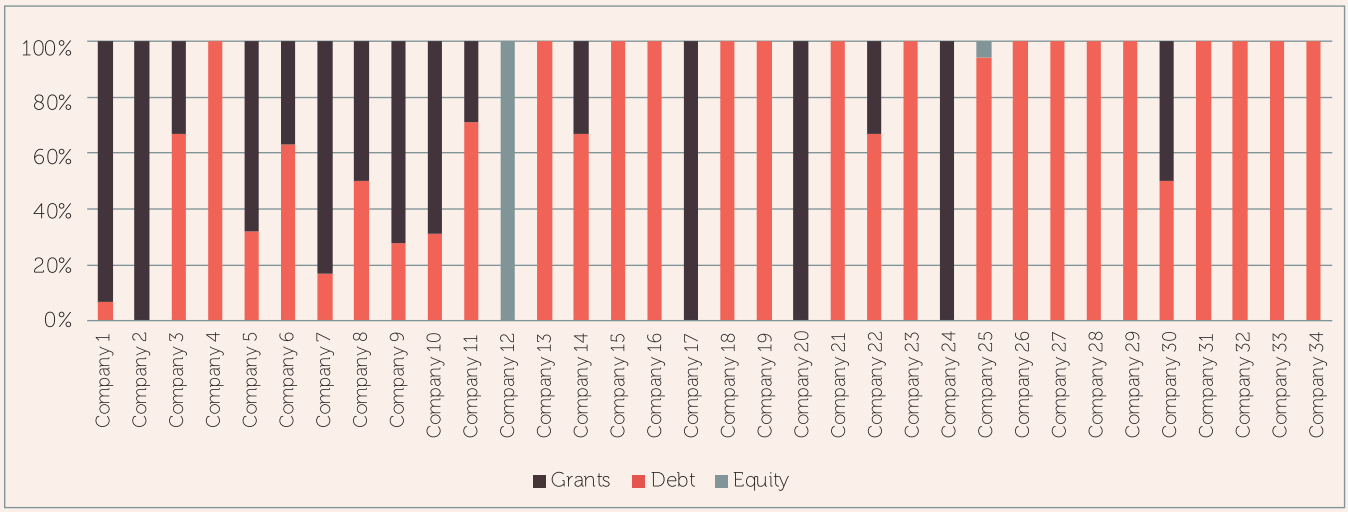
**Looking in more detail at the amounts raised in 2023, eight out of 34 companies (24 per cent) raised more than $500,000 in total and 14 (41 per cent) raised less than $100,000, as shown in Figure 20. Among the 34 LMDs that provided 2023 capital-raising data, 16 were able to raise grant capital only.** The most popular and accessible source of external financing for LMDs is grant capital, accounting for 29 out of 47 transactions reported in 2023 (62 per cent). Debt accounted for 16 out of 47 transactions (34 per cent), while there were just two equity transactions with transaction data (4 per cent).

**Figure 20: Grant, debt, and equity raised by company in 2023 (percentage)**



## Grant funding trend: grant funding is increasingly provided through results-based financing, with both positive and negative impacts on last mile distributors' commercial performance

Grants are needed to play an equity-like role when risks are high and potential returns are low, to cover the cost of pilots and innovation, to drive growth, and to subsidise first-time access for low-income or remote households. They typically come from aid agencies, foundations, and governments.

**Grants are increasingly provided through RBF, with RBF contracts typically being worth less than upfront grants, as demonstrated in Figure 21.** Development partners such as Beyond the Grid Fund For Africa (BGFA) and EnDev have offered RBF for many years, while the World Bank has dramatically scaled up its portfolio of RBFs supporting off-grid solar,[38] with $350 m disbursed since 2018 and a further $527 m committed between 2022 and 2024. Only 15 LMDs – 11 per cent of respondents – report accessing RBF in 2023. For those who have been able to access it, it has contributed significantly to their income.

> We wrote the application [to EEP Africa] and they funded everything we asked for. It is taking us from one level to another.
>
> **Fena Solar**

**Figure 21: Average upfront grant and RBF transaction sizes**

| | Grant | RBF |
|---|---|---|
| **Lowest value** | 10,000 | 10,000 |
| **Highest value** | 2,240,000 | 717,000 |
| **Median** | 100,000 | 64,254 |
| **Average** | 274,075 | 149,610 |

**There is a perception, particularly among locally owned LMDs, that when only larger companies participate in RBF programmes, smaller distributors are unfairly disadvantaged.** Inclusion within an RBF scheme can provide selected companies with a potent competitive advantage, especially if those companies already have access to working capital financing. This **can** wipe out smaller companies that have been left out, and have a negative impact on the market by making it less resilient and overly reliant on a small number of companies. Smaller companies can struggle to get accepted into RBF schemes because of complex and lengthy application processes and challenging eligibility criteria, especially if prior access to working capital is a requirement.

**Inclusive RBFs can combine the strengths of larger companies in terms of scale and efficiency with smaller companies' focus on underserved areas and their market creation role – all while fostering fair competition and maximising consumer choice.** For this approach to work, however, smaller companies need access to working capital so they can buy stock – ideally before the RBF scheme begins – and fully participate. While more and more RBF programmes are designed to be inclusive of smaller companies, very few form part of holistic programmes that address smaller companies' working capital constraints, with Africa Enterprise Challenge Fund being a notable positive exception.[37] Part payment of RBF prior to sale, for example upon proof of stock orders being placed or stock arriving in the country, can partly address the working capital constraint but is insufficient to fully address the issue.

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**Encouragingly, grant and RBF programmes are increasingly adapting to meet LMD needs.** For example, BGFA offers separate 'launch to scale' and 'direct to scale' windows, with the former open to smaller companies. To better reflect the need of earlier stage companies, the 'launch to scale' window offers financing upfront and makes more TA available. The World Bank's Regional Off-Grid Energy Access Project in West Africa offers upfront matching grants, training, and TA, before companies 'graduate' to RBF. In Malawi, the government's Ngwee Ngwee Ngwee Fund (NNNF) RBF worked mostly through bigger players, but also included GDC members Yellow, Vitalite, Zuwa, and Green Impact Technologies. A parallel RBF providing demand-side subsidy managed by EnDev worked mostly through smaller companies to reach particularly hard-to-reach locations and low-income households.

**RBF appears to enable LMDs to push further into remote areas, reach a greater proportion of low-income households, and serve more women customers.** LMDs receiving RBF report that 82 per cent of their customers live below the poverty line, 79 per cent live in rural areas, and 60 per cent are women, as presented in Figure 22. This is compared to 50 per cent below the poverty line, 60 per cent living in rural areas, and 50 per cent women customers for those not receiving RBF.

**Figure 22: Enhanced reach and inclusivity of LMDs benefiting from RBF**

| Characteristics | RBF | No RBF | 60 Decibels Off-Grid Energy Benchmarks[39] |
|---|---|---|---|
| Customers below the poverty line | 82% | 50% | 51 |
| Rural customers | 79% | 61% | 62 |
| Women customers | 60% | 50% | 37 |

(Source: GDC member survey, 2024; 60 Decibels)
(Note: 60 Decibels data is derived from interviews with 34,000+ customers across 115 off-grid energy companies. GDC data is self-reported data from 91 companies)

**While some LMDs report that RBF has enabled them to scale up and improve commercial performance, many others report a negative impact.** LMDs such as Widenergy, Fena Solar, and Yellow report that RBF has enabled significant growth. However, many others shared negative experiences, where RBF incentivised them to enter remote areas that they could not sustainably serve once the RBF came to an end. RBF also incentivised some distributors to sell products on PAYG at scale before they had robust credit risk management systems and processes in place, leading to high default rates. LMDs report being incentivised to expand as quickly as possible by RBF schemes that only offer funding for a short, fixed period, leading to commercial performance challenges linked to over-expansion. Some struggled to collect all the information necessary for RBF claims, causing delays in claim processing, and even once claims were approved, many reported cash-flow issues caused by late payment. Some LMDs such as Bidhaa Sasa have chosen not to apply for RBF programmes because of concerns it would distract them from their core business, and that they would not be able to sustainably serve remote locations once the RBF ended.

**RBF providers need to design their facilities carefully to build sustainable markets and avoid incentivising companies to make poor commercial decisions.** Even though RBF providers only pay for results, they still take on risk when they seek to extend markets into underserved areas or lower-income customer segments, while seeking to avoid negatively impacting companies' commercial performance. RBF providers need to avoid incentivising companies to scale up too fast, or to enter hard-to-serve areas that they will not be able to sustainably serve post-subsidy. Programmes could also be designed in phases to provide continuation of subsidy and support and maintain availability of affordable products in hard-to-reach locations. They should also avoid incentivising companies to scale up PAYG unless companies have the systems and processes needed for robust credit risk management, or are being provided with TA to develop responsible in-house consumer financing.

> **We had gross margins of 30 per cent to 40 per cent, but that disappeared overnight because of FX depreciation. Costs have gone up enormously – it becomes mathematically impossible to survive unless you have very deep pockets and can go into hibernation mode to ride it out.**
>
> **GDC member**

**To truly unlock LMDs' market creation potential, RBF needs to be combined with access to working capital and TA as part of a holistic package of support. RBF providers could enhance their risk mitigation strategies and improve their chances of building sustainable markets in hard-to-reach areas through:**

1. Enhanced company assessment and due diligence at the proposal stage;
2. Stronger TA offerings, particularly when companies with limited PAYG experience are being incentivised to scale up PAYG;
3. Provision of working capital alongside RBF to enable all companies to fully participate in RBF facilities;
4. Improving management information: the commercial health of companies expanding into hard-to-reach areas could be tracked using a subset of PAYGo PERFORM indicators, for example, instead of relying solely on sales data to track progress.[40] This would allow companies' commercial performance to be tracked as they extend into hard-to-reach areas, with RBF amounts adjusted to strike a balance between reaching as many people as possible and ensuring the long-term sustainability of companies' operations in target locations.

## Debt trend 1: in a challenging lending environment, it is more important than ever for last mile distributors to be prepared before engaging investors

Debt is needed to fund working capital, including inventory and day-to-day operating expenditure. In some cases, debt may be used for capital expenditure (e.g. purchasing assets such as delivery vehicles) that enable loans to be repaid.

**The key challenges around access to finance, from both borrower and lender perspectives, are outlined in Figure 23. From the investor perspective, transaction costs are often too high relative to the small-ticket sizes required by most LMDs.** Young and/or small companies may lack the governance, systems, or processes needed to meet due diligence requirements, or may be unable to provide sufficient data on, for example, receivables quality. They may lack audited accounts or up-to-date, consistent management accounts, and they often lack a clear understanding of their unit economics, their path to profitability, and their ability to service the debt. Without these key elements in place, investors must put a lot more time into working with companies to understand their businesses and gain confidence that they can effectively monitor their investments, pushing up transaction costs. Even if an LMD has these key elements in place, country risk profile or currency risks (including volatility, convertibility, depreciation, and devaluation risks) can be key impediments to obtaining debt, particularly from international impact investors. Investors such as SIMA Funds and Charm Impact have evaluated many LMDs but struggled to identify suitable investees.

**From the borrower perspective, fewer investors are now willing and able to provide small-ticket loans, especially considering reduced investor risk appetite linked to heightened FX risk and worsening loan performance in the PAYG sector.** The fundraising process is seen as time-consuming and inefficient, with a lack of harmonisation among investors and onerous due diligence requirements. Investors' requirements regarding equity-to-debt ratios are also seen as hard to meet for companies ill-suited to raising commercial equity. LMDs' inability to raise equity pushes them to take on loans at high interest rates, leading to unmanageable debt. Hard currency loans are becoming less attractive given LMDs' limited ability to take currency risk, while local currency financing at the right ticket sizes, interest rates, and terms (e.g. collateral and guarantee requirements) remains hard to come by.

**Figure 23: Key access to finance challenges from borrower and lender perspectives**

| Borrower challenges | Lender challenges |
|---|---|
| Lack of investors providing small-ticket loans. | Unprofitable companies will rely on equity or grant capital to cover ongoing losses if debt is to be repaid. This limits the extent to which a loan can contribute to company growth, which is often needed to ensure debt repayment. |
| Increased investor caution in light of heightened FX risk and worsening loan performance in the PAYG sector. | High real and perceived risk of investing in smaller companies. |
| Few investors offering local currency financing, with limited local bank participation in the sector. | Transaction costs are too high relative to transaction size. |
| Long and inefficient fundraising processes with a lack of harmonisation across investors. | Insufficient data to assess borrowers and the quality of their receivables. |
| Collateral requirements from local lenders that cannot be met by borrowers. | LMDs often struggle to produce unit economic analysis, a clear path to profitability, or sound debt-servicing plans. |
| Lack of access to equity impairs ability to raise debt, given equity-to-debt ratio requirements. | Borrower systems (e.g. credit management and after-sales services) are not sufficient to scale sustainably. |
| Few opportunities to access investment-readiness focused TA. | Hedging instruments to offset currency risk are too expensive or unavailable for smaller-ticket loans. |
| | Lending to some borrowers may result in over-indebtedness. |
| | Investors cannot lend in some countries due to capital controls, currency risks, or third-party restrictions (e.g. payment processors). |

**Grant funders and TA providers need to focus on helping LMDs meet lender requirements.** Investors need to keep transaction costs down and hardly ever provide TA or grants to companies that fail their due diligence checks. LMDs seeking to raise debt should prioritise investing in audited accounts, regular management accounts, unit economics analysis, and development of robust financial models that show a clear path to profitability, as well as sound debt-servicing plans.

Organisations like GET.invest and the GDC have pioneered investment-readiness focused TA for smaller companies through initiatives such as GET.invest Finance Readiness Support[42] or the GDC's investment-readiness self-assessment tools, Access to Finance Accelerator programme, and forthcoming GDC Investment Catalyst Facility.[43] However, these facilities are the exception rather than the norm. While many grant funders hope their grantees will go on to raise debt, few invest in LMDs' investment readiness through enhancing company systems and processes, strengthening financial management, or helping LMDs build the competencies investors look for. Grant funding and TA facilities that are targeted to address the barriers preventing LMDs from raising debt could be particularly catalytic for smaller companies.

