



Last Mile Distribution

State of the sector report

**Global
Distributors
Collective**

An initiative by:

**Practical
ACTION**



BoP
INNOVATION
CENTER

HYSTRA
hybrid strategies consulting



Last Mile Distribution

State of the sector report

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This Last Mile Distribution: State of the sector report is based on in-depth interviews with 72 members of the Global Distributors Collective (GDC) – approximately 50 per cent of the GDC’s membership, as of August 2019. Our first thanks therefore go to our members for their time and willingness to share their expertise and experience. In doing so, they have enriched the report with personal testimonies and grass-roots perspectives on the sector.

Thank you also to the additional experts, investors, aid agencies, and companies who participated in semi-structured interviews with the GDC team. These interviews informed the ‘deep dives’ found throughout the report, which showcase innovative and replicable solutions to challenges faced in last mile distribution.

Recognition is also due to our peer reviewers for their excellent feedback and insights. This includes GDC Advisory Council members Christine Eibs Singer (Special Advisor on Energy Access at SEforALL) and Dr Saul S. Morris (Director of Programme Service Team at the Global Alliance for Improved Nutrition (GAIN)), as well as valued colleagues Shrikant Avi (Manager, Private Sector and Investment at the Clean Cooking Alliance) and Johanna Galan (Director of Policy at GOGLA).

Many thanks to Lucy Peers, graphic designer, and Practical Action Publishing for assistance throughout the publishing process. Finally, the GDC would like to show our appreciation for those individuals and organizations who allowed their data, studies, and photographs to be used – helping bring to life the first ever state of the sector report on last mile distribution.

Praise for this report

'The data in this report is astoundingly useful. The GDC managed to not only provide new data around financing flows to last mile distributors but also holds a mirror to all investors to ask: Is this the right type of capital to deploy to support LMD to scale? Are our terms and check sizes flexible to support LMDs? How can we challenge business as usual to actually scale LMD in reaching shared financial and impact objectives? As Acumen thinks about how it can best change the way the world tackles poverty, particularly in energy access, we'll leverage the data in this report to see how we challenge our own assumptions and do our work more effectively and impactfully.'

Leslie Labruto, Head of Global Energy, Acumen

'This report provides valuable insights on the last mile distribution sector's current state of play. It explores many of the challenges and opportunities for scaling up last mile distribution models that can close the gap on access to life-enhancing products and services. Unilever has been collaborating and innovating in the area of last mile distribution for many years. We look forward to seeing how this report - alongside partners' efforts - galvanizes the essential cross-sector collaboration and investments needed to establish future-fit systems, infrastructure and scalable solutions. Congratulations to the Global Distributors Collective on this important and timely publication!'

Buks Akinseye, Senior Global Sustainability Manager, Unilever

'This report is essential reading for organizations committed to achieving the Sustainable Development Goals through a sustainable, market-based approach. As a manufacturer of household water filters, the report is especially insightful for Nazava as it clearly depicts what the opportunities and challenges are for last mile distribution organizations (LMDs) – and, importantly, what actions manufacturers such as ourselves can take to support and strengthen LMDs. We thank the GDC for this publication, which addresses an incredibly important but relatively new topic, and look forward to hearing more on this in future endeavours!'

Lieselotte Heederik, Co-founder & Director of Business Development, Nazava

'This report shows how dynamic and diverse the off grid solar sector - and last mile distribution more broadly - has become. For a program like GET.invest, this research is critical because it allows us to better design and implement activities that address the challenges faced by smaller companies on the ground. The timing could hardly be better. We would like to thank the GDC for publishing this timely and insightful report.'

Michael Franz, Team Leader, GET.invest

'This groundbreaking report sheds light on an important, but often neglected part of the energy access ecosystem, and more broadly on delivery of essential services to the poor. Without better understanding the last mile distribution sector, and without finding better ways to support the sector, we are unlikely to achieve our Sustainable Development Goals, including universal energy access. This report is relevant for all stakeholders, including governments, investors and development partners. It provides them with fresh thinking on "last mile electrification" and the delivery of key household services and products - including extremely valuable insights on how to serve the hardest to reach population segments and how to support companies at the frontline of delivering basic services to underserved communities.'

Dana Rysankova, Senior Energy Specialist, World Bank

About the Global Distributors Collective

The Global Distributors Collective (GDC) is a collective of over 140 last mile distributors who reach underserved customers with products that contribute to the Sustainable Development Goals. The GDC's purpose is to make last mile distribution a first priority so beneficial products are made available and affordable to all.

Established in 2018, the GDC is the world's only entity dedicated to supporting and representing last mile distributors across sectors and geographies. GDC members operate in 43 countries, sell 10 different types of product categories, and have cumulatively impacted more than 13 million people with beneficial products.

The GDC's underpinning philosophy is that last mile distributors have a pivotal role to play in achieving the SDGs, and that this role can best be fulfilled through collaborative, bottom-up, and innovative approaches.

The GDC has two main pillars of activity:

1. Providing services that help members save time, reduce costs, build capacity, and develop catalytic business partnerships. Examples include setting up a centralized purchasing platform to help members procure products; delivering training; facilitating the exchange of information, insight, and expertise through events and communications; and crowd sourcing and testing innovations.
2. Building a collective voice for the last mile distribution sector by driving research and market intelligence, raising the profile of members, and helping the broader ecosystem to engage with and support distributors.

The GDC is hosted by international development organization Practical Action. Activities are delivered in consortium with two implementing partners, BoP Innovation Center and Hystra. The GDC is guided by an Advisory Council, comprising both member representatives and sector experts, and works closely with a broad range of partners to achieve shared impact goals.

The GDC is supported by UK Aid, P4G, and IBAN/GIZ.

For more information visit the GDC's website at globaldistributorscollective.org



The Global Distributors Collective team

This report was written by a core team from Practical Action, Hystra, BoP Innovation Center and Oxford Policy Management.

Practical ACTION

Practical Action is an international development organization that puts ingenious ideas to work so people in poverty can change their world. It consists of a UK-registered charity with community projects in Africa, Asia, and Latin America, an independent publishing company, and a technical consulting service. It combines these specialisms to multiply its impact and help shape a world that works better for everyone.



BoP Innovation Center supports start-ups, SMEs, and multinationals in creating and scaling inclusive business models that include the 'Base of the Pyramid' (BoP) as consumers, producers, and entrepreneurs. Active in 25 markets, it focuses on practical solutions that are commercially viable and based on deep market and consumer insights. BoP Inc has supported more than 500 businesses in innovating, marketing, and distributing propositions for the BoP.



Hystra is a global consulting firm specialized in designing and implementing sustainable and scalable market-based strategies with a social impact. Since its creation in 2009, Hystra has worked in over 20 countries on over 200 projects, serving large corporations, inclusive businesses, social investors, and public and private donors, to support business models that change the lives of low-income communities across the globe.



Oxford Policy Management (OPM) is an international development consulting firm that aims to help low- and middle-income countries achieve growth and reduce poverty and disadvantage through public policy reform. OPM seeks to bring about lasting positive change using analytical and practical policy expertise.

Glossary

Base of the Pyramid: Less than \$8.44 per day purchasing power parity (PPP) (Hammond et al., 2007).

Beneficial products: Products used at the household level that contribute towards achieving the Sustainable Development Goals (SDGs).