> Access to financing is the main challenge in all forms – equity, debt, quasi equity. Equity investors don't see good exits, and it is difficult for equity financiers to raise funding themselves, which leads to an ecosystem with more demand and less supply. Also, debt funds struggle or have disappeared as they need minimal levels of solvency that are met by too few companies. And for grants, we see many financiers shifting their strategy, moving away from SHSs to mini-grids, PUE, etc.
>
> **SIMA Funds**


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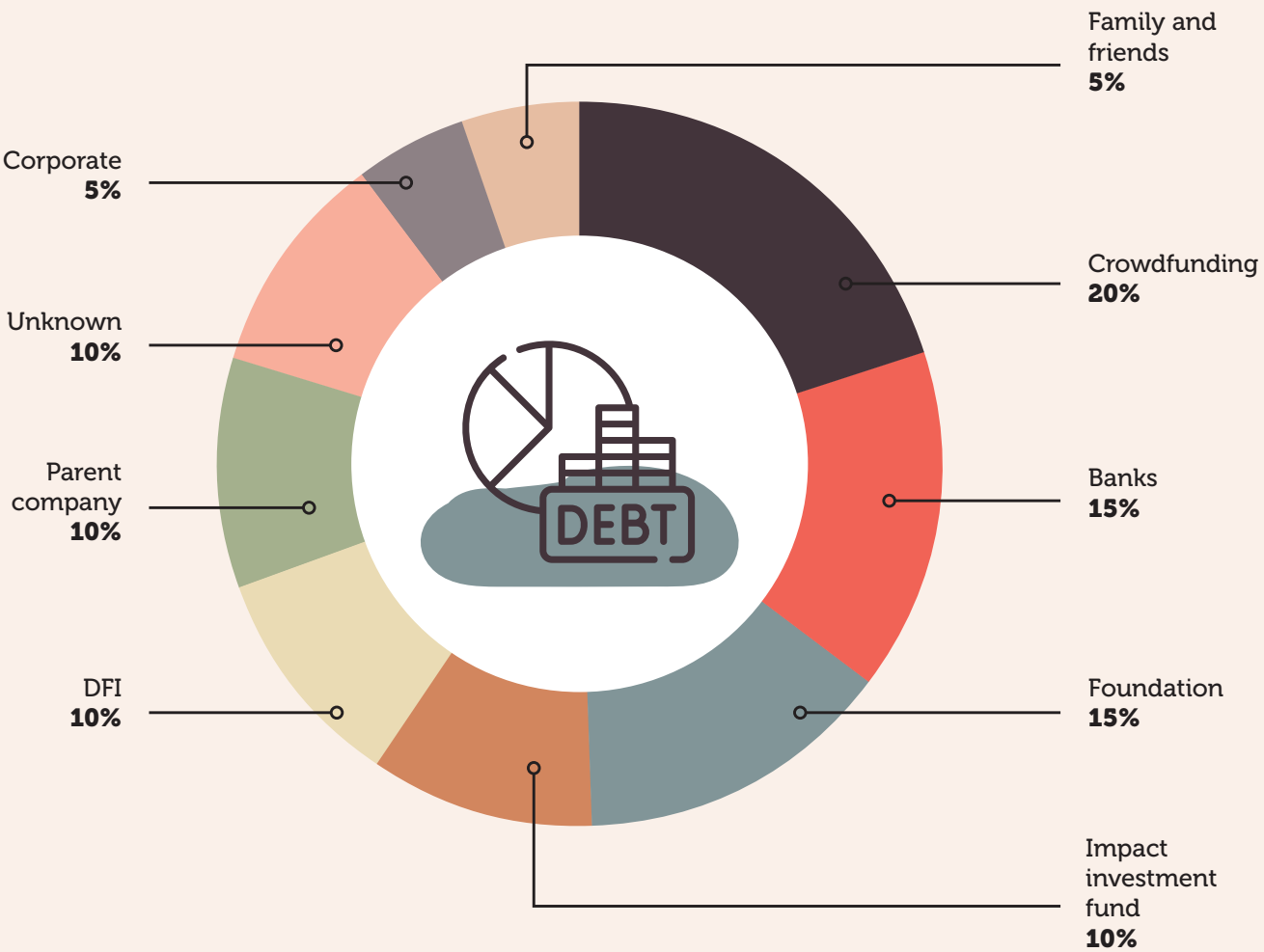
## Debt trend 2: established and emerging digital and online lending solutions appear to be the most promising way to unlock smaller ticket-size debt for smaller companies, using digital and data-based approaches

**Crowdfunding investors, such as bettervest and Kiva, were the most common sources of debt for LMDs in 2023, followed by banks and foundations.** Impact investment funds, development finance institutions (DFIs), and parent company loans were also reported sources of debt. From 2021 to 2023, there was a notable drop in lending to LMDs among impact investment funds and crowdfunding investors that had increased lending in response to the COVID-19 pandemic (e.g. SIMA Funds and Kiva). While some LMDs have accessed World Bank credit lines that channel funding through local financial institutions, for example through the NNNF in Malawi or the Energy Access Scale-up project in Uganda, LMD participation in World Bank credit lines remains limited.

**Figure 24: Sources of debt finance for LMDs in 2023**




(Source: GDC member survey, 2024)
(Note: 17 LMDs stated they raised debt in 2023)


© Practical Action

## Case Study Green Genset Facility

GGF launched in 2024, providing much-needed small-ticket debt transactions of $5,000 to $250,000 to distributors of solar generators and PUE products (e.g. solar water pumps and solar freezers). To qualify, solar products providing an electrical output of a minimum of 500W AC, or 250W DC if coupled with PUE products, must replace or reduce the use of fossil fuel generators. GGF can provide small-ticket loans through due diligence automation, which integrates with customer management software. In addition, GGF monetises carbon savings, with carbon credits providing a first-loss layer that de-risks the facility and reduces the cost of capital.[45]

**Despite crowdfunding being the most used form of debt financing for LMDs, it is not achieving the scale hoped for.** Four out of 17 LMDs that raised debt in 2023 did so through debt crowdfunding platforms like bettervest[46] and Kiva. The potential of crowdfunding highlighted in the 2022 SoS report has not been realised, as several platforms such as Trine and Lendahand became more risk averse in light of macroeconomic conditions and pivoted towards commercial- and industrial-scale solar in 2023, as well as larger LMDs such as Altech.[47] More promisingly, EnDev has recently launched an Energy Access Small and Medium-sized Enterprises Finance Facilitator,[48] in partnership with RVO, Charm Impact, and Kiva to support off-grid solar and improved cooking. Debt crowdfunding platforms remain an option for LMDs seeking loans below $200,000, but fewer crowdfunders will now consider investing in LMDs.

**Digital and data-based due diligence approaches for small-ticket debt transactions are emerging.** Since the 2022 GDC SoS report, highly digitised small-ticket debt investors, including the Green Genset Facility (GGF), Superpower Africa, and Unconventional Capital have emerged or grown. These models have the potential to increase access to smaller-ticket loans by bringing down the cost of origination and due diligence, and helping LMDs build a track record of loan repayment. However, these models rely on LMDs having up-to-date, digitised records of their sales and finances, which many LMDs lack. For these models to be scaled up, many LMDs will require TA and small grants to strengthen data quality.

Case Study

## Managing foreign exchange risk by only taking on local currency loans

Yellow, in Malawi, uses debt strictly for inventory financing and has become increasingly cautious about FX exposure. As FX availability in the local market declined, they approached their lenders with a request to borrow in US dollars and repay in Malawian Kwacha at a pre-agreed exchange rate, limiting their downside risk. Four investors agreed, including the Facility for Energy Inclusion Off-Grid Energy Access Fund, Oikocredit, Acumen's Hardest-to-Reach Fund, and the World Bank-financed Malawi Energy Access Project (MEAP). These investors were able to access a subsidised currency hedge, highlighting the importance of this kind of instrument, which is not available in all markets.

The decision proved critical. Just one month after signing an agreement with a new financier, the local currency was devalued by 44%, bankrupting a leading PAYG company in the country. 'Imagine if we'd borrowed in hard currency – we'd have lost half the money', said a co-founder of Yellow. This experience solidified their policy of rejecting lenders who expect the LMD to shoulder all FX risk. By insisting on repayment in local currency at a pre-agreed rate, Yellow had greater cash-flow predictability and could maintain financial resilience in a highly unstable environment.

## Debt trend 3: access to local currency financing is critical, given heightened foreign exchange risks

**As mentioned in Trend 2, currency volatility, devaluation, and convertibility risks increased significantly between 2021 and 2023.** With debt financing often in hard currency and customer payments in local currency, local currency depreciation leads to a mismatch between the value of revenue streams and debt-servicing obligations. This is particularly true for smaller companies that do not have access to hedging instruments, as well as for LMDs that offer SHS or PUE products over longer repayment periods. While various initiatives are trying to provide instruments to deal with this, it remains a major challenge for distributors and their financiers, and impact finance remains almost entirely in hard currency. Local currency financing is increasingly available for larger companies - with over a third of total investments in 2023 being in local currency – but remains unavailable to most LMDs at suitable ticket sizes or on the right terms.

**LMDs continue to utilise local banks for small working capital injections; however, few local banks lend at the scale needed to secure inventory.** While some LMDs have had success accessing small working capital facilities, typically in the $5,000 to $50,000 range, these amounts remain significantly lower than the median LMD debt transaction size of $250,000, and insufficient to cover the cost of a typical container of products. LMDs still struggle to secure larger loans to purchase inventory, primarily due to stringent collateral requirements. According to GET.invest, TA can play a crucial role in convincing local banks that companies are ready to handle larger sums. Some LMDs also report a lengthy processing time when working with local banks. Limited availability of local currency financing at the scale required affects distributors across the revenue spectrum and remains a key barrier to scale.

**In general, lenders are better placed to hedge against FX risk than LMDs.** They are more likely to have the scale needed to access hedging instruments and cover the transaction costs involved. They are better placed to access de-risking instruments from bilateral or multilateral donors that can bring down FX risks, and international lenders are more able to manage FX risk through hedging across a portfolio of investments in different countries. In particular, the Green-for-Access First Loss Facility run by Greenmax shows promise, having successfully de-risked local currency investments from local financial institutions for Simusolar, Vitalite and others.[49] We hope that more lenders develop innovative local currency financing solutions for small-ticket borrowers in the future.

> Local financial institutions are more open to financing energy and less scared in comparison to before, when it was completely unknown and collaterals of 200 per cent were being demanded!
>
> **GET.invest**

> We secured debt from a local bank as part of the co-financing requirement of the EnDev RBF. The local bank was slow, unreliable, and it didn't understand our business. In the end, it nearly crippled the whole project.
>
> **Anonymous GDC member, Uganda**


## Equity trend: all last mile distributors are struggling to raise equity, and when they do manage to raise it, the amounts are typically small

Equity is needed by LMDs to fund business growth – especially investments in capital and operational expenditure that enable LMDs to extend their reach. It typically comes from angel investors, family, friends, and founders, with some coming from patient, impact-oriented specialist equity investment funds. Equity is also needed to raise debt, as many debt providers look for investees to maintain a healthy equity-to-debt ratio.

**The median equity transaction in 2023 was $55,660 across the four transactions we have data on.** Three of the four companies were locally owned. Most transactions involved equity from founders or a parent company, and one transaction involved an undisclosed investor. No women-owned LMDs reported raising equity during that period.

**Most LMDs are not well suited to equity investment, as they cannot deliver the outsized commercial returns expected.** Most equity investors look for companies with the potential for high returns that LMDs cannot meet, with the idea that outsized returns from successful investments will offset losses from investees that fail. Equity is also sometimes used to finance lower-return investments, for example, in project financing for infrastructure. However, these investments tend to be low risk, and ticket sizes are typically large. Investing in the LMD sector is risky, small-ticket sizes are needed, and return expectations are low. The structural mismatch between the kind of equity available today and the sector's needs continues to make equity an inaccessible and unsuitable form of capital for most LMDs. Patient, risk-tolerant, impact-focused equity with low return expectations and small-ticket sizes – most likely underpinned by de-risking instruments such as guarantees, insurance, or TA – is needed to meet the sector's needs.

**In addition, many LMD founders do not wish to dilute ownership and lose influence or control.** Instead, they seek to fund their companies with a combination of grants and debt that aligns better with a focus on impact, or a lower-risk, lower-growth business strategy. When faced with lenders' requirements regarding equity-to-debt ratios, some LMDs have successfully built equity through retained earnings and then accessed debt without external equity.

> While the equity space has been relatively dry, there is still some hope – though many of the businesses seeking equity aren't well suited for it, especially given the difficulty of generating strong returns in distribution. In reality, we're using equity imperfectly, but doing the best we can without holding exceptional expectations.
>
> **Acumen**

> At this point, we can't get equity in the short run, so we must fund ourselves with a combination of debt and grants. Grants help to build the business by covering irrecoverable costs such as new market entry and awareness creation, and debt helps to cover the cost of stock. We're not ready for equity, and equity investment may divert us from our mission
>
> **FENA Solar**

## Carbon financing trend: a few last mile distributors have managed to access carbon financing, enabling them to focus more on remote areas and lower-income households

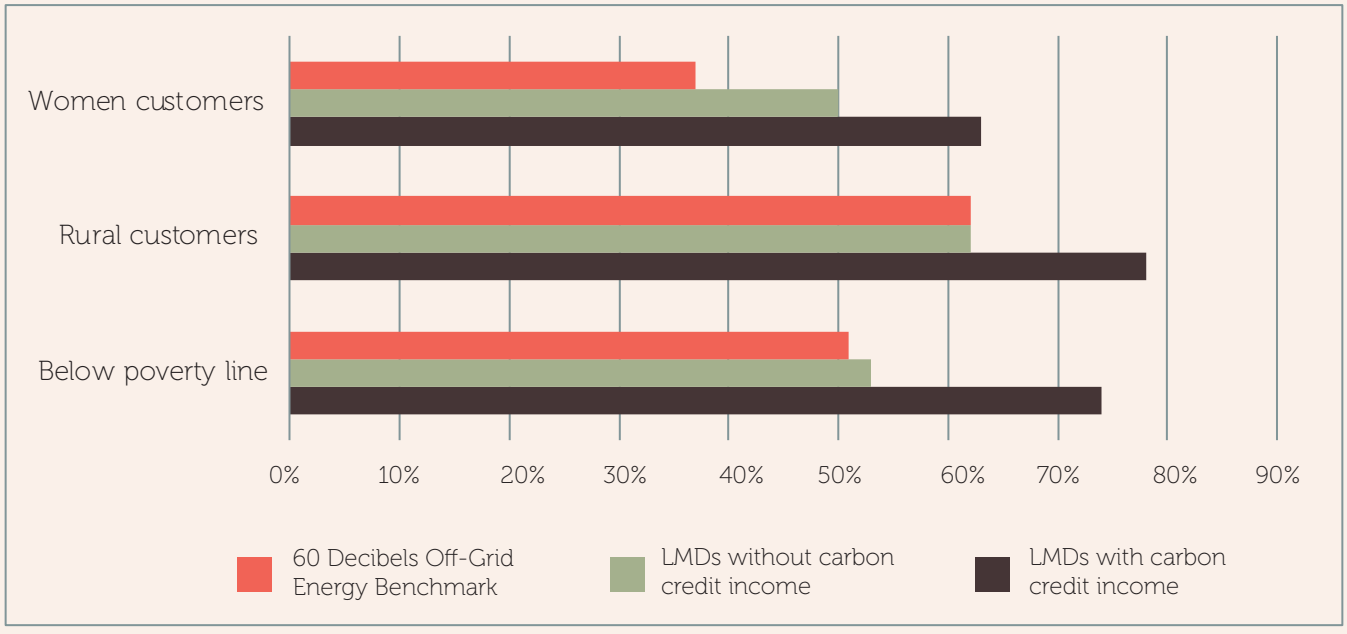
Carbon financing is used by LMDs delivering substantial emission reductions through sales of cooking, water filtration, solar, and PUE products. While challenging to set up, once in place it provides a significant revenue stream, enabling LMDs to fund their operations and, in some cases, offer products at more affordable prices. Carbon financing typically comes from carbon credit buyers via carbon markets.

**Few LMDs can access carbon credits, because setting up a carbon project is challenging and expensive.** However, many benefit indirectly from lower wholesale prices passed on by manufacturers that have the scale needed to make carbon credit transaction costs worthwhile. In the future, LMDs may benefit from government programmes such as the World Bank's Accelerating Sustainable and Clean Energy Access Transformation project in East and Southern Africa, which is being designed to leverage dMRV systems to access carbon credits on behalf of companies.[50]

**Where LMDs have accessed carbon finance, it has come with some challenges and risks.** For example, price instability in the carbon markets has caused insecurity over future cash flows, whilst concerns around the credibility of carbon methodologies create reputational and financial risks, and requirements regarding carbon baseline measurement vary from country to country or even within countries. Participating in carbon credit programmes also presents a time and financial cost, and the regulatory environment is evolving in many markets where LMDs operate, making it difficult to predict project success.

**If these challenges can be overcome, and if LMDs sell the right product categories, carbon credit income can become a major revenue stream, enabling LMDs to focus more on remote areas and lower-income households.** Seven LMDs reported generating carbon revenue through their own projects, for whom it provided a median of $200,000 revenue and accounted for a median 58 per cent of annual revenue in 2023. LMDs with carbon credit income report greater focus on customers below the $3.20 per day poverty line (74 per cent compared to 53 per cent), rural areas (78 per cent compared to 62 per cent), and women customers (63 per cent compared to 50 per cent) (see Figure 25). For example, Ugandan water filter provider Spouts of Water has set up its own carbon project and uses carbon revenue to cover the high distribution costs incurred when targeting remote, low-income communities, as well as to offer lower product prices to its customers.

**Figure 25: Comparison of customers of LMDs with carbon credit income and those without**




(Source: 60 Decibels Off-Grid Energy Benchmark 2024)
(Note: n = 115; seven companies reported carbon credit income)

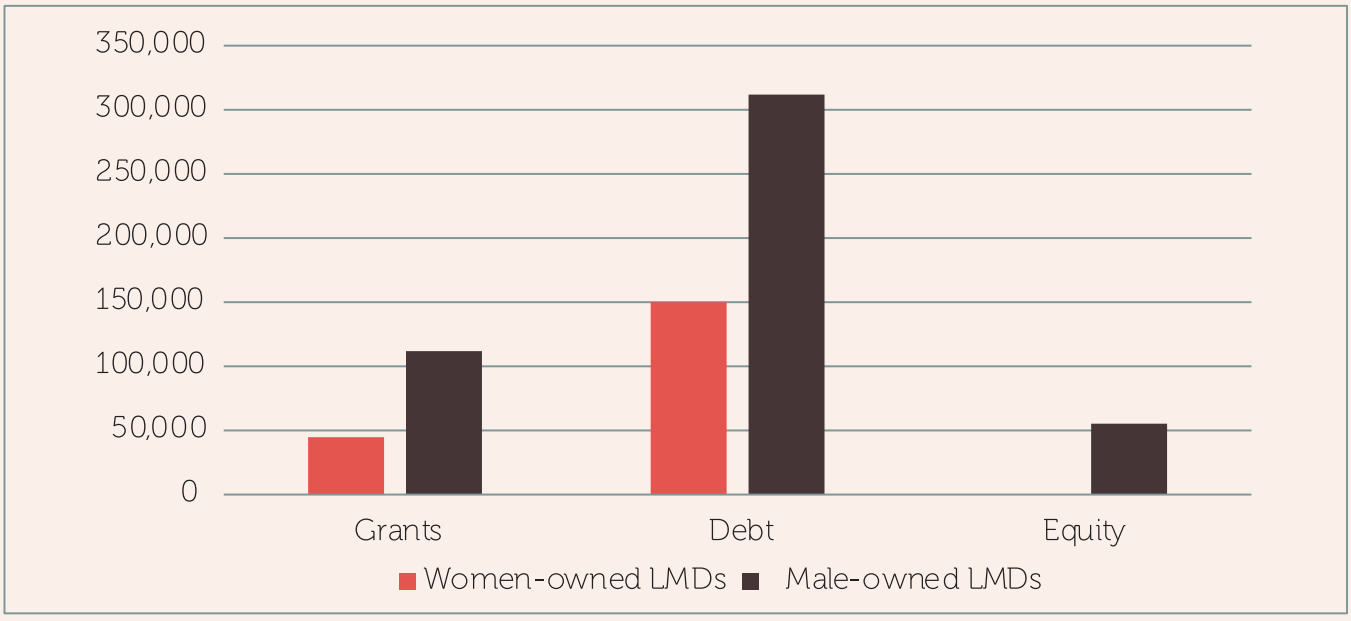
**Carbon financing has the potential to become a significant revenue stream for LMDs, but innovative gain-share partnerships and carbon market reform are needed.** For example, CarbonClear, a specialist dMRV provider, has helped GDC member Ilumexico access carbon credits in return for a share of carbon credit income.[51] To truly unlock growth, new carbon methodologies for beneficial products are needed, including standardised baselines, dMRV, and emission reduction calculation tools.[52]


## Access to finance and support for women-led last mile distributors

**Women-owned LMDs, which constitute 47 per cent of LMDs surveyed, raised far less than their male-owned counterparts.** In the off-grid solar sector, just 1 per cent of off-grid solar investment went to women-led companies.[53] According to the 2024 GDC member survey, women-owned LMDs were about half as likely to raise debt, and when they did, they raised less than half the amount raised by male-owned companies in 2023, as seen in Figure 26. This is in part explained by the fact that women-owned LMDs had lower average revenues ($315,000 in 2023) compared to male-owned LMDs ($804,000 in 2023), and smaller companies are less likely to raise large amounts. However, interviews suggested that, while donors and investors are often vocal in their efforts to be gender-inclusive, most women founders still feel their gender puts them at a disadvantage when seeking grants, debt, or equity.

> Across the board there are advantages, but in general things are more challenging, especially if you'd like to grow and scale. I don't want to be a small women-led company, I want to play with the big boys, and that is more challenging as a woman.
>
> **Sosai Renewable Energies Company**

**Figure 26: Women-led businesses lag male counterparts raising capital[54]**

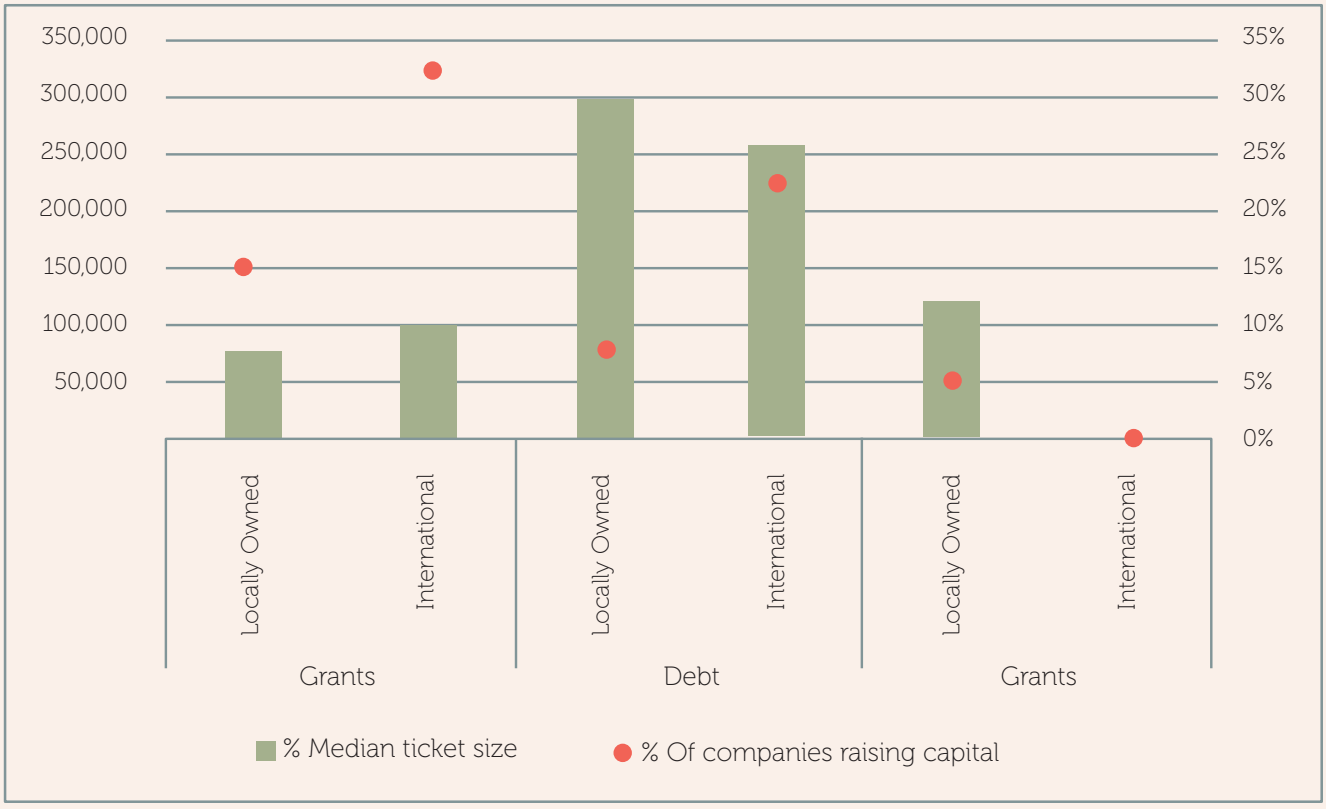


## Spotlight: access to finance and support for locally owned last mile distributors

**Locally owned LMDs are less likely to raise grants or debt compared to their international counterparts, but raise similar amounts when they do so.** This reflects a challenge also faced in the off-grid solar sector, where access to capital is highly uneven, with just 5 per cent of total funding going to locally owned companies. LMD size only partly accounts for the discrepancy, with locally owned LMDs having only slightly lower 2023 average revenues ($542,000) compared to their internationally owned counterparts ($710,000).

When locally owned enterprises do secure funding, the median ticket size is similar – $89,000 in grants compared to $100,000 for international companies, and $300,000 in debt versus $260,000 for international peers. Nevertheless, the fact that locally owned LMDs are significantly less likely to raise grants or debt in the first place highlights the significant barriers locally owned companies face in accessing capital, as explored in Figure 27.

**Figure 27: Percentage of locally owned and internationally owned companies raising grant, debt, and equity, and median amounts raised[55]**



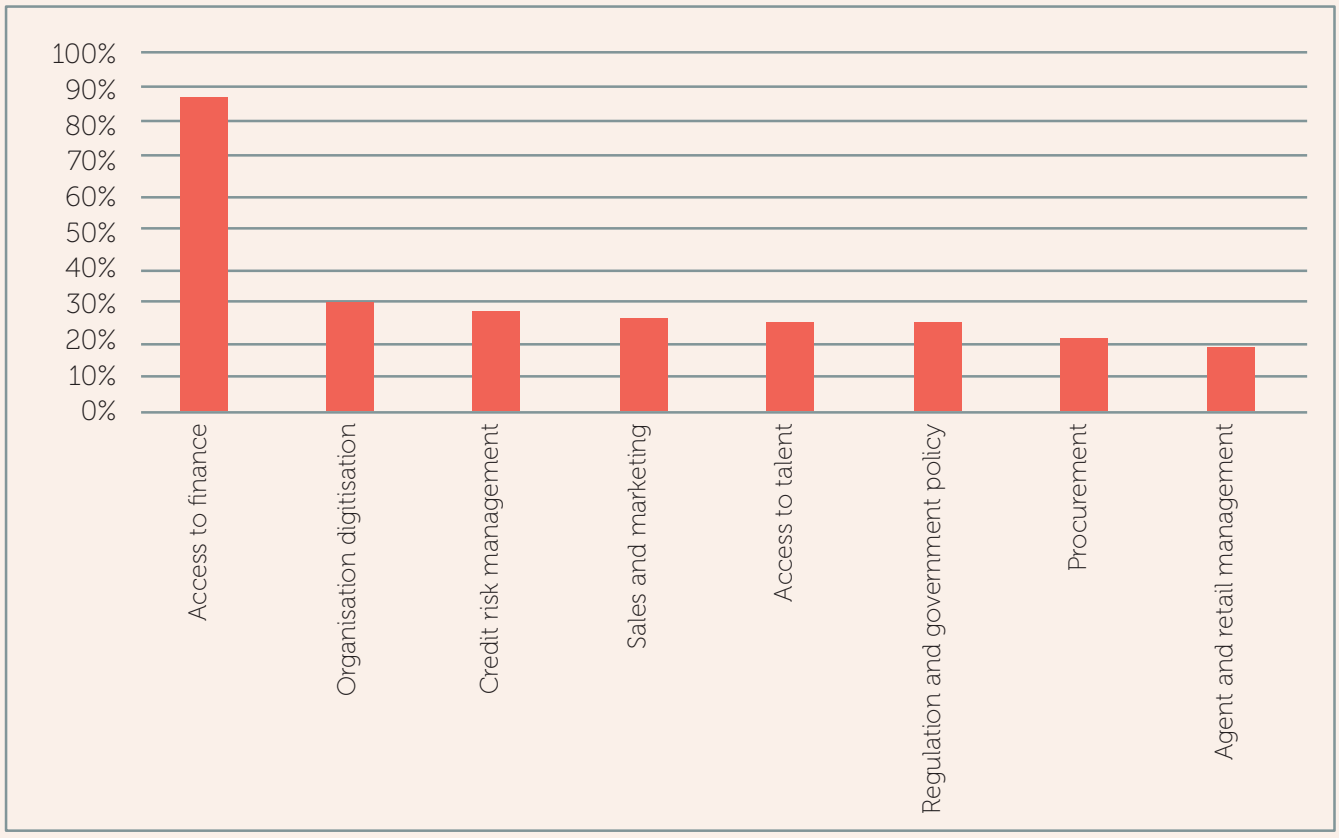

(Note: sample size = 59 locally owned and eight international companies)

## Technical assistance trend: despite a significant proportion of last mile distributors benefiting from technical assistance, facilities are heavily oversubscribed, and smaller/earlier-stage last mile distributors are under-supported

**LMDs value TA in a wide range of areas, including access to finance, financial management, digitisation, credit risk management, and sales and marketing.** TA can be provided in a range of ways that vary in terms of cost and the number of LMDs that can be supported – from tailored one-to-one support for larger companies to cohort-based training for medium-sized companies that bring together groups of 10 to 20 LMDs, in person or online. TA also includes the provision of tools, policies, guidance, and resources to larger numbers of smaller LMDs that are unable to access more in-depth support.