Extreme poverty: Less than \$1.90 per day purchasing power parity (PPP) (World Bank, 2019).

Global Distributors Collective (GDC) members: Last mile distributors that have been approved to join the Global Distributors Collective. Criteria for membership is three fold: members must target under-served customers, who are low income and/or remote, primarily focused on last mile distribution, and sell household products through physical sales touch points. Members may be exclusive distributors of one company's products, or distributors of products from a range of companies. They may work with white-label manufacturers to produce their own branded products, or be subsidiaries of companies that have a broader mission.

Last mile consumers: Consumers that are underserved by the mainstream private sector, because they are low income or live in remote areas, or both.

Last mile distributors (LMDs): Organizations that distribute beneficial household products to last mile consumers. These are mostly for-profit companies and social enterprises, although some are set up as non-profit organizations.

Local LMDs: Organizations that are owned or managed by people from the region in which the enterprise is operating.

Low income: Less than \$3.20 per day purchasing power parity (PPP), the official World Bank poverty line (World Bank, 2019).

Pay-as-you-go (PAYG): A metering technology that enables customers to pay for products over time, rather than paying the entire cost upfront, using mobile technology.

Executive Summary

Nearly 1 billion people lack access to electricity, 3 billion lack access to clean cooking, 844 million lack access to basic drinking water, and a further 815 million are undernourished (IEA et al. 2019; Roser and Ritchie, 2019; United Nations, 2019). Beneficial household products such as off-grid solar lights and home systems, improved cookstoves, water purifiers, nutritional supplements, and agricultural inputs can play an important role in helping to address this ‘access gap’. The majority of potential customers are ‘last mile’, defined as those that are underserved by the mainstream private sector because they are low income, live in remote areas, or both. In spite of these challenges, a significant proportion of these people can be reached through market-based approaches, and the opportunity to deliver beneficial products has already attracted many different kinds of organizations including specialized last mile distributors (LMDs), small-scale retailers, manufacturers with proprietary distribution networks, multinational corporations, and microfinance institutions (MFIs).

This report helps stakeholders to better understand how to engage with, invest in, and support the last mile distribution sector

The objective of this report is to shine a light on the last mile distribution sector – to better understand the products being sold, the customers being reached, and the business models being used to reach them. It identifies key trends, challenges, and opportunities, and provides recommendations to donors, investors, and other stakeholders regarding how to engage with, invest in, and support the sector. It highlights the important role of LMDs in market creation and in effectively reaching last mile customers with a range of beneficial products thanks to strong local networks and a comprehensive value proposition focused on quality, sales service, and consumer financing.



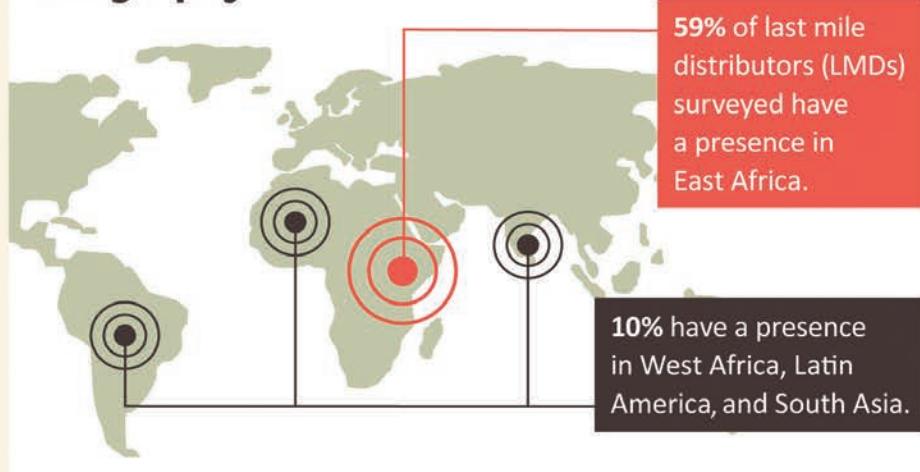
Small, local retail shops, like this one in Kenya, are a common channel that last mile distributors use to sell their products to underserved customers.

This report is based primarily on a survey conducted with 72 Global Distributors Collective (GDC) members. To qualify for GDC membership, LMDs must sell beneficial products, target last mile households, and primarily focus on last mile distribution. As such, the survey provides a snapshot of a subset of LMDs and not a comprehensive view of the sector as a whole. Interviews were also conducted with over 30 investors, aid agencies, and other sector experts, and an extensive literature review was undertaken. Survey findings regarding company characteristics are summarized in the infographic on the following page.

Last mile distributors at a glance

Characteristics of our 72 survey respondents

Geography



Customers



Almost three out of four customers* earn less than

\$3.20 per day**

95% of customers live below \$8.40 (as defined as Base of the Pyramid by the World Bank).

Revenue

<\$1 million

90% of LMDs* have annual sales revenues of less than US\$1 million per year.

Products

54%

of LMDs* sell more than one product category

65%



38%



The two main products being **off-grid solar lights** (sold by 65% of LMDs*) and **cookstoves** (sold by 38%).

Impact



Average number of people reached to date by LMDs surveyed:***

167,643

Marketing Tactics

89% of LMDs* have four or more marketing tactics:

1st

Community demonstrations (used by 93% of LMDs*)

2nd

Door-to-door demonstrations (used by 82%)

Consumer Financing

69% of LMDs* offer consumer financing



After-Sales Service

65% of LMDs* offer warranties on their top-selling product



Distribution Channels

80%

of LMDs* use more than one channel

81%



56%



32%



The two main channels being **sales agent networks** (used by 81% of LMDs*) and **retailers** (used by 56%). 32% sell through **partners**.

'Deep dives' in the areas of procurement, sales efficiency, and access to finance were undertaken to fully explore three significant challenges faced by LMDs.

LMDs face serious challenges accessing the right products, at the right price, and on the right terms

Procurement

Across the board LMDs struggle with getting reliable information on products and suppliers, negotiating prices and payment terms, and with maintaining efficient stock levels whilst importing in small quantities. Potential solutions identified in this area include enhanced product certification, new wholesaler partnerships, and centralized purchasing.

Sales efficiency

LMDs face a high cost of sales as they seek to serve remote areas and establish trust with risk-averse customers, whilst often aiming to provide consumer financing and quality after-sales services. Achieving sales efficiency – defined as the maximization of sales revenues compared to sales-related costs – is a constant struggle. Sales forces take time and investment to build, and recruitment, training, management, and retention are among the biggest challenges faced by LMDs. Addressing these issues is key to building a viable sales force, where agents sell enough to justify their costs and earn enough to keep 'churn', and associated recruitment and training costs, down. Potential solutions in this area include improved software platforms to manage sales, enhanced training service provision, and cost-sharing between LMDs to unlock economies of scale.

Access to finance

LMDs have been surprisingly successful in accessing external financial support, given their small size. Eighty-six per cent of surveyed LMDs have raised grant funding, 69 per cent have raised debt funding, and 41 per cent have raised equity funding, while 28 per cent have raised all three types of capital. However, most equity and debt has come from family, friends, angel investors, crowdfunding, or founders themselves. The kind of longer-term, larger-scale commercial financing needed for growth-stage companies is not widely available. Ninety-four per cent of LMDs are looking for additional financial support. Access to finance is more of a challenge for LMDs with at least one local founder, especially when seeking debt financing.