**LMDs value TA relating to all the key challenges they grapple with.** Access to finance is by far the top challenge faced by LMDs, irrespective of size, with 87 per cent of LMDs reporting it as one of their top three challenges. Other key challenges are around organisational digitisation (29 per cent), credit risk management (28 per cent), sales and marketing (26 per cent), access to talent (25 per cent), and regulatory requirements (25 per cent), as shown in Figure 28.

**Figure 28: LMDs' top three challenges**




(Source: GDC member survey, 2024)
(Note: n = 68)

**Over 40 per cent of GDC members received some form of one-to-one or cohort-based TA in the last 12 months, with most engagements focused on capital raising and financial management.** Other areas of support mentioned by survey respondents included product and business model design support, legal/transaction services, management team coaching, human resources, branding, and building strategic partnerships. All members said the TA provided was at least partially effective.

**LMDs most value TA that addresses needs they have identified, is integrated into their core business, and leads to sustainable outcomes. They particularly value TA that enhances systems, processes, capacity, and skills for the long term.** LMDs felt there was less impact from TA where the topic to be addressed was identified by a donor or investor, or which provided external or temporary solutions to challenges. LMDs sometimes felt pressured into accepting TA to get funding, even though they did not agree with the topic or mechanism used to deliver it. They understand that funders need LMDs to meet their requirements and appreciate it when support is provided to enable this. However, from the LMD's perspective, TA is most appreciated and adds most value when it is based on needs they have identified themselves.

**Cohort-based TA training is particularly appreciated by small and mid-sized LMDs.** When TA providers or funders offer training for a cohort of companies, it is often linked to a grant award or follow-on funding for the 'best performers' in a portfolio. This is sometimes seen as a barrier to being completely open and vulnerable during training – it is difficult to show your weaknesses when you are competing to show that you are the best. Cohort-based TA should, where possible, not be tied to possible future funding, in order to create an open and collaborative atmosphere, where people are honest about challenges and learning, rather than competing and trying to create a good impression.

**More tailored TA is available to LMDs than ever before, but most TA facilities remain oversubscribed, with smaller LMDs unable to benefit from them.** GET.invest's Finance Readiness Support[56] facility was set up in 2021 to provide one-to-one support to help early-stage, locally owned and managed companies get ready for investment. However, the programme recently adjusted its eligibility criteria and now only supports smaller transactions as part of a total investment size of €500,000 or more. This decision was taken in recognition of the fact that, even after TA, companies with lower revenues seeking smaller investment sizes were likely to continue to rely on grants and to remain unable to raise commercial investment. Cohort-based initiatives that have launched include EnDev's Energy Enterprise Coach, GOGLA's ELEVATE programme, and the GDC's Access to Finance Accelerator.[57] The GDC's Knowledge Hub is the leading platform providing tools, policies, guidance, and resources to smaller LMDs that are unable to gain access to either one-to-one or cohort-based TA.[58]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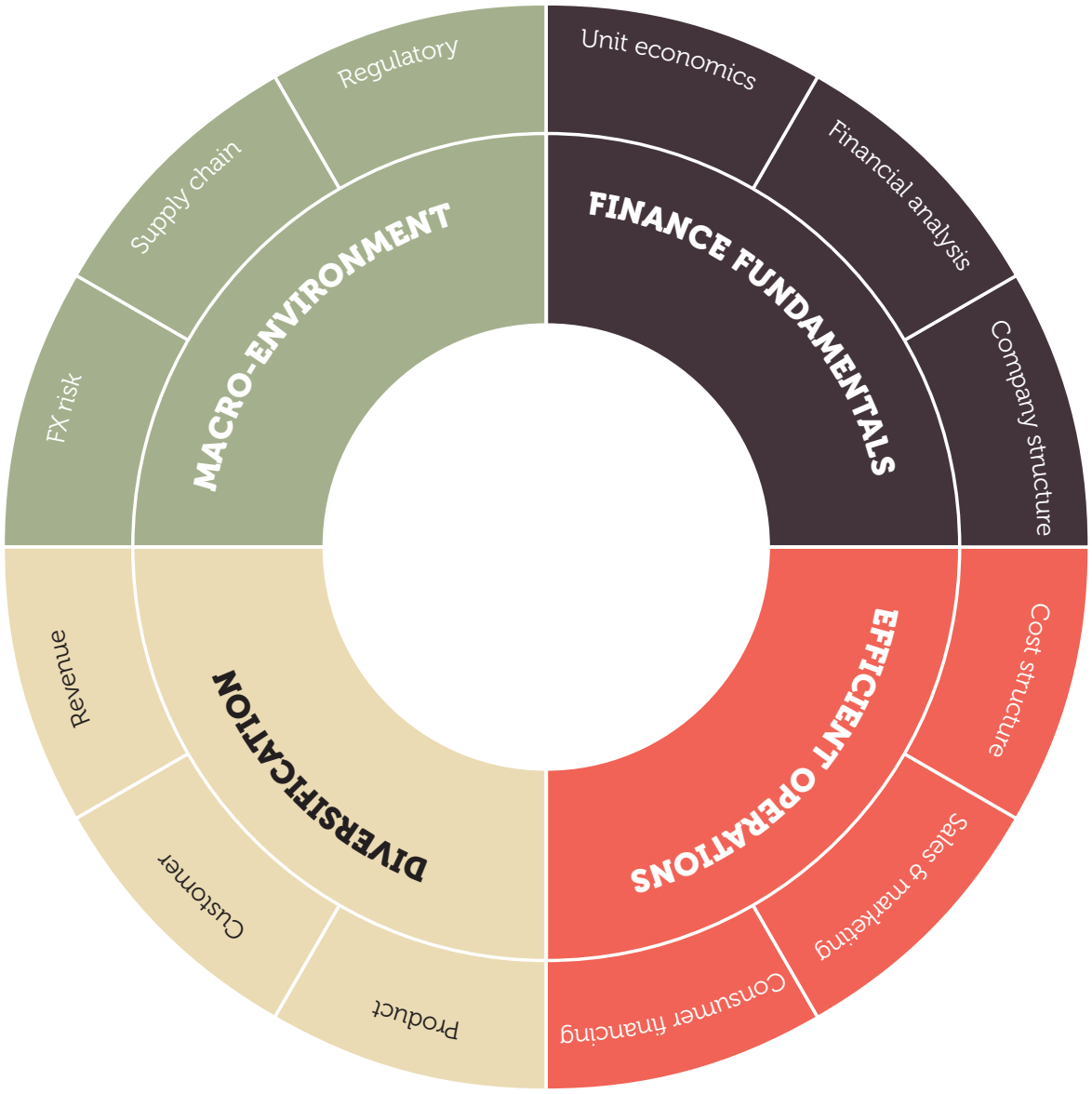
# 5 The characteristics of successful LMDs

**LMDs have achieved resilience and growth through diversification, operational efficiency, strong finance fundamentals, and dedicated strategies to manage their macro-environment.** While the causes of challenging market dynamics are outside the control of founders, we have seen LMDs achieve growth and stability by maintaining a lean and strong sales function, while improving business fundamentals. Many LMD founders and leaders excel at sales and distribution but struggle to scale their operations. For companies to achieve success, LMDs must continue to excel at sales while constantly improving other aspects of operations.

Resilient LMDs possess a strong, growth- and efficiency- oriented sales function in combination with actively managing and improving performance across four key areas: finance fundamentals, efficient operations, diversification, and the macro-environment. Interviews with GDC members reveal that the most resilient LMDs focus on all four of these areas, adopting one or multiple actions from each area, as shown in Figure 29.

**Figure 29: Key characteristics of resilient LMDs**

**Resilient LMDs possess skills in and actively manage these four areas:**




## Managing known risks in the macro-environment

LMDs that have maintained revenue growth and stability have minimised their exposure to macro-environmental factors that are outside a company's control. Resilient LMDs plan for a changing macro-environment and employ scenario planning when planning sales forecasts and building financial models. Some of the approaches LMDs have taken to manage macro-environmental factors are listed below.

## Foreign exchange risk management

Many LMDs must manage currency mismatches. Inventory is often financed by and purchased in hard currency, while sales revenue is typically in local currency and must be converted to repay hard currency denominated loans. The most resilient LMDs minimise exposure to local currency depreciation by limiting and/or hedging hard currency loans. Hedging is not practical for all transactions, however, due to ticket size and/or country. Resilient LMDs often include a scenario analysis in their unit economics calculations, showing the impact on margins of 10 per cent, 20 per cent, and 30 per cent depreciations in local currency, so they can make informed pricing decisions.

## Supply chain diversification

Resilient LMDs tend to procure products from multiple suppliers to reduce the risk of stock shortages and stock outs. Some suppliers make stock available in-country, which can shorten LMDs' working capital cycles, while others offer credit terms, enabling LMDs to optimise their product mix and make best use of limited working capital. Although LMD–supplier relationships are typically long term and built on trust, exclusivity arrangements are rare. Several LMDs reported their suppliers entering the areas where they operate and competing directly with them – usually causing them to switch to a different supplier. LMDs increasingly seek suppliers that are unlikely to compete with them and have a holistic LMD support offering. For example, Spark Energy offers hardware, PAYG software, trade financing, training, and technical support.[59]

Case Study

## Solarity

'Our business thrived under manufacturer A's B2B [business-to-business] model, but things changed when they began selling directly to consumers with long instalment plans, which we couldn't match. That, coupled with FX volatility, exposed the fragility of our position', says Ovoke Ekrebe, founder of Solarity.

In response, Solarity shifted strategy to gain greater control and agility. The company began distributing own-brand Verasol-certified products tailored to the needs of African markets. Moving beyond manufacturer A's offerings, Solarity diversified its portfolio to include inverters, water pumps, commercial-grade refrigerators, and ice machines – targeting households and businesses where energy access drives economic growth.

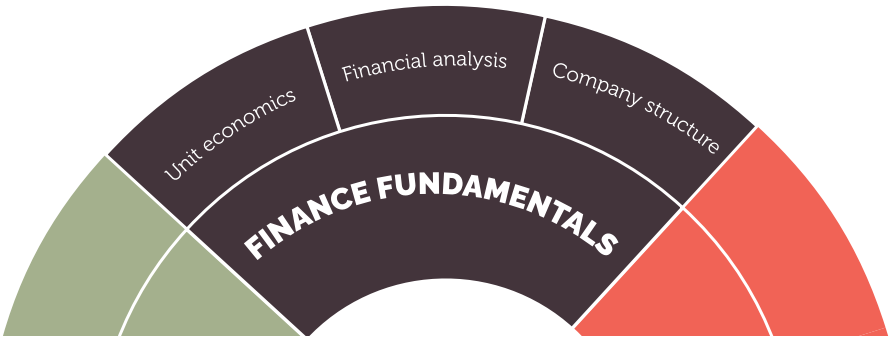
'One of our clients in the healthcare industry, a pharmacist, saw their income double within months of installing our cooling system', Ovoke adds. 'It's not just clean energy – it's a revenue driver'.

> **To grow the PUE part of the business, we would need substantial investments in capacity and working capital or concessional finance, especially since the FX exposure in this market is quite significant and leads to a spiral of either non-profitability, or less affordability for customers'.**
>
> **Anonymous LMD**

## Regulation

Resilient LMDs are closely attuned to regulatory shifts and changes that impact their business model. Regulations on topics such as taxation and carbon credits are evolving, and it is important to be aware of potential, impending, and enforced regulatory changes in countries of operation. LMDs reported changes in taxation in their countries of operation with little advance notice given, forcing them to quickly adjust their pricing to avoid loss-making sales, and ensure their teams were able to communicate to customers that tax policy was the main driver of increased prices. Sometimes LMDs need to cultivate close relationships with policymakers to advocate for their business or sector, either themselves or through industry associations. This is especially true when changes to policy are being considered, as is currently the case relating to carbon market regulation in Kenya.

> **We review a lot of LMDs, and we reject more than we approve. We see companies that are supported by grants to deliver specific projects. This means they rarely use the grants to get to scale or show a path to sustainable growth. We need to see clear rationale to provide a loan, seeing clear evidence of the LMD's ability to repay the loan.**
>
> **Charm Impact**




## Staying on top of finance fundamentals

LMDs reporting revenue growth are not necessarily the most well funded. Many founders of well-run, small, and growing LMDs are dedicated to consistently measuring and reporting financials. These LMDs continuously track revenues and expenses and know the unit economics and profit margins of their products. Those that can attract commercial capital also have audited accounts and a good understanding of their company's attractiveness to investors. Some of the ways LMDs stay on top of finance fundamentals are listed below.

### Positive unit economics

Resilient LMDs clearly understand the unit economics of each product they sell. They know the COGS per unit and have analysed the contribution of fixed and variable costs of each unit sold. They know which products cost more to sell, and which ones their sales team should prioritise selling. They also calculate the customer acquisition cost and customer lifetime value of each customer. If the LMD offers consumer financing, the true cost of financing is factored into unit economics calculations. All metrics are recalculated biannually at least, and can easily be shared with potential investors. Both Zonful Energy and Altech credit their success to focusing on profitability and calculating unit economics from day one, using this data to make informed decisions, optimise pricing and sales strategies, and build investor confidence. Poorer performing LMDs don't calculate unit economics and don't have visibility of the role of fixed, variable, and financing costs in determining profitability.

### Robust financial analysis

In addition to understanding unit-level profitability, resilient LMDs also understand the big picture. They have up-to-date management accounts and audited financials from the last few years. At least one member of the management team can critically analyse company financials to identify areas of strength (e.g. stable operating expenses) and weakness (e.g. declining gross profit margin) to action necessary improvements. Armed with this deep understanding, this team member can calculate a realistic financial ask, then confidently and transparently lead conversations with investors. In response to investor feedback, the GDC Access to Finance Accelerator developed a module on this topic, which helps LMDs compute profitability, liquidity, solvency, and asset utilisation ratios to inform a realistic financial ask.


**LMD checklist: top five documents to prepare before engaging with investors**

**Management accounts:** up-to-date monthly record of profit and loss and balance sheet.


**Audited financials** from the last two financial years and completed by a quality auditor.

**Certificate of incorporation:** demonstrate company registration.

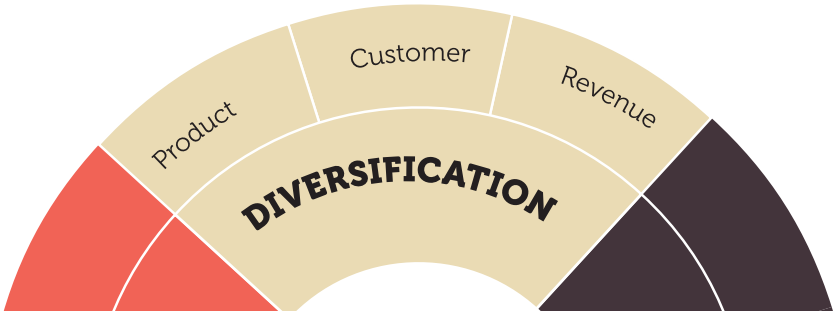
**Organisational chart:** show key personnel and qualifications of key staff.

**Pitch deck or one-page teaser:** this should be concise, data rich, and reviewed by an expert.

> We have a non-profit [organisation], subsidised by grants, which lays the foundation before the business comes in. We create awareness and build distribution partnerships, and once there is demand for these solutions, the business comes in. Carbon credit revenue has also helped to subsidise some of the costs relating to sensitisation of the community and distribution partnerships. I think any LMD would probably go bankrupt if you looked at it just as a business, because the costs you must incur to get people to a level where they demand the product are quite significant.
>
> **Aqua Clara**

## Optimised company structure

Some LMDs have established innovative company structures that combine for-profit and not-for-profit arms, or two entities focused on separate product categories. Splitting their organisations in these ways can help LMDs keep a handle on the performance of, for example, a core commercial business serving higher-income customers and a subsidised first-time access business serving low-income households. Dual structures can also help LMDs build the distinct teams, systems, processes, and business practices needed to sell very different product categories, such as PUE products or commercial and industrial solar, alongside household solar and cooking products. The distinct business practices needed to sell PUE products are explored in more detail in the chapter on LMDs' business aspirations. There is no one-size-fits-all approach, and LMDs must consider their options in the context of their business model and country of operation.




## Diversification of customer segments, products, and revenue streams

All LMDs must be nimble and respond quickly to changes in market conditions. Diversifying and pivoting has become a prerequisite for LMDs to maintain lean operations, adapting to challenging market dynamics. They have diversified or pivoted to survive, typically choosing to diversify their customer base, product line, or revenue streams. However, more is not necessarily better and may lead to over-diversification. External factors, such as carbon credit markets and RBF, often shape business model evolution. Some of the diversification strategies that LMDs have explored are listed below.

## Customer diversification

As outlined in Trend 1, GDC members have a higher income inclusivity ratio than their peers in the off-grid solar, agricultural, or financial inclusion sectors, as well as a higher proportion of rural customers than the wider off-grid solar sector. LMDs' customers have lower and less predictable incomes, while being more expensive to serve. Over the past few years, many LMDs have diversified their customer base and now serve a combination of low- and middle-income customers, businesses, and institutions. Reducing reliance on one customer base enables them to cross-subsidise their work in hard-to-reach communities, with more profitable business lines serving higher-income customers seeking higher-margin products and services.

## Product diversification

**From 2021 to 2023, LMDs diversified their product mix, with a 30 per cent increase of LMDs selling three product categories or more, as shown in Figure 30.** Serving new customers often means introducing new products to better suit different customer profiles. We see many LMDs diversifying their product range to reduce reliance on a single market and become more commercially viable. Even historically specialised SHS firms are pivoting into new areas, like commercial- and industrial-scale solar, necessitating significant changes to their organisational structure, team skill set, and business practices. For example, Solarity in Nigeria went from selling solar lights and home systems to households, to selling inverters, water pumps, and refrigerators.[60]

Case Study

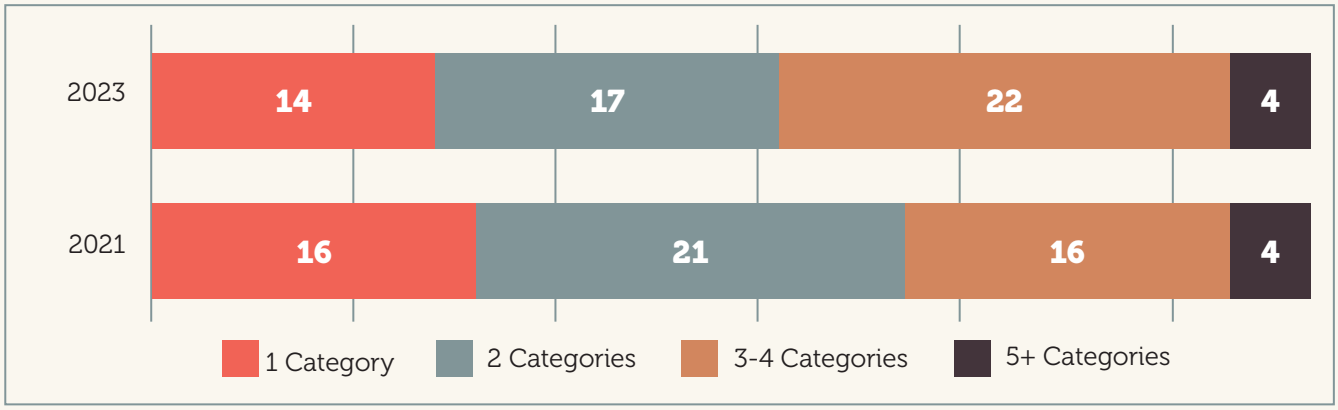
### Improving resilience through selling higher-margin products to higher-income customers, while continuing to serve hard-to-reach households

Natfort Energy in Zimbabwe primarily serves rural and peri-urban customers who are off-grid and underserved. Around 40% of their customer base consists of low-income households earning less than $8 per day. To improve financial sustainability and reduce reliance on a single customer segment, the company recently launched a new business line focused on sales to business and corporate clients who seek larger solar systems for use as a grid backup or their primary electricity source. Selling higher-margin products to higher-income customers allowed the company to continue serving their core base of low-income, off-grid customers while generating additional revenue from more financially stable customer segments.

© Natfort Energy

Some LMDs selling off-grid solar are moving away from focusing on rural, low-income households in a bid to improve their commercial performance by selling higher-margin products to higher-income customers in more densely populated areas. While this is understandable given the need to improve profitability, it increases the risk of communities being left behind. If the SDG 7 aim of universal household electrification by 2030 is to be achieved, around $21 bn is needed for subsidised first-time household electricity access, with a further $74 bn needed to scale productive uses.[61]

**Figure 30: Number of products sold by LMDs**




(Source: GDC member survey data 2024) (Note: n = 90)

Case Study

## Case study: Easy Solar – diversifying beyond solar home systems to build commercial viability in a challenging market

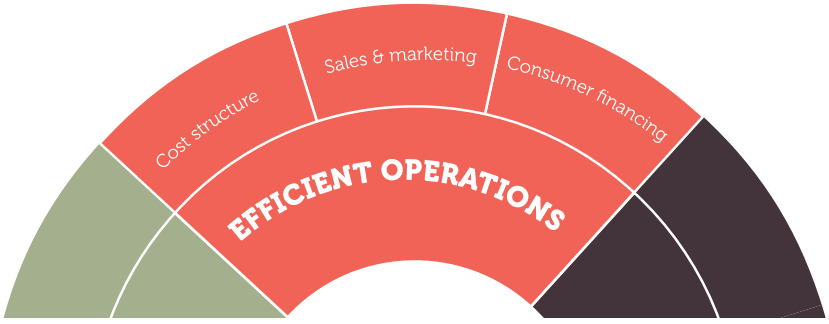
In 2022, a 15% goods and services tax was added to solar products in Sierra Leone, dramatically impacting affordability for last mile customers. Many households that could once afford SHSs could now only afford entry-level systems or lanterns. This affordability crunch left over 350 distribution centres under-utilised, pushing Easy Solar to rethink its business model and develop a leaner cost structure.

The company responded by shifting its focus from deeply rural markets to peri-urban and urban areas, where customers had higher purchasing power. At the same time, it broadened its product offering to meet peri-urban and urban demand for smartphones, refrigerators, and freezers. Cooling product sales accounted for 20% of revenue in 2024. The company has since diversified further into commercial and industrial solar solutions (5kW–500kW) and energy as a service for households.

## Revenue stream diversification

Many LMDs have looked beyond revenue from product sales and have sought additional revenue streams, such as RBF, carbon credit revenue, or service-based revenue. For example, Enra Power's team of electricians provides electrical services. Companies and investors often consider RBF or carbon credit income as 'revenue' since they are tied to sales. For the 15 LMDs that reported receiving RBF in 2023, this accounted for 28 per cent of revenues on average. For the five LMDs that reported carbon financing through their own projects, this provided an average of 75 per cent of 2023 revenue. A total of 59 per cent of LMDs reported revenue from services, providing a median 22 per cent of revenues. RBF and carbon financing trends are explored in more detail in Trend 3.

> **We have significantly refined our business model, aligning it more closely with opportunities in carbon finance. After reviewing our product catalogue, we focused on one product eligible for carbon credits. Unlike time-bound RBF funding, carbon finance offers a longer-term pathway to sustainability. This shift appears to make financing and fundraising more straightforward, with growing interest from investors, and we are progressing towards becoming a financially sustainable company.**
>
> **Bidhaa Sasa**




## Prioritising lean and efficient operations

LMDs have responded to a drop or flattening of revenue by focusing on lean and efficient operations to maintain cost ratios. Several LMDs have restructured their salesforce and operations to reduce staff costs, and for those LMDs that offer in-house financing to customers, developing robust credit management practices has become a prerequisite for sustainable revenue growth. Some of the techniques LMDs report using are listed below.

## Flexible, efficient cost structures

Resilient LMDs understand their company's cost structure clearly and can adjust both fixed and variable costs in response to market trends, while also keeping their overhead ratio (operating expenses divided by total revenue) stable. Several LMDs we spoke to needed to reduce their workforce in response to a decline in sales revenue.

Facing sustained financial pressure, one LMD was forced to implement drastic cost-cutting measures to stay afloat. Still carrying significant losses from the COVID-19 period, the situation worsened in 2022 with the collapse of the local currency and soaring inflation. Margins were effectively wiped out, making it nearly impossible to operate under such conditions. To survive, the company had to dramatically shrink its operations, including a 50 per cent reduction in staff. 'We had no choice but to cut our cost base', one executive noted. 'It wasn't about growth – it was about survival'.

## Sales and marketing

Resilient LMDs have invested time in optimising their salesforce management strategy, including agent and staff recruitment, remuneration, retention, and training processes. They know when to switch from sales channels with higher costs of sales (e.g. agents) to lower costs of sales (e.g. retail) and have proven adept at leveraging partnerships with community-based organisations to generate leads. As noted in the 2022 SoS report, LMDs use digital solutions, such as assisted e-commerce, online field staff training, and digital marketing, to bring down the cost of sales.

## Consumer financing

Resilient LMDs offering in-house consumer financing have a dedicated team to manage customer financing and robustly track customer repayments. They continuously improve credit risk management through the evolution of policies, tools, and operations. LMDs with sound loan portfolios typically separate the company's sales and credit functions to ensure a rigorous credit assessment. Consumer financing trends are covered in more detail in the chapter on LMDs' business aspirations.

## Spotlight on benchmarking

The GDC's benchmarking tool is for LMDs that are interested in evaluating their business performance and identifying areas for improvement. It is grounded in insights from over 75 LMD interviews and outlines 23 key performance indicators (KPIs) that provide a structured assessment of business health. The response to the tool has been exceptional – within just three months of its release, it was accessed over 2,000 times, underscoring the strong demand for practical, sector-specific performance metrics. Examples of some of the key KPIs, why they are useful, and best practice examples for each area are provided in Figure 31. It is followed by three short case studies that illustrate how they have been deployed in practice.

**Figure 31: Example KPIs from the GDC's benchmarking tool**

| | Why is it useful? | Best practices |
|---|---|---|
| **Value proposition** | | |
| **KPI 1: Net Promoter Score® (NPS)** | Provides valuable insight into customer satisfaction and loyalty | • Monitor NPS on a regular basis – ideally monthly and covering at least 10% of the customer base per product or service.<br>• Some LMDs integrate NPS results into sales agent performance reviews or compensation structures to reinforce the importance of service quality. |
| **KPI 2: unique selling proposition** | Provides an understanding of what differentiates a company's products or services from competitors | • Conduct both customer and non-customer surveys (20–100 respondents) to refine messaging and product features. |
| **KPI 4: revenue streams** | Identifies revenue diversification opportunities that can reduce risk and maximise revenue | • Regularly explore the availability and feasibility of additional revenue streams, including RBF, carbon credits, or services. |
| **Sales and marketing** | | |
| **KPI 10: revenue per sales agent** | Helps to assess agents' performance and maintain cost-efficiency across the salesforce | • Assess compensation offered by competitors – particularly ones you have lost agents to.<br>• Include a variable component of compensation that aligns with company goals – such as bonuses based on performance, retention, or repayment.<br>• Some LMDs also offer non-financial incentives, including health insurance or education support. |
| **KPI 13: sales agent churn** | Flags if there could be cost inefficiencies stemming from high churn | • Maintaining churn below 10% is ideal.<br>• Top-performing companies provide adequate training, competitive compensation, and active management support, such as regular feedback and check-ins.<br>• Tracking each agent's NPS can also serve as an early warning indicator of declining customer service standards. |
| **KPI 15: cost of field force** | Evaluates the financial sustainability of a company's sales compensation model | • A full-time and closely managed sales team, who also earn a partially fixed stipend, usually results in overall lower field-force costs. |
| **Backend Infrastructure and Overheads** | | |
| **KPI 18: stock loss ratio** | Taking action to keep stock losses to a minimum is central to effective inventory management | • Track the reasons for write-offs, including , markdown rates, improper storage, and theft. LMDs could consider phasing out certain products. |


## How Natfort Energy uses the revenue per sales agent key performance indicator

Natfort Energy actively monitors revenue per sales agent to ensure that agents are generating sufficient revenue to justify their costs. This analysis allows the company to identify both high- and low-performing agents, enabling targeted coaching, performance incentives, and resource allocation. By closely tracking sales agent cost-efficiency, Natfort Energy can optimise its sales operations and avoid unnecessary expenditure on underperforming agents through:

- **leveraging digital tools**: implementing CRM systems such as Upya or Salesforce to monitor agent performance in real time;
- **incentivising agents through gamification**: introducing bonuses and rewards for agents who surpass revenue targets or maintain favourable cost-to-revenue ratios;
- **providing regular training**: addressing underperformance through ongoing training in product knowledge and sales techniques;
- **refining commission structures**: using performance-based incentives to better align compensation with productivity.