Over 75 per cent of LMDs surveyed cited access to finance as a key barrier to growth

Over 75 per cent of LMDs surveyed cited access to finance as a key barrier to growth. Based on extensive consultation with LMDs and investors, the key challenges set out in Table 1 have been identified. These apply across grants, debt, and equity, irrespective of funding source.

Potential solutions in this area include dedicated grant-making mechanisms, specialist intermediary investment funds, and adaptation of existing funding mechanisms to make smaller investments whilst accepting higher transaction costs and risks.

Recommendations

Aid agencies and foundations can play a vital role in providing flexible grants, as well as in de-risking commercial investment in the sector. De-risking measures could include first-loss facilities, guarantees, or provision of grant-funded technical assistance to investees. They can also support the sector through enhancing product certification schemes and quality assurance frameworks, improving market intelligence, funding social impact research, and fostering use of more harmonized business performance metrics. Networking and matchmaking activities would help LMDs build new partnerships and learn from each other, to avoid reinventing the wheel.

Table 1: LMD and funder perspectives on access to finance

LMD perspective	Funder perspective
<ul style="list-style-type: none"> Minimum investment amounts are too high 	<ul style="list-style-type: none"> Transaction costs are too high on small investments
<ul style="list-style-type: none"> Collateral requirements are hard to meet 	<ul style="list-style-type: none"> Loans too risky without collateral
<ul style="list-style-type: none"> Interest rates are too high 	<ul style="list-style-type: none"> Last mile distribution is high risk, requiring a high return/interest rate
<ul style="list-style-type: none"> Application process and due diligence requirements are too complex and heavy 	<ul style="list-style-type: none"> High-risk transaction requires extensive application process and due diligence
<ul style="list-style-type: none"> Funders are too focused on technology or SDG 'silos' rather than last mile distribution across multiple product categories 	<ul style="list-style-type: none"> LMDs have limited track records LMD performance data is not always reliable and/or is hard to verify LMDs sometimes have poor governance/financial management
<ul style="list-style-type: none"> Foreign exchange risk 	
<ul style="list-style-type: none"> Lack of market intelligence 	



Seen here in Kailali District in Nepal, water filters, solar lights and improved cookstoves are just some of the products that contribute to the Sustainable Development Goals (see Table 2).

Investors are encouraged to build the data and experience needed to invest in LMDs either directly, or through specialist intermediaries. In order to make collateral requirements easier to meet, investors could accept some LMDs' receivables as collateral. Particular efforts must be made to overcome the barriers that local LMDs face when seeking debt financing, to capitalize on their exceptional local market knowledge and networks. Manufacturer interest in finding ways to offer better terms and credit to LMDs, and interest from software companies in using their

data to de-risk investments, both represent further opportunities for creative innovation, as we work towards an increasingly efficient, unbundled supply chain for beneficial products. Longer-term, larger-scale investment – coupled with intensive technical assistance and capacity building – is needed.

LMDs are encouraged to continue testing the promising solutions identified in this report, in partnership with other stakeholders. They can do more to learn from and collaborate with each other, to unlock economies of scale and implement best practices. **Manufacturers** are encouraged to design and test products in consultation with LMDs and their customers, and to build long-term strategic partnerships with them. **Service providers** such as software and training companies are encouraged to continue developing the low-cost, tailored platforms and services that LMDs need to thrive. **Governments** must recognize the role of LMDs in contributing to development goals, and include them in dialogue between the public and private sectors.

This first-of-its-kind report has shone a light on a part of the last mile distribution sector that has long been overlooked. Further research is needed to broaden our understanding of the LMD sector as a whole, and to look in more depth at specific business-model challenges. Only by better understanding the sector, and opportunities for intervention, can we catalyse the urgent action needed to unlock its significant potential to contribute to the Sustainable Development Goals.

1. Introduction

Nearly 1 billion people lack access to electricity, 3 billion lack access to clean cooking, 844 million lack access to basic drinking water, and a further 815 million are undernourished (Figure 1). This ‘access gap’ is most severe in Africa, in rural areas, and amongst people with low incomes. Although some of those lacking access cannot be served through market-based approaches, a significant proportion could be. Most already spend significant amounts of money on inefficient solutions such as candles or kerosene lamps for lighting, or biomass for cooking or boiling water, which can cost more than the beneficial products that could replace them.

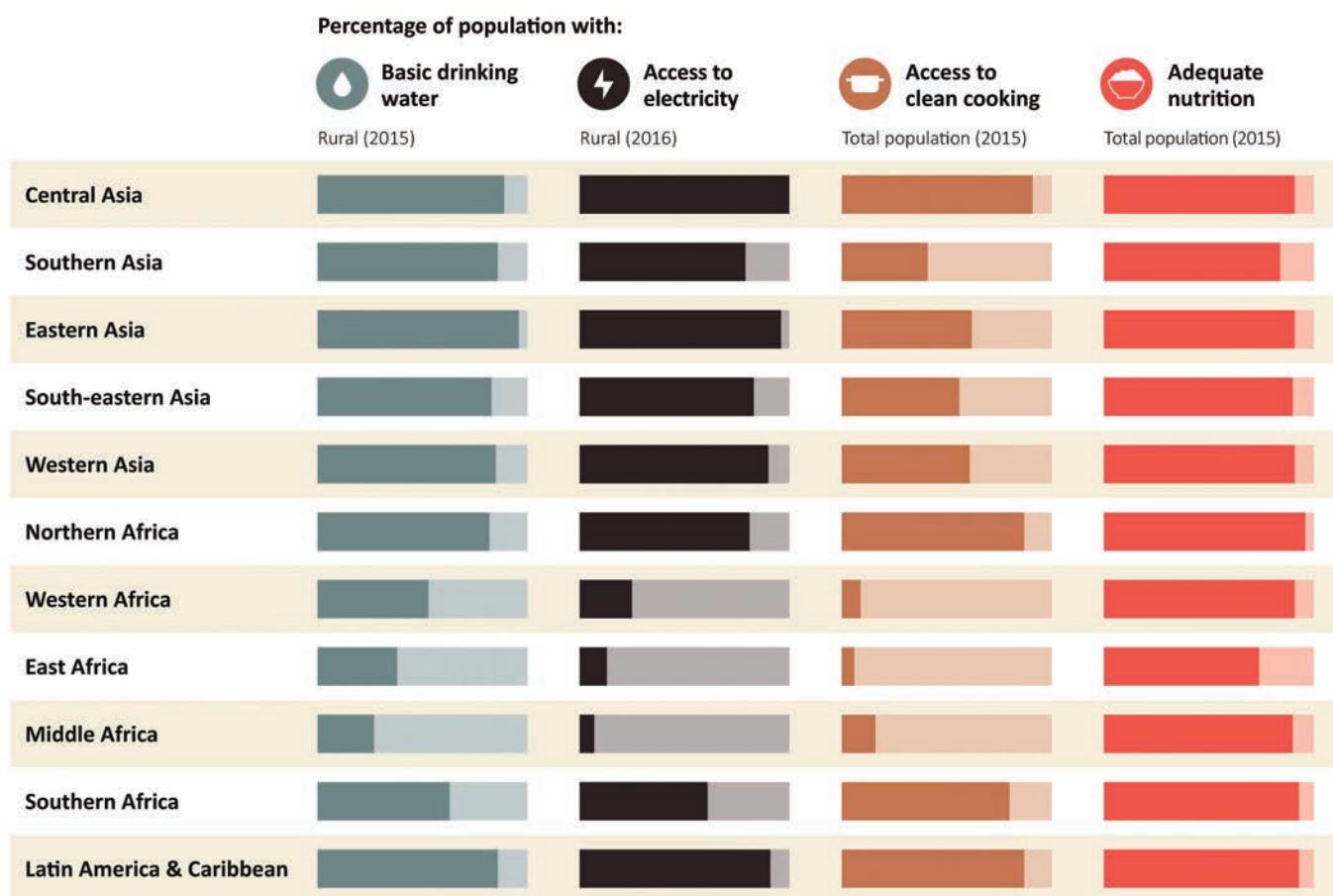


Figure 1: Access gaps across regions

Sources: IEA et al (2019), Roser and Ritchie (2019) and United Nations Statistics Division (2019).

Beneficial household products such as off-grid solar lights and home systems, cookstoves, water purifiers, nutrition supplements, and agricultural inputs can play an important role in helping to address the access gap. The Sustainable Development Goals (SDGs) envision expanded service delivery and improved infrastructure as key mechanisms to achieve impact. But the high cost of improving services and infrastructure, coupled with the time needed to put them in place, means many people are unlikely to benefit in the next decade. Ownership of some products, such as solar home systems or clean cookstoves,

counts as 'access' under the SDGs (see Table 2), whilst in other areas such as water purification they represent a vital interim solution. The main kinds of products that contribute to the SDGs are shown in Figure 3. For a more complete list, descriptions of the categories, and the SDGs they contribute to, as well as estimates of market size where possible, see Annex 1.

Table 2: Products that contribute to the SDGs

SDG 2: End hunger, achieve food security and improved nutrition, and promote sustainable agriculture	SDG 3: Ensure healthy lives and promote wellbeing for all at all ages	SDG 6: Ensure availability and sustainable management of water and sanitation for all	SDG 7: Ensure access to affordable, reliable, sustainable, and modern energy for all
<ul style="list-style-type: none"> • Fertilizers • Fortified foods • Nutrition supplements • Irrigation pumps • Seeds • Herbicides and pesticides • Irrigation equipment 	<ul style="list-style-type: none"> • Sanitary products • Soap • Medicines 	<ul style="list-style-type: none"> • Water filters • Water purifiers • Water treatment products 	<ul style="list-style-type: none"> • Solar lights, torches, and home systems • Electrical appliances • Improved cookstoves • Cleaner fuels

The majority of potential customers for these products are known as 'last mile', defined as those that are underserved by the mainstream private sector because they are low income, live in remote areas, or both. Last mile distributors face comparatively high costs and risks that are inherent in the profile of the customers they serve and the environments in which those customers live (Barki and Parente, 2014). Last mile customers often have low, fluctuating, or unpredictable incomes. Most live in remote, rural areas with poor transport and telecommunications infrastructure. They often have limited awareness of quality products that could improve their lives, and live in challenging regulatory environments, with inconsistent application of taxation, and limited recourse if contracts are broken (Coetzer and Pascarel, 2014; Rasagam and Zhu, 2018).



Sales agent networks are by far the most common distribution channel cited by LMDs, used by 81 per cent of LMDs surveyed.

In spite of these challenges, the market opportunity has already attracted many different kinds of organizations. A vast number of small-scale entrepreneurs and independent retailers already distribute products to last mile consumers, and sometimes stock beneficial products. Manufacturers, such as D.Light for solar lanterns, have established extensive proprietary distribution networks. Multinational corporations such as Unilever have sold large volumes of beneficial, fast-moving consumer goods through proprietary channels. The rise of

**Specialized distributors
constitute a vital
route to market for
manufacturers across
product categories**

microfinance has enabled distributors to sell higher-value beneficial products to low-income customers at scale, especially in South and South East Asia (Convergences, 2018). Specialized distributors, including some larger organizations such as One Acre Fund and Ignite Power, and many smaller ones such as those surveyed for this report, have constituted a vital route to market for manufacturers across all product categories.

The objective of this report is to shine a light on the last mile distribution sector – to better understand the products being sold, the customers being reached, and the business models being used to reach them. It identifies key trends, challenges, and opportunities, and provides recommendations to donors, investors, and other stakeholders regarding how to engage with, invest in, and support the sector.

Section 2 outlines the research methodology, and Section 3 presents survey findings regarding customers, products, and companies and their approaches to distribution, marketing, after-sales service, and consumer financing. Sections 4, 5, and 6 are ‘deep dives’, exploring challenges and potential solutions in three key areas: procurement, sales efficiency, and access to finance. Section 7 concludes with a summary of the state of the sector, recommendations, and proposed areas for future research.

2. Methodology

This report is based primarily on an in-depth survey conducted with 72 GDC members

This report is based primarily on an in-depth survey conducted with 72 GDC members. This sample constitutes around 50 per cent of the total GDC membership and is broadly representative of the GDC as a whole. The 72 LMDs interviewed have operations in 30 countries worldwide. Fifty-nine per cent of them have a presence in East Africa, while 10 per cent have a presence in West Africa, Latin America, and South Asia respectively.¹ Ninety per cent have annual sales revenues of less than US\$1 million per year. As such, the survey provides a snapshot of a subset of LMDs rather than a comprehensive view of the sector as a whole. Manufacturers and larger distributors were by design excluded from the survey, in order to focus on smaller LMDs whose unique characteristics have been overlooked in many previous studies.

Semi-structured interviews were conducted with more than 30 additional LMDs, investors, aid agencies, and companies providing services to LMDs. These interviews were used to inform the case studies in the report, which showcase innovative and replicable solutions to challenges faced. Where possible, findings were triangulated through additional interviews and desk research. Finally, a literature review was undertaken to explore all topics in the report, in particular: the ‘access gap’; characteristics of beneficial products and how these contribute to the SDGs; barriers to LMD growth; and examples of innovative business models and financing mechanisms.



LMDs like Latin American company Endurance Electric liaise closely with customers to ensure products and services meet their needs.

3. Survey findings: Sector overview

This section presents survey findings relating to customers and products sold, before categorizing LMDs surveyed based on their age, size, and growth trajectory. It provides an overview of the distribution, marketing, after-sales service, and consumer financing strategies used by LMDs, before briefly exploring the extent of gender inclusion in the sector and its overall impact.

3.1 Customers

LMDs surveyed report that 95 per cent of their customers are ‘base of the pyramid’, on less than US\$8.44 per day, 75 per cent of customers live in poverty on less than \$3.20 per day, and 44 per cent live in extreme poverty on less than \$1.90 per day. For LMDs operating in East Africa, West Africa, and Latin America, approximately 50 per cent of their customers live in extreme poverty, falling to around a quarter for LMDs in South and South East Asia (Figure 2). Whilst further customer research is needed to verify these self-reported figures, they suggest that LMDs are serving low-income customers.