## How Agriput Enterprises uses the Net Promoter Score key performance indicator

Agriput Enterprises conducts NPS assessments for each of its products at least once every three months. The company uses these insights to segment its customer base and tailor product offerings accordingly. NPS results also help identify underperforming products that may need to be phased out of the portfolio. Additionally, the data is used to highlight key training needs for sales agents and to recognise and reward agents who consistently receive high NPS scores from customers. This approach enables Agriput to continuously improve both customer satisfaction and internal performance.


## How Ajat Solar Systems uses the stock loss ratio key performance indicator

Ajat Solar Systems significantly improved its stock loss performance by introducing systematic product checks and testing upon receipt of goods. Previously, stock losses were around **4–5%,** largely due to undetected factory defects and damage sustained during transportation. These losses negatively affected customer trust, financial performance, and supplier relationships.

To address this, Ajat Solar Systems assigned a **dedicated staff member** responsible for checking all new stock upon arrival. The company implemented a structured process that includes:

- **visual inspections** of every batch of products;
- **basic electrical functionality tests** conducted on a simple test bench;
- **documentation of any rejected items,** creating a clear record for supplier follow-up and warranty claims.

This proactive quality control approach ensured that only reliable products were stocked or sold to customers. Within the first three months, the **stock loss ratio dropped to less than 1%** and has remained consistently below this level ever since.

The benefits have been substantial.

- **Improved customer confidence:** the consistent delivery of high-quality products led to positive feedback and strengthened customer satisfaction, boosting retention and repeat sales.
- **Financial gains:** enhanced product reliability translated into higher sales and revenue, underpinned by growing customer trust.
- **Stronger supplier accountability:** early identification and documentation of faulty products provided clear evidence to manufacturers, resulting in quicker resolutions and more effective warranty claims.

© Practical Action

# 6 LMDs' business aspirations

**LMDs are impact-driven organisations committed to delivering high-performing products that improve quality of life, save time and money, and boost incomes.** They seek to build long-term relationships with customers based on trust. They do everything they can to make products affordable through consumer financing, and to keep them operational through warranties and repair services. However, their ability to provide higher-tier products, offer sophisticated consumer financing, and carry out repair services is constrained by a lack of funding, support, and spare parts.

## Last mile distributors want to sell higher-tier solar home systems and cookstoves, but struggle with affordability and consumer financing constraints

**LMDs mainly sell basic products for cash, but they are keen to sell more higher-tier products.** In addition to their social impact, basic energy products establish trust in technology and pave the way for bigger purchases. According to 60 Decibels, 50 per cent of off-grid solar customers have climbed a step or more on the 'energy staircase' since their first purchase, rising to 67 per cent in rural areas. For cookstove users, over two-thirds have either moved to cleaner fuels or more efficient technologies using the same fuel.[62] Over 65 per cent of solar PV products sold by LMDs in 2023 were lanterns rather than Tier 1+ SHSs. There is a similar trend with cookstoves, where 89 per cent of products were improved cookstoves at Tiers 2–3, rather than clean cookstoves at Tiers 4–5 (see Figure 32). Based on interviews, LMDs' ability to sell products delivering a higher level of service is constrained by end-user affordability, as well as limited LMD capacity and appetite to offer consumer financing. In the cookstove sector, the ability to offer higher-tier stoves is also linked to whether companies had access to carbon credit financing, enabling them to offer higher-tier products at affordable prices.


© Nyalore Impact

> 'Sales grew because products became more affordable [with PAYG], so we started selling more SHSs. At first, we thought customers preferred buying pico-products [solar lanterns], but we learned their preference was for SHSs. It was just that they were expensive without subsidy or being sold on PAYG.
>
> **Fena Solar**

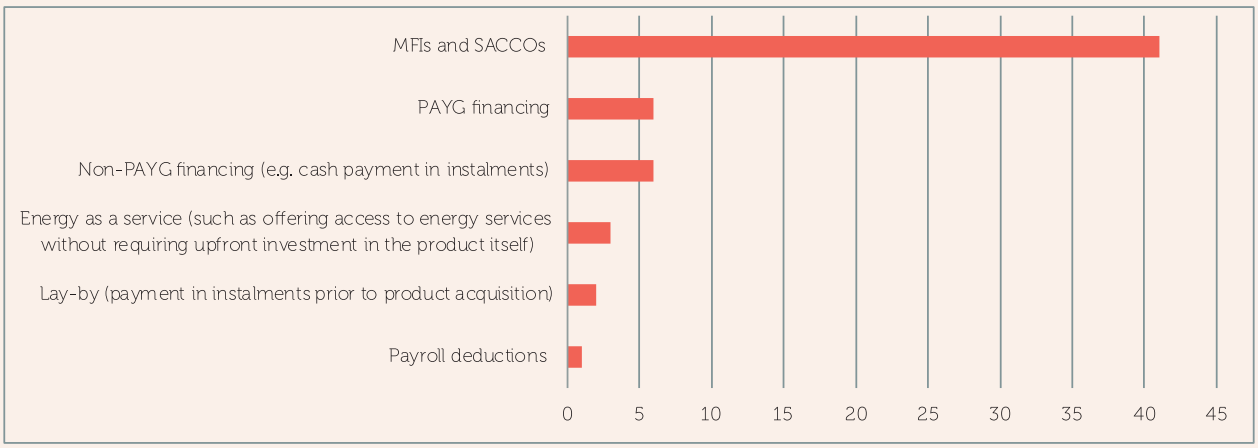
**Figure 32: Products sold by GDC members in 2023**

| Category | Product | Total Units sold in 2023 |
|---|---|---|
| Solar PV | Solar lanterns | 700,789 |
| | Multi-light systems (3–10 Watt-peak (Wp) | 82,097 |
| | SHSs (11 Wp or higher) | 79,907 |
| | Commercial and industrial solar | 438 |
| | Mini-grids | 942 |
| | Other | 14,532 |
| Improved cookstoves | Cookstoves: Tier 0 or 3 | 444,578 |
| | Cookstoves: Tier 4 and above | 24,687 |
| Domestic appliances | Fans | 60,458 |
| | TVs | 19,527 |
| | Radios | 31,846 |
| Productive use of energy | Solar water pumps | 6,170 |
| | Refrigeration units | 742 |
| | Other | 1,702 |
| WASH | Water filters | 102,108 |
| | Menstrual health products | 164,816 |
| | Handwashing products | 4,267 |
| | Other | 2,447 |

(Source: GDC member survey data 2024) (Note: n = 111)

**Seventy-two per cent of LMDs reported offering consumer financing, which is broadly consistent with the 78 per cent that reported offering consumer financing in 2021. Consumer financing is mostly provided through partnerships with MFIs and saving and credit cooperative organisations (SACCOs), used by 69 per cent of those offering financing.** This suggests that MFIs and SACCOs may be increasingly willing to offer the smaller loans needed for households to acquire beneficial products. It may also reflect the fact that LMDs are increasingly seeking to sell higher-value products such as PUE appliances, which are more aligned with the minimum loan sizes required by MFIs and SACCOs.

**Figure 33: Types of consumer financing offered**




(Source: GDC member survey, 2024)

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**MFI and SACCO financing can work well for higher-value items such as PUE products, but it has significant drawbacks compared to PAYG for lower-value items.** MFIs and SACCOs typically only operate in areas with higher population density, and are not always available in remote, rural areas. To keep transaction costs and risks down, they have minimum loan sizes and short loan tenors, which make their loans unsuitable for many LMD customers seeking to purchase lower-cost beneficial products over longer repayment periods. MFI and SACCO repayments are often made in cash rather than through agents or customers using mobile money in the PAYG model – increasing transaction costs, which must be passed on through higher interest rates. Unlike PAYG, there is no possibility of remote product deactivation in case of non-payment, and recovery of the product in case of default is more challenging. Credit checks to minimise default losses need to be more stringent, excluding a higher proportion of lower-income households.

**Despite its benefits, PAYG remains unsuitable for many LMDs that have yet to put in place finance fundamentals such as regular management accounts, cash-flow forecasting, and access to working capital (see Trend 2).**[63] Many distributors also struggle to allocate resources to building the systems, processes, and teams needed to undertake careful credit risk assessment and ongoing CRM to maximise revenues and minimise defaults. The average collection rate in the PAYG sector was just 72 per cent in 2024.[64]

> “It’s very challenging for LMDs to become PAYG companies. Selling both the asset and the consumer finance is a conflict of interest – one side wants to push sales, while one wants quality of receivables. It’s a marathon, not a sprint – but LMDs such as Zuwa Energy in Malawi are showing it can be done.”
>
> **PAYGo Lab**

**Only 14 per cent of LMDs offering consumer financing sell products on PAYG, but based on interviews, many more would like to do so.** LMDs' ability to sell on PAYG is constrained by the fact that PAYG technology is not widely available on non-solar products. Many LMDs lack the systems and processes needed for credit risk assessment and management. They also have limited working capital for on-lending. A significant proportion are also unwilling to take on credit risk, viewing it as a distraction from their core distribution business.

Case Study

## Green Impact Technologies – expanding access through flexible financing

Green Impact Technologies, an LMD based in Malawi, offers three types of consumer financing to address the different affordability challenges of customers: PAYG, lay-by, and partnerships with MFIs.

- **MFI financing**: the company works with the Micro-Loan Foundation and Wealthnet Finance Plc. to extend credit access. Customers are identified both through the MFIs' networks and Green Impact Technologies' own pipeline. Interested customers are referred to the MFI partner, which conducts credit assessments and provides financing – removing the barrier of high up-front costs. This type of arrangement is most suitable for salaried customers, with repayments deducted directly from payroll, reducing default risk.
- **PAYG** is best for low-income and rural households, allowing small, flexible mobile money payments that match irregular income flows. This mechanism has proven the most effective in reaching underserved communities.
- **Lay-by**: a savings-based option, enabling customers to pay in instalments before taking possession of the asset.

In terms of sales performance, PAYG leads, followed by lay-by, with MFI-linked financing coming third. This reflects the stronger demand and accessibility of PAYG, especially for rural and low-income households.

**LMDs are also exploring energy-as-a-service (EaaS) models.** For example, Zonful Energy, operating in Southern Africa, has transitioned to a hybrid model that offers both PAYG and EaaS options across its product lines – including large SHSs, PUE products, and improved cooking solutions. The shift was driven by customer feedback: end users are more interested in the benefits of energy (lighting, domestic appliance use, and productive use) than in owning the hardware. Ownership brings long-term risks and maintenance or replacement costs that many customers prefer to avoid. Under the EaaS model, customers pay for access to reliable energy services rather than for the assets themselves. Instead of focusing on repayment enforcement, Zonful Energy's emphasis has moved to ensuring service reliability and continuity – critical for customer satisfaction in a subscription-based model. Zonful Energy's experience contrasts with what LMDs tell us in many other countries, where customers have a preference for asset ownership and do not wish to 'pay indefinitely' for a service.

Similarly, in partnership with the Rural Energy Access Lab (REAL), Easy Solar has developed a heavily subsidised EaaS offering in Sierra Leone focused on rural areas and designed for customers who cannot afford to purchase a solar system on credit. Easy Solar reports little to no cannibalisation of its PAYG business, as the two models serve distinct customer needs and mostly distinct communities. PAYG continues to meet demand from customers seeking ownership and asset acquisition, while EaaS – particularly in rural markets – appeals to those prioritising convenience, continuity, and affordability through subsidies. Offering both PAYG and EaaS reflects a maturing strategy that better aligns with diverse customer profiles and preferences.

**With the right support, LMDs could enhance their consumer financing offering – doing more to overcome affordability constraints and enable households to access higher levels of service.** This could be through innovative MFI/SACCO partnerships, developing in-house capacity to sell on PAYG, or through testing and demonstrating household EaaS models at greater scale. By enhancing the availability of different consumer financing and ownership options, the need for end-user subsidy and the cost of achieving universal access for governments can be minimised.

Case Study

## Last mile distributors exploring innovative solutions to the affordability challenge through the Rural Energy Access Lab

REAL was set up by three LMDs – Moon, SolarAid, and Easy Solar – to fast-track progress towards universal energy access in rural sub-Saharan Africa through innovative EaaS models. Between them, they have now reached over 25,000 households in Togo, Malawi, Sierra Leone, and Senegal with support from the DOEN Foundation, Good Energies, Nordic Development Fund, and British International Investment, generating invaluable insights into the business model and the blended financing needed to implement it. The Energy Saving Trust has commissioned a forthcoming evaluation of the longest-running household EaaS project – SolarAid's EaaS model in Malawi – as well as a stakeholder consultation exercise to inform future scale-up.