75% of surveyed LMDs' customers earn less than US\$3.20 per day

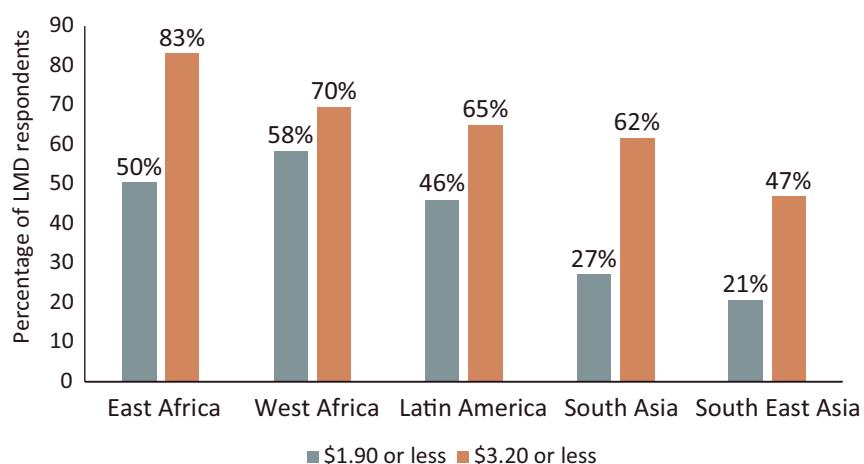


Figure 2: Income levels among LMD customers, by region

Although they operate across urban, peri-urban, and rural areas, the LMDs surveyed have a focus on rural areas, with 58 per cent reporting that four-fifths or more of their customers live in rural areas. The focus on rural areas is consistent across all product categories and regions. There are important differences between urban and rural last mile settings, as explored in Box 1.

Box 1: Understanding last mile settings – Mukuru Clean Stoves

Mukuru Clean Stoves is an LMD in Kenya that manufactures and distributes cookstoves. It started in one of the slum areas of Nairobi, before transitioning to serving communities in rural counties, which now account for 70 per cent of its customer base. Mukuru finds that urban and rural customers purchase cookstoves for different reasons: *'In urban areas, improved cookstoves help customers make savings on fuel whereas rural customers typically just collect firewood which is free. As such, we've had to change our marketing strategy in urban areas – where we emphasize cost-savings – compared to rural areas, where the focus is on the aspirational status of a cookstove.'*

Product awareness and affordability are less of a challenge in urban areas compared to rural ones, and the cost of customer acquisition is typically lower. Why then, did Mukuru decide to move their business towards rural customers, where sales efficiency is harder to achieve? *'The market is much more saturated in the urban slum areas. We found it easier to compete in rural areas, as other cookstoves on the market which are popular in urban regions are not seen as robust enough to cook ugali (cornmeal porridge) for families of 10 that are common in the villages.'* Mukuru has found their operations in urban and rural areas to be complementary, as customers in Nairobi purchase cookstoves on behalf of family members in rural areas, helping create awareness and demand.

3.2 Products

Most LMDs (54 per cent) sell more than one product category. There are advantages to focusing on a single product category, such as reduced training costs for sales agents, more streamlined inventory management, and being able to work with a smaller number of suppliers. However, LMDs often sell more than one category to generate as much revenue as possible so they can cover the distribution costs of serving sparsely populated, rural areas. Since many LMDs are social enterprises, they may also be motivated to sell more than one product category by a desire to maximize impact.

Sixty-five per cent of LMDs surveyed sell off-grid solar lighting and appliances, 38 per cent sell cookstoves, and 27 per cent sell water products (Figure 3).

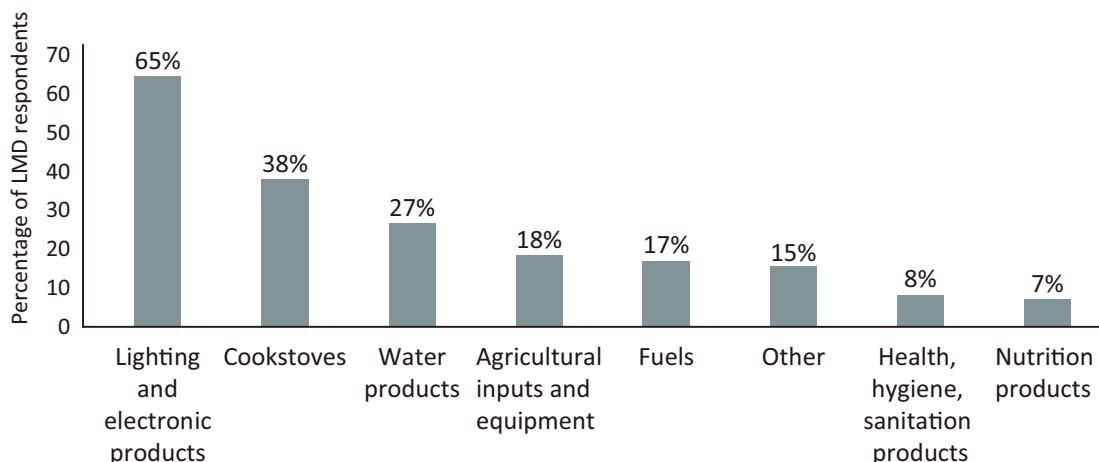


Figure 3: Percentage of LMDs that report selling each product category



Some distributors also manufacture their own products, like Damaris Ocholla who makes and sells briquettes in Kisumu, Kenya.

Off-grid solar and cookstove products are most often reported as being LMDs' best-selling products. This is likely to be because they have an obvious value proposition compared to other beneficial products and so are in relatively high demand, making them a reliable source of sales and revenue, and a good product with which to enter a new market. LMDs are then able to sell other product categories in addition, to maximize overall revenue and impact.

Only 16 per cent of LMDs manufacture their own products, with the rest being supplier agnostic. LMDs report manufacturing their own products for

two main reasons: to ensure the product is affordable for their target market, and to control the quality of the product, including maintaining the ability to rapidly integrate consumer feedback into product design. Additional reasons cited include ensuring climate-friendly production, and reducing risks that come from dealing with suppliers, such as stock-outs.

3.3 Last mile distributors: Age, revenue, and growth trajectories

LMDs surveyed fall into three categories: experimenting LMDs, fast-growth LMDs, and small, stable LMDs

The LMDs surveyed roughly fall into three different categories, corresponding to different levels of maturity and their growth philosophy (Figure 4).² These categories are as follows:

Experimenting LMDs: 45 per cent of LMDs fall into this category, made up of LMDs that are less than six years old and have, on average, increased their sales revenue at a rate of <\$150,000 a year per year of existence. They are still fine-tuning their models, which vary significantly. Over 80 per cent are for-profit, whilst the rest are non-profit. Income streams are diverse – over a third receive more than 90 per cent of revenue from sales, but another third receive less than 50 per cent from sales. One third have only raised grant funding, and a quarter have raised equity, mostly through friends and family.

Small, stable LMDs: 36 per cent of LMDs fall into this category, made up of LMDs that are six years or older and have, on average, increased their sales revenue at a rate of <\$150,000 per year of existence. Close to half of them make less than 60 per cent of their income from sales revenue, the rest of their income coming from grants and services, and less than a third make 100 per cent of income from sales revenue. Almost half of them generate income through provision of services such as field testing of products for companies, or delivery of awareness campaigns or training programmes funded by foundations or governments. Sixty per cent are for-profit, 30 per cent are not-for-profit, and 10 per cent have hybrid models. They may focus on harder-to-reach customers than more commercially oriented LMDs, or their business strategy may be

focused on provision of services to other stakeholders rather than on scaling up sales. Only 5 out of 22 of these LMDs have raised equity, including from friends and family; they are unlikely to be attractive to commercial investors unless they change their model.

Fast-growth LMDs: Nineteen per cent of LMDs fall into this category, made up of LMDs who have, on average, increased their sales revenue at a rate of >\$150k per year of existence. Sixty per cent are focused on just one product category – either off-grid solar lighting and appliances, or water filters. Over ninety per cent are for-profit and the rest have hybrid models. Most have a sales agent network with average sales per agent (in full-time equivalent) of over \$10k per year on average, and growing. Three quarters of companies in this category make all of their revenue from sales, and all make more than 60 per cent of revenue from sales. The remaining revenue comes from consulting, results-based financing, or grants. Over eighty per cent of them have raised equity.

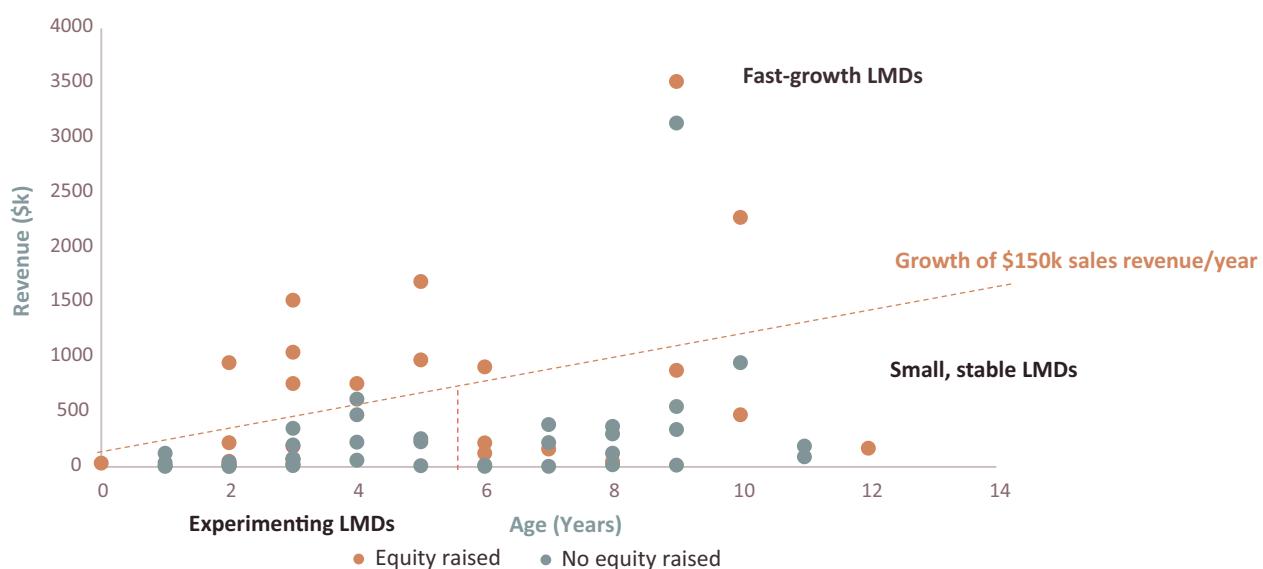


Figure 4: LMD categorization based on age and annual revenues

3.4 Distribution channels

This section and those that follow show that LMDs adopt strategies that are well suited to market creation, such as distributing through sales agents, using below-the-line marketing tactics, and offering consumer financing as well as quality after-sales services.

Eighty per cent of surveyed LMDs use multiple distribution channels. Sales agent networks are by far the most common distribution channel, used by 81 per cent of LMDs. Sales agents travel around, engaging potential customers face to face and demonstrating products through 'push' marketing strategies such as door-to-door sales or community meetings. Sales agent networks require a substantial amount of time and energy to build, but are proven to be effective at raising awareness of product benefits, overcoming risk aversion, and building trust in a new product category. Even as markets mature, some LMDs continue to use sales agents to offer additional services that retailers cannot provide. For example, Nutrizaza, selling fortified infant porridge in Madagascar,

80 per cent of surveyed LMDs use multiple distribution channels



Practical Action

Selling through local, trusted partners can have many benefits for LMDs. In Sudan, Women's Development Associations play an important role in getting clean fuels like LPG to poor customers.

closely with headteachers to sell lights to the parents of students in Uganda and Malawi. Mukuru in Kenya sells some of its clean cookstoves via rural MFIs. Selling through partners that have long-standing relationships of trust with end users is another proven way to raise awareness of product benefits and overcome risk aversion.

Retail is used as a distribution channel by 56 per cent of LMDs surveyed, with 48 per cent selling through independent retailers and 20 per cent selling through proprietary retail networks (Figure 5).³ LMD distribution channels evolve as demand is created and markets mature, steadily transitioning from 'push' channels, such as sales agent networks and selling through partners, to 'pull' channels like retail. This enables them to meet demand on an ongoing basis. Toyola, for example, a cookstove LMD in Ghana, reported shifting from a pure direct-sales agent distribution model initially, to selling over 80 per cent of their products through retailers after a few years of operation. Ecofiltro, an LMD selling water filters in Guatemala, has also evolved its strategy now that it has generated strong brand awareness, and has repurposed its agent network

initially worked through direct sales agents. As their product became better known, they also started selling through retailers but retained direct sales agents to deliver porridge door to door, hot and ready to eat. LMDs selling off-grid solar products use agents to install solar systems, troubleshoot maintenance issues, or follow up on missed payments, even when markets have matured.

Thirty-two per cent of LMDs sell products through partners. Partnerships are most common with community-based organizations and NGOs, followed by schools and clinics, microfinance institutions (MFIs), or government programmes. SunnyMoney, for example, works

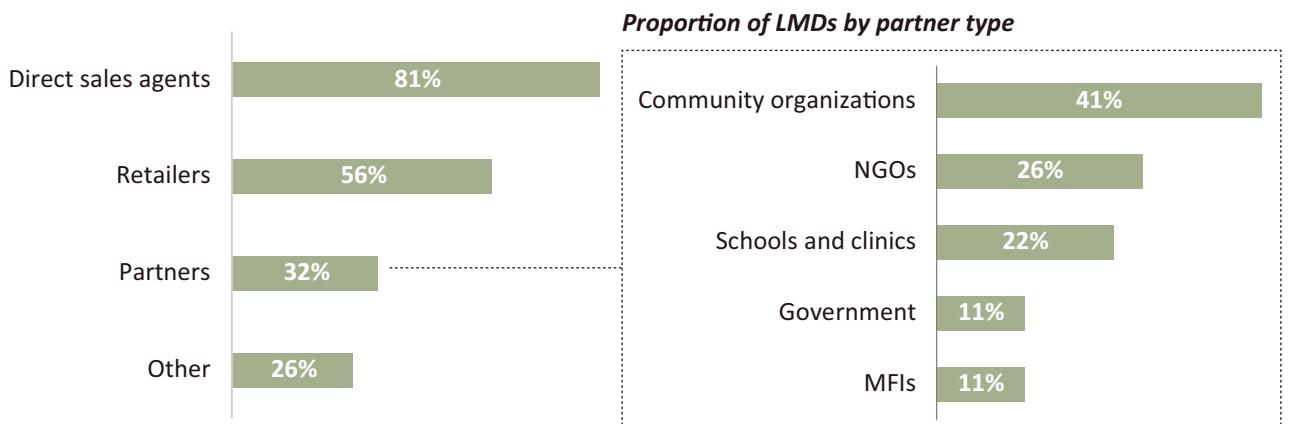


Figure 5: Percentage of LMDs utilizing different distribution channels⁴

to recruit and sell to retailers in rural areas instead of selling directly. Other LMDs sell through electrical or hardware shops, through branded retail outlets such as supermarkets or gas stations, or to employers who then sell products to employees, with payroll financing.