The model is starting to gain traction with governments and development partners, with SolarAid's EaaS model in Malawi being funded by the government through the World Bank-financed MEAP, and a dedicated EaaS RBF window being launched under the +Energia Facility in Mozambique.[65]


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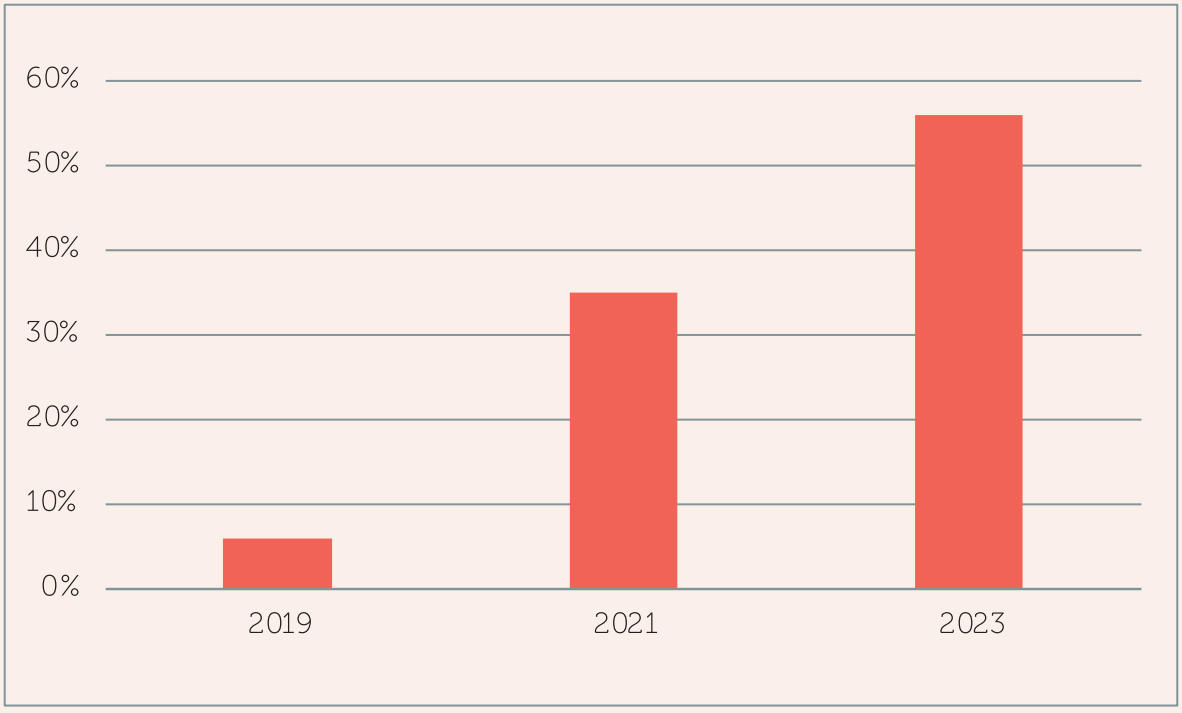
## Last mile distributors want to sell productive use of energy appliances, but volumes remain low as last mile distributors innovate to find the right business models

**There has been a striking increase in the proportion of LMDs selling PUE products and agricultural inputs since 2019. Fifty-six per cent[66] of LMDs were selling PUE products in 2023, up from 35 per cent in 2021 and 6 per cent in 2019, as shown in Figure 35. A further 40 per cent of LMDs surveyed stated their intention to start selling PUE in the coming year.**

**Based on interviews, the increase in LMDs selling PUE – in particular solar water pumps, refrigerators, and milling equipment – has been driven by four key factors:**

1. **Technology:** enhanced reliability and performance, alongside falling prices and availability of third-party quality assurance.
2. **Demand and impact potential:** there is high demand for products that have the potential to increase incomes, improve food security, reduce drudgery, and increase resilience against climate-related shocks.
3. **Improved supplier offerings:** suppliers increasingly offer PAYG software, marketing materials, and staff training.
4. **Funder interest**: PUE has become a key priority for donors, investors, and governments seeking to achieve job creation and economic growth outcomes.

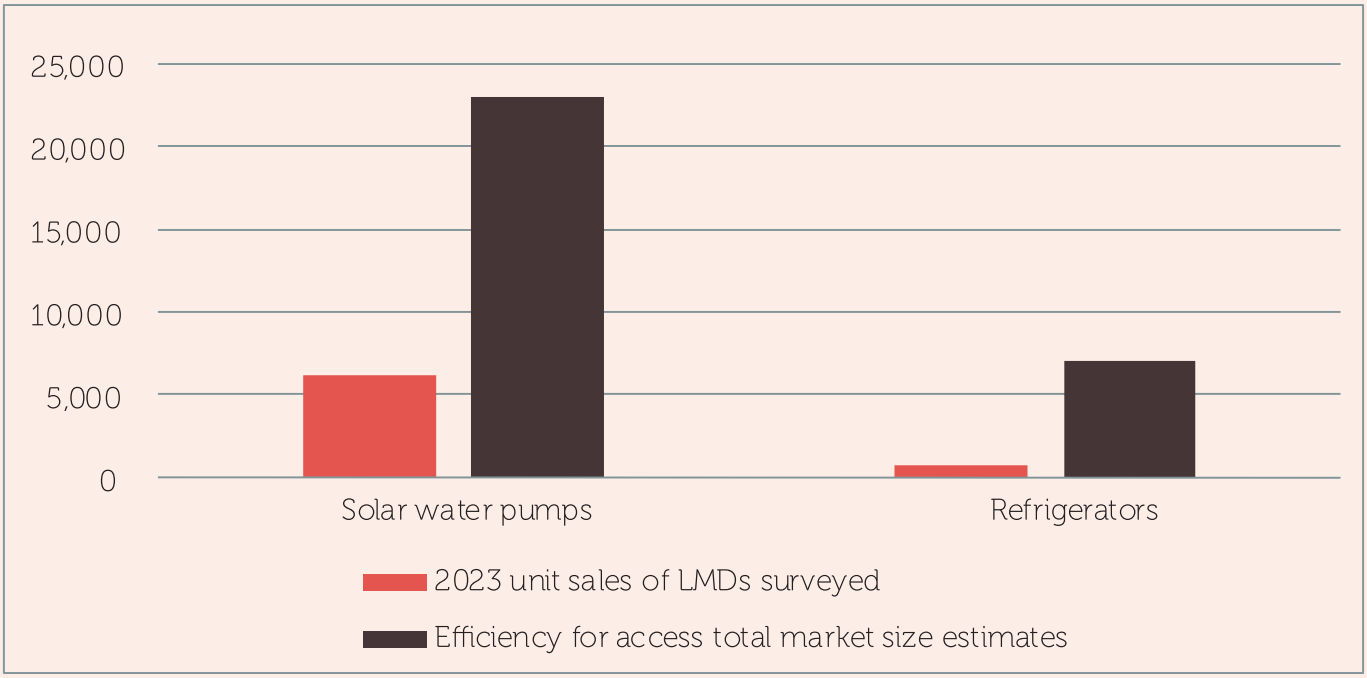
**Figure 34: Percentage of LMDs selling PUE products**




(Source: GDC member survey data 2018, 2022 and 2024)

**LMDs appear to have captured a significant share of PUE markets, which are still nascent.** LMDs reported selling 8,100 PUE units in 2023, including 6,170 solar water pumps, 742 solar refrigerators, and 1,702 other PUE appliances, suggesting a collective market share of at least 27 per cent of all solar water pump sales (~23,000 in total) and 10 per cent of all refrigerator sales (~7,000 in total) (Figure 36) . Actual 2023 market share is likely to be higher considering the 90 LMDs providing data represent less than half of the GDC's 200+ members, and only a small proportion of the wider LMD sector.

**Figure 35: Minimum LMD PUE market share**

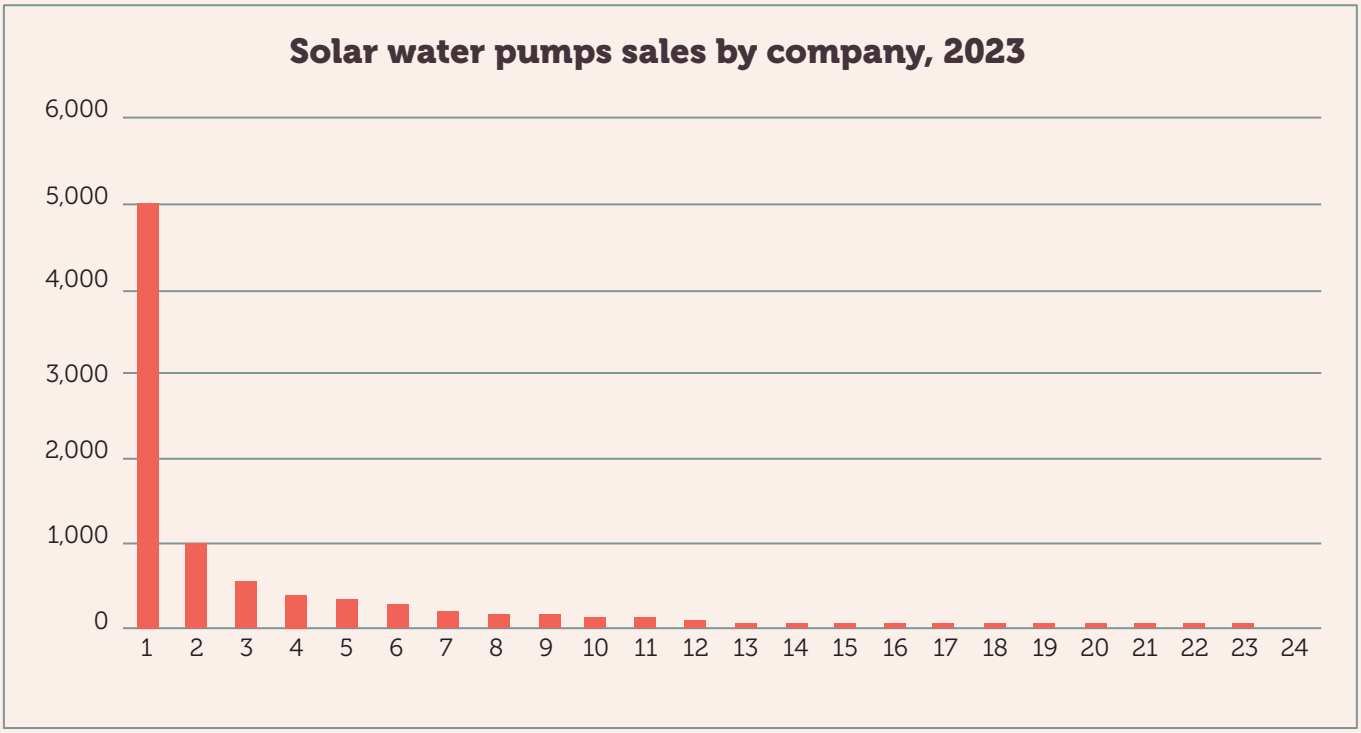


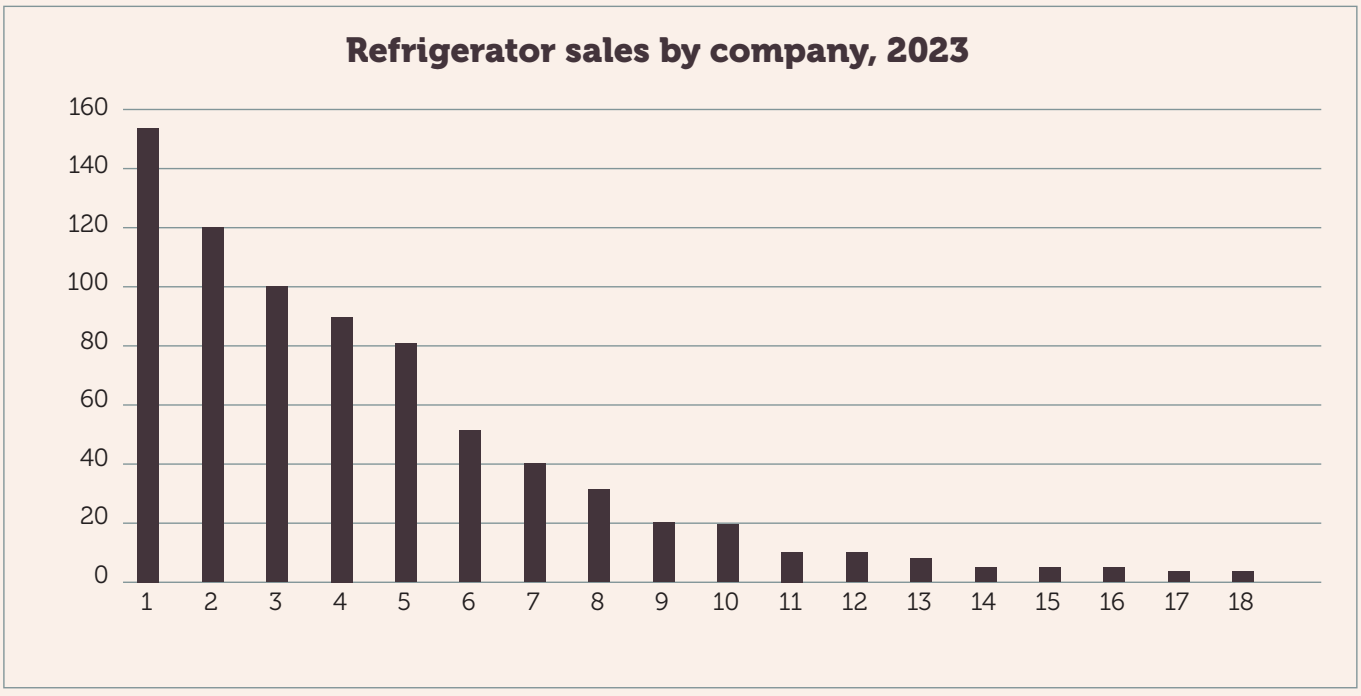

**LMDs are well placed to help build PUE markets further.** They have deep local market knowledge and strong relationships of trust with the communities in which they operate. Their business models are designed to create trust and demand through sales agents deploying high-touch, BTL marketing strategies. Their proximity to end users makes them well placed to gather feedback on PUE products and services, and to use that to inform both supplier product design as well as LMD business model innovation. It also makes them well placed to offer repair and maintenance, as well as other added value services, such as consumer advice and support.

**A handful of LMDs have achieved significant sales volumes, as shown in Figure 37.** For example, Zonful Energy sold 3,100 solar water pumps to smallholder farmer groups through a credit model that combines down payments with monthly instalments, while also providing installation, after-sales service, input access, market linkages (retaining a 10 per cent commission), and optional insurance. POPO in Uganda's refrigerator sales increased fourfold from 52 in 2023 to 220 in 2024 through decentralised logistics enabling rapid delivery, a flexible PAYG consumer financing model, after-sales support through routine field agent checks to ensure proper usage, and warranties.[67]

> **We're working with our manufacturer partner to develop a solar dryer that has a much higher daily turnover than their current product, so communities can produce the volumes of product needed to make the business model work.**
>
> **Sosai Renewable Energies Company**

**Figure 36: Solar water pump and refrigerator unit sales by company**




(Source: GDC member survey 2024)
(Note: n = 23 (left) and n = 18 (right))

**Selling PUE requires a very different business model to other energy access products. In prior GDC research (Selling Productive Use of Energy Appliances to Last Mile Consumers),[68] LMDs told us that they underestimated how hard it would be to sell PUE products, and that while the demand is there, they have not yet been able to effectively meet that demand. This is for a range of reasons, including:**

1. Lack of market-ready products with little or no stock available in most countries, making it costly and time consuming to procure even small samples.
2. Affordability constraints for last mile consumers and the high consumer financing and working capital requirements linked to it.
3. The technical complexity of PUE products and agricultural market systems, making it essential to provide customer engagement – including awareness-raising, demonstration, site assessment, advice, customised system design, and after-sales advice and support.
4. The high-touch nature of sales, with extensive customisation, education, and after-sales support requirements.