3.5 Marketing tactics

Eighty-nine per cent of surveyed LMDs use four marketing tactics or more, and 61 per cent use six or more, most of which are aimed at 'below the line' consumers (Figure 6). Below-the-line marketing gives end users the chance to see products for themselves, through product demonstrations and direct interaction with agents, as opposed to 'above the line' tactics such as public announcements via TV, radio, or newspapers.



Bop Innovation Center

Below the line marketing techniques, including product demonstrations such as this, give customers the chance to see products and ask questions for themselves before investing.

Ninety-three percent of LMDs surveyed deliver community demonstrations, for example where they encourage consumers to 'touch and feel' products and directly experience benefits. For instance, Pollinate Group in India uses community leaders to demonstrate products and generate leads, and they receive a small commission for every sale they have referred. Ecofiltro in Guatemala conducts demonstrations of its water filters in schools, where all parents are invited, and equips classrooms with filters for free so that the children can taste the water and tell their parents about it.

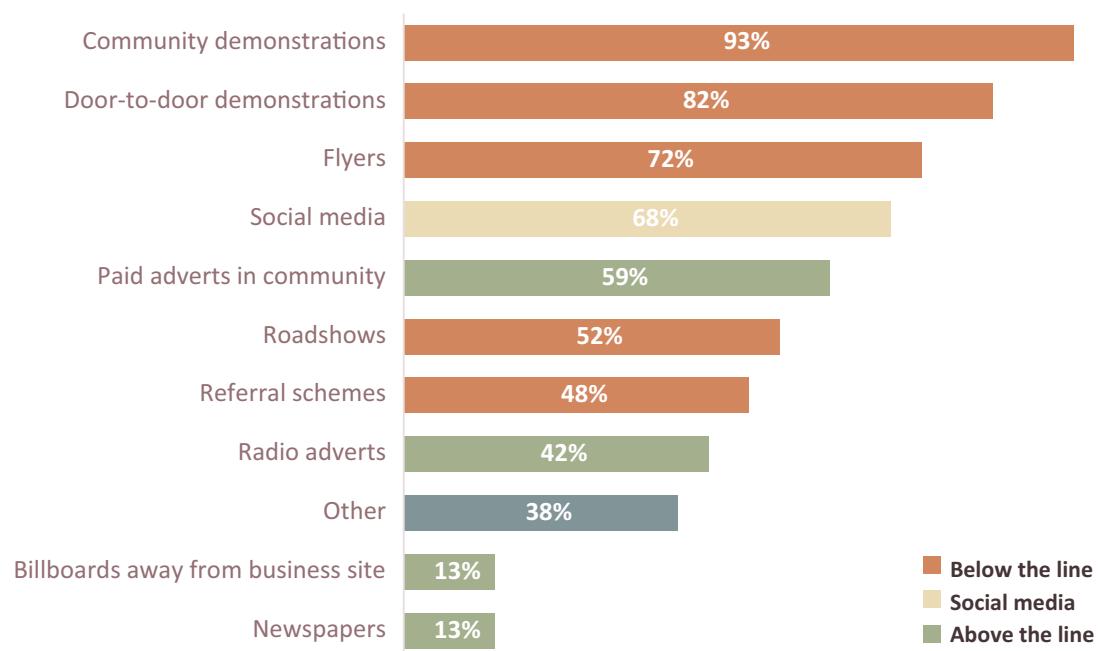


Figure 6: Share of LMDs using different marketing strategies⁵

3.6 After-sales service

Sixty-five per cent of surveyed LMDs offer warranties on their top-selling product. Most LMDs consider high-quality after-sales service to be critical to ensuring that customers have a positive experience with their product, and that they recommend the product to others. This is a major driver of sales: previous research has found that, typically, at least half of LMDs' customers make purchasing decisions based on recommendations from friends and neighbours (Hystra, 2013). A good after-sales experience can be the trigger for such recommendations, and resulting sales. Dev Solaire, a company selling solar home systems in DRC, has largely credited after-sales service with a seven-fold increase in sales:

Given that over 50 per cent of LMD customers make purchases based on word-of-mouth recommendations, high-quality after-sales services are critical

*'After a course where I realized the importance of after-sales, I appointed a really talented after-sales service manager and have been making customers fill in a maintenance sales card. We keep calling them every once in a while, to find out about the quality of the solar system or lamp. We have really kept our word on the one-year guarantee and replaced the product in case of defect, which has allowed for a great word-of-mouth promotion. From only selling 300 lamps per month, we have reached around 2,000 lamps and the sales keep increasing every month.'*⁶

3.7 Consumer financing

Sixty-nine per cent of surveyed LMDs offer consumer financing to overcome the affordability barrier faced at the last mile. According to Vitalite in Zambia, *'Customer affordability is the biggest challenge – ability, not willingness, to pay. We need to pair the product with people's abilities to pay rather than their willingness to pay, because they tend to be aspirational.'* Around half of all sales made by the surveyed LMDs leverage some form of consumer financing, with 48 per cent of LMDs accepting payments over time in cash and 45 per cent accepting repayments using mobile money. The proportion of LMDs offering consumer financing is fairly even across regions, apart from in South Asia where it is exceptionally low at 28 per cent, most likely because of the widespread availability of microfinance (Convergences, 2018). Technologies that enable products to be deactivated in case of non-payment, and that make it easier for LMDs to process high volumes of small transactions such as mobile money, have made 'pay-as-you-go' commonplace in off-grid solar and increasingly present in other product categories, such as Liquid Petroleum Gas (LPG) stoves.

69 per cent of surveyed LMDs offer consumer financing

As one would expect, surveyed LMDs charge a higher price – on average 20 per cent higher – for products sold with consumer financing, in order to cover the default risk, the additional working capital burden, and the cost of collecting payments.

The reported default rate averages 8 per cent, and ranges from 0 to 35 per cent. Surveyed LMDs are experimenting with a range of ways of reducing default risk. For example, Zonful Energy in Zimbabwe minimizes defaults by setting aside a percentage of the money collected from customers for community projects, meaning that *'if you don't pay, your neighbours lose too.'* This has helped them reach an almost 100 per cent repayment rate.

Forty-four per cent of LMDs use pay-as-you-go (PAYG) software to increase the effectiveness of their consumer financing. Of these, more than half use



Practical Action

The development of software that allows customers to pay for products in installments using their mobile phone has reduced the need for in-person sales agent collections, saving LMDs time and money.

them on price. They are able to invest heavily, deploying large numbers of agents in a matter of months. Whilst it may make business sense for manufacturers to undercut their own distributors in some situations – for example where distributors are performing poorly – there can be advantages to longer-term strategic partnerships with LMDs through exclusivity agreements and franchisee models. Some PAYG manufacturers, for example, are exploring LMD partnerships as a route to scale, seeing clear commercial value in supporting their LMD partners to succeed long term, rather than using them to ‘prepare the ground’ for their own proprietary distribution networks (Dalberg Advisors and Lighting Global, 2018).