**Distributors need to build dedicated and specialised teams to sell PUE products, with customised business practices in areas such as sales, marketing, distribution, consumer financing, after-sales service, and repair.**[69] LMDs need to undertake research and pilot the sale of PUE appliances, using semi-structured business practice tests to identify the adaptations necessary to sell PUE products in a cost-effective way. The GDC's Step-by-Step Guide to Selling Refrigerators for Productive Use[70] provides insights into how LMDs can do so.

**LMDs need funding and support to develop and scale PUE business models.** Nearly all LMDs report that PUE business model testing and innovation is too risky and expensive without some form of subsidy. The products are relatively complex and unfamiliar to end users, making awareness raising and training essential to ensure customers can fully leverage their income-generating potential. Site assessment, customised system sizing, and professional installation is also often needed. LMDs and their suppliers must invest in understanding customer needs and tailoring both the supplier's product design, and the LMD's broader offering (e.g. consumer financing, after sales, and repair) accordingly. For LMDs to successfully create and sustain demand for PUE appliances, they need grant funding to support business model innovation, debt financing for working capital and on-lending, and TA to build the systems and processes needed to scale.

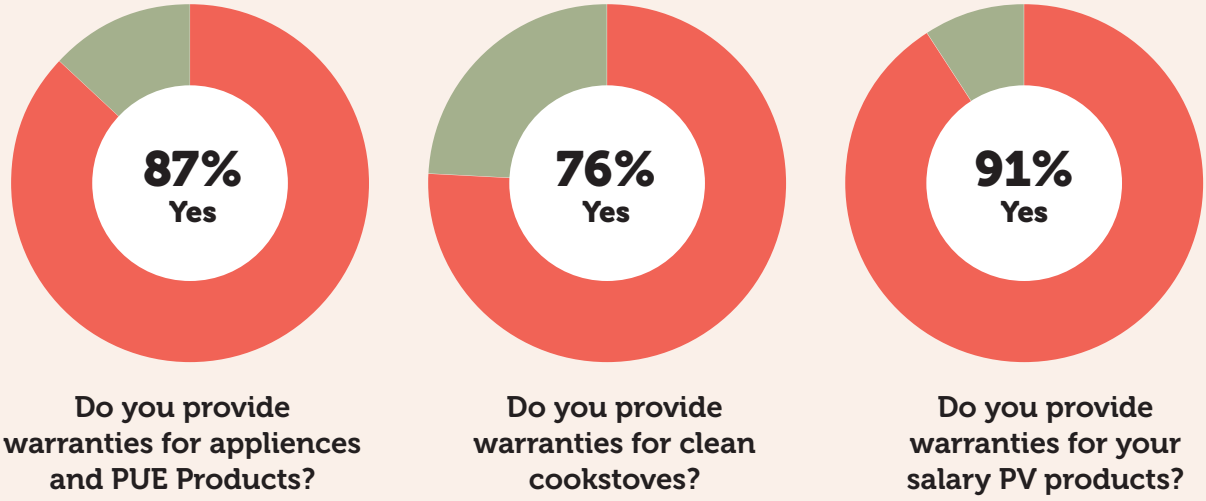
> We were getting lots of enquiries from customers about solar water pumps, but when we started to sell them, we found uptake was extremely low. We soon realised there was a misalignment around customer expectations and ability to pay. The customers who could afford the pumps were those with bigger farms, but they needed bigger systems than the pumps we were offering. These customers often had experience of diesel pumping and were unhappy with the flow rate of the solar pumps. On the flip side, the customers with smaller farms, for whom the pumps were more appropriate, found the payment plans too expensive.
>
> **Easy Solar**

> When it comes to productive-use equipment, training is absolutely essential. It's not just a one-off session, but ongoing support to help users understand both how to operate the system and how to run the business side. This kind of training isn't cheap – it really requires grant funding to be sustainable.
>
> **Sosai Renewable Energies Company**

## Last mile distributors want to go beyond warranties and offer repair services to extend product lifetimes and improve customer satisfaction

**The proportion of companies offering warranties increased from 65 per cent in 2019 to 87 per cent in 2021, falling to 83 per cent in 2023.** For those selling each category, 91 per cent of LMDs provided warranties on solar PV products, 87 per cent on PUE appliances, and 76 per cent on improved cookstoves (Figure 38). LMDs' decentralised business models can be leveraged to offer quick turnaround times, with faulty products collected, inspected, replaced, or repaired. Most GDC members adhere to the principles outlined in GOGLA's Consumer Protection Code, which includes commitments to good product quality and good customer service.

**Figure 37: Percentage of companies offering warranties in main product categories**




(Source: GDC member survey 2024)
(Note: n = 89)

**To extend product lifespans and improve customer satisfaction, LMDs could consider going beyond offering warranties and consider offering repair services.** Though costly and complex to initiate, repair services present an opportunity to deepen customer relationships and open additional revenue streams, while enhancing environmental sustainability[73] and minimising e-waste and life-cycle emissions.[74] More research is needed to understand the cost-effectiveness of providing repair services for specific product categories in specific locations, with a particular focus on understanding end-user demand and willingness to pay, as well as potential volumes, gross margins, costs, and commercial viability.

Case Study

### Piloting repair business models for solar lanterns and solar home systems

GDC member SolarAid in Zambia offers their customers in-house repair services outside the warranty period, for a fee. They have successfully repaired just shy of 2,000 products, and 85% of their customers said they would consider paying for repair services again. As part of the GDC's Innovation Launchpad,[71] SolarAid transferred the learnings from their pilot to Nyalore Impact, Kukula Solar, and Natfort Energy to trial repair services as well.[72]

Kukula Solar charged a 35% average gross margin on their first 280 repairs, while Natfort Energy achieved a 25% gross margin on repairs, averaging $12 per product, though they noted that transport costs in rural areas eroded profitability. Natfort also trained 25 technicians – 16 of them women – and reported 72% customer satisfaction.

This suggests that, while repair services may not always be commercially viable on their own, they can play a valuable role in building a trusted brand and customer loyalty and make sense as part of a broader value proposition. Many LMDs are exploring tiered repair approaches – focusing local repair efforts on higher-value products with better margins.


**Building a repair ecosystem is particularly critical to the long-term success of basic solar lighting and PUE distribution models.** PUE products still face challenges around durability and reliability. Given their size, it is usually easier and cheaper to repair them on site or close to customers, rather than returning them to suppliers. LMDs like POPO in Uganda are innovating to prevent technical issues through routine customer visits to ensure proper usage, while suppliers such as FuturePump are leading the way by supporting their distributors to offer a 10-year warranty and providing them with spares, training, and support to do so. Other solutions that are needed include:

1. **customer training** at point of sale, and the provision of clear instruction manuals in local languages to ensure proper usage;
2. establishment of **repair hubs** close to end users to enable quick turnaround times;
3. suppliers making **spare part**s available and training distributors in appliance repair;
4. **repair business model innovation** to understand demand, pricing, gross margins, costs, and unit economics.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# 7 Conclusions and recommendations

**LMDs play a market creation role that raises awareness, educates end users, enhances trust in technology, and creates demand for beneficial products – but that also incurs significant costs and puts pressure on LMDs' profitability.** In other contexts, this role is often filled by NGOs, community organisations, or public bodies. LMDs go beyond the products they sell to educate people on, for example, the dangers of indoor air pollution, the importance of hygiene, or how to use mobile money. LMDs are forced to pass on the cost of these 'public goods' to end users in the form of higher prices, contributing to a 'poverty premium' whereby early adopters in low-income, rural communities must often pay more than late-stage adopters or people living in areas where commercial markets are already established.

**Encouragingly, there is increasing recognition of LMDs' social impact and market creation role among donors, investors, and governments – and of the importance of supporting smaller, locally owned, and women-owned companies more broadly.** Governments, development partners, and foundations are increasingly designing inclusive funding and TA mechanisms. However, with grant funders facing budget cuts and investor risk appetite waning in challenging macroeconomic conditions, LMDs are finding it harder to access finance than ever before.

**LMDs have been able to maintain or grow revenues despite challenging conditions, suggesting they are both lean and resilient.** LMDs have adapted through diversification, enhancing operational efficiency, putting in place strong finance fundamentals, and deploying dedicated strategies to help manage the macro-environment. The GDC's forthcoming in-depth profitability analysis will seek to better understand LMDs' commercial performance and identify specific steps LMDs can take to improve beyond those identified in this report. Grant and RBF funding should be targeted towards LMDs with optimised cost structures to maximise impact.

**There remains an untapped opportunity to deliver impact at scale and accelerate the growth of markets for beneficial products through increasing funding and support to LMDs.** Funding and support should focus on helping LMDs create markets in hard-to-reach communities and improve their commercial performance. It should also support them in achieving their aspirations to sell higher-tier SHSs and cookstoves, offer more sophisticated and longer-term consumer financing or EaaS solutions, develop scalable and sustainable PUE distribution models, and develop repair offerings.


**Three key innovations are needed to unlock growth in the sector:**

## Embrace LMDs as market creators that enable sustainable development

**Governments and development partners need to adopt a holistic market-building approach that recognises and values market creation alongside commercial performance, scale, and attracting investment.** Such an approach would combine grants, RBF, small-ticket local currency debt financing, and TA. Grants and RBF should ideally be offered alongside working capital to ensure LMDs are not capital-constrained, and alongside TA to enhance commercial performance and investment readiness. Where possible, grant funding should also be targeted to address the key barriers preventing LMDs from raising debt in the future, for example, through covering the cost of audits or CRM systems that improve the availability of reliable data for investors.

Existing grant and RBF mechanisms need to be designed to include smaller companies, either through dedicated windows targeting them, or through eligibility criteria that smaller companies can meet. Efforts should be made to recruit women-led and locally owned companies, given evidence of their robust commercial performance and impact. Long-term concessional or zero-interest financing, which has played an important role in the adoption of renewable energy and energy efficiency globally, also has a potential role to play for example in financing household energy-as-a-service.[75]

## Build inclusive financing models with local currency and digital innovation

**Stakeholders need to work together to develop local currency and small-ticket debt offerings, as well as risk-tolerant, low-return equity offerings that align with LMDs' needs.** There is a need to unlock small-ticket debt financing – especially in local currency. Data-based and digital solutions to streamline lender due diligence processes, including the use of greater automation in credit assessment, can help to reduce transaction costs and more accurately appraise risk. Patient, risk-tolerant, impact-focused equity with low return expectations is also needed to meet the sector's needs. For both debt and equity, there is a need for strategic deployment of grants and de-risking instruments to bring down investor costs and risks, while enhancing LMD investment readiness through TA in parallel. All stakeholders have a role to play – with investors developing innovative solutions that reduce transaction costs and risks, governments and development partners providing de-risking instruments and investment-readiness TA, and LMDs making investment readiness a key strategic goal before engaging investors at all.

## Equip early-stage companies with tailored, scalable support

**Finally, TA providers need to develop enhanced TA offerings, particularly for smaller and newer companies.** More and better TA is needed, including high-touch, long-term, one-to-one support, cohort-based training, peer-to-peer learning mechanisms, and light-touch guidance or tools. TA needs to be demand driven and long term, focused on building LMDs' staff and workforce capability, solving specific business challenges, and prioritising unit economics over growth. TA with a flexible grant funding component would be particularly beneficial, enabling LMDs to bring in expertise in key areas, such as accounting, credit management, and sales, for the long term. There are also clear TA needs relating to LMDs' aspirations in areas such as consumer financing, PUE, and repair.

**More needs to be done to assist smaller and earlier-stage companies currently unable to access any kind of finance or TA because of high transaction costs and risks.** These companies can be supported through low-cost, light-touch, collective approaches. For example, the GDC's open-source benchmarking tool will help companies evaluate their performance against a range of KPIs. We are now seeking to develop an AI-enabled guidance tool to signpost LMDs to high-quality, best-practice guidance and toolkits to help them address identified areas of weakness. Supporting LMDs to conduct structured business practice tests could accelerate the pace of business model innovation and the emergence of best practice in areas such as PUE

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11. The income inclusivity ratio is calculated by dividing the number of customers living below a specific poverty line (like the World Bank's national poverty lines) by the total number of customers. A ratio above 1 indicates that an organisation is serving a greater proportion of low-income customers than the national average, while a ratio below 1 suggests the opposite. To calculate LMDs' income inclusivity ratio of 1, we compared LMDs' stated per centage of customers living below $3.20 per day with the sub-Saharan African average poverty rate, because a country-by-country calculation was not possible. Whilst not a perfect reflection of the GDC membership's geographical footprint, 78 per cent of GDC members are based in sub-Saharan Africa, making this region's average the strongest available comparator. The World Bank's poverty line has since been updated to $3.65 per day; Christensen, C. (2023) 'Economic poverty trends: global, regional and national', Devinit.org. https://devinit.org/resources/poverty-trends-global-regional-and-national/
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66. Out of 82 respondents, 49 reported that they sell PUE and appliances. Of these, 41 provided sales volumes, which allowed us to determine whether they were selling PUE and/or appliances. For the remaining eight respondents who confirmed selling these products but did not provide volumes, we estimated their breakdown by applying the same proportions observed among those who did report volumes.
67. GDC (2025) 'How to sell refrigerators for productive use'. https://www.globaldistributorscollective.org/how-to-sell-refrigerators-for-productive-use
68. GDC (2022) 'Selling productive use of energy products to last mile consumers'. https://infohub.practicalaction.org/server/api/core/bitstreams/06639afa-1fdc-4b72-a7b9-6f1c9630afbe/content
69. See, for example, Hystra (2024) 'Scaling irrigation for small-scale producers: the role of private sector solutions'. https://static1.squarespace.com/static/5fc8cfc5ae882d23f7359f96/t/661935b9da2c3b276389b11b/1712928194502/Small-Scale+Irrigation_Public+Landscape+Report.pdf
70. GDC (2025) 'How to sell refrigerators for productive use'.
71. GDC (n.d.) 'Innovation launchpad'.
72. ibid.
73. SolarAid and University of New South Wales (2023) 'Off-grid solar repair in Africa: from burden to opportunity'. https://solar-aid.org/news/off-grid-solar-repair-in-africa-from-burden-to-opportunity/
74. GDC (2025) 'GDC repair innovation spotlight'. https://www.globaldistributorscollective.org/gdc-repair-innovation-spotlight-updated#:~:text=This%20publication%20on%20last%20mile,last%20mile%20distribution%20(LMD)
75. Energy Saving Trust (2023) 'The road to zero interest: the potential role of concessional consumer financing in energy access'. https://efficiencyforaccess.org/publications/the-road-to-zero-interest/

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