LMDs also report growing numbers of informal retailers, who are often unregistered and do not pay tax, selling lower-quality products at low prices that can be attractive to poorer customers. In the off-grid sector in particular, non-quality-verified products are estimated to account for over 70 per cent of the global off-grid solar market (Dalberg Advisors and Lighting Global, 2018). Competition with cheaper, lower-quality products does not always take place on a level playing field, given that the informal retailers selling these products often do not pay tax, and in some cases the products themselves do not meet mandatory national standards.

LMDs’ primary differentiator from these competitors is intimate knowledge of their customer base, and strong local networks and partners. LMDs that have built a differentiated brand and a comprehensive value proposition focused on quality, after-sales service, or consumer financing are best placed to resist competition, as their model is harder to replicate, and hard-won customer trust might keep competitors at bay.

In some cases, however, LMDs are forced to find a new, unique value proposition or niche in the market. An LMD selling solar products in DRC decided to move from cash sales of solar lamps to PAYG solar home systems in response to increased competition from low-quality solar lamps. An LMD in Papua New Guinea is experimenting with selling products such as water tanks and irrigation equipment following increased competition in the off-grid solar sector.

Angaza, a software platform for managing mobile payments, whilst a further 20 per cent use proprietary in-house software.

3.8 Competition

As LMDs succeed in creating demand, markets mature, leading to increased competition. Larger, better capitalized companies offering high-quality products, and smaller, informal retailers selling cheaper, lower-quality products, enter the market. LMDs report manufacturers entering their markets to establish proprietary distribution once there is a proven market opportunity, and undercutting

LMDs sometimes respond to increased competition by focusing on markets that are less commercially attractive, but the impact potential is high

Some LMDs are responding to increased competition by focusing on more difficult markets that are unattractive for more commercial companies, accepting lower profitability in exchange for social impact. As more and more public funding becomes available to encourage LMDs to serve remote areas, for example through results-based financing, this kind of hybrid model could become more prevalent. One Acre Fund, selling agricultural product bundles on credit to smallholder farmers in East Africa, has achieved significant size and impact through a hybrid market-based model paying for its operations, while overheads and research and development activities remain covered by grants.

3.9 Impact and gender

On average, LMDs estimate that they have benefited 167,643 people to date. This figure is self-reported, based on LMDs' own assumptions regarding whether each sale benefited individuals or whole families. It is discounted to exclude repeat purchases. Further research would be needed to verify this figure. In general, it is widely recognized that beneficial products deliver a modest but important improvement in last mile consumers' incomes, health, and quality of life, but again further research is needed to better understand the nature of the social impact achieved. Annex 1 provides an overview of the types of social impact beneficial products can have on families.

LMDs represent a potential source of employment for low-income populations, with those surveyed reporting employing an average of 35 staff and 99 full-time equivalent agents. Their activities directly create jobs in retail and sales, with positive knock-on effects in manufacturing, assembly, installation, consumer financing, and maintenance (Rasagam and Zhu, 2018).

LMDs also benefit last mile communities in other ways. In some cases, initial purchase of an entry-level product may create demand for subsequent purchases, through creating trust in the product category and enabling consumers to experience benefits first-hand. Once pay-as-you-go products are paid off they can potentially be used as collateral, and the payments create a credit history, which can be leveraged to access additional products and services. In doing so they play an important role in market creation, generating opportunities for other kinds of companies to enter markets and sustainably serve low-income consumers.



While the proportion of female staff in LMDs varies widely, there is a growing understanding of the unique role women play in achieving last mile sales and the importance of their participation throughout the value chain.

Whilst some LMDs surveyed, such as Solar Sister and ElleSolaire, have a deliberate focus on female empowerment and gender equality, overall female participation in LMDs' workforces ranges from 0 to 100 per

cent. As shown in Figure 7, a quarter of LMDs have a fairly even gender balance (41–60 per cent female workforce). Nineteen per cent of LMDs are mainly staffed by men with less than one in five staff being female, and 15 per cent are mainly staffed by women with less than one in five staff being male.

There is a growing body of evidence suggesting that female staff are more effective at achieving sales at the last mile, given their ability to leverage social networks and build relationships of trust with female customers (Solar Sister et al., 2018). The ‘Business First Approach to Gender Inclusion’ study by the Value for Women and Shell Foundation tested several gender-inclusive business strategies that could easily be replicated. Whilst not all strategies succeeded, many had a positive commercial impact (Shell Foundation and V4W, 2018; ENERGIA, 2019).

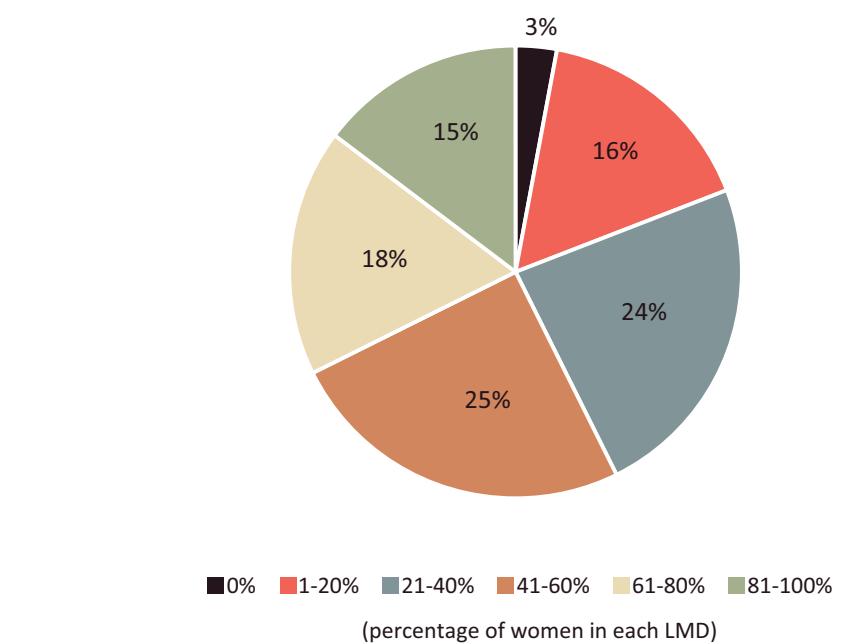


Figure 7: Percentage of LMDs reporting on women in their workforces

3.10 Representation and the impact of government programmes

Eighty-three per cent of LMDs are members of at least one national or international network or association. Seventy-eight per cent are members of a national industry association, while 37 per cent are members of a national NGO network. Internationally, the most common memberships are with GOGLA (16 per cent) and the Clean Cooking Alliance (13 per cent). Forty-two per cent of LMDs take part in meetings with governments, aid agencies, or other stakeholders seeking to accelerate market growth once a month or more, whilst over 70 per cent participate at least once every three months. Participation is fairly even across geographical regions, although larger companies, with turnovers of more than \$100,000, participate much more frequently than the smallest companies.

The largest companies feel best represented, with 70 per cent of those making over \$1m in revenue expressing positive sentiments, compared to

The largest companies feel best represented in policy and programme development related to the sector they work in

40 per cent of those generating below \$250,000. LMDs in South Asia feel most well-represented, compared to those in West Africa who feel least well-represented (Figure 8). Those with positive sentiments about their representation attributed this to their active participation in networks/associations and their own government connections. For those that felt negatively about their representation, this was put down to not being heard, not having enough opportunities for interaction, or being too small.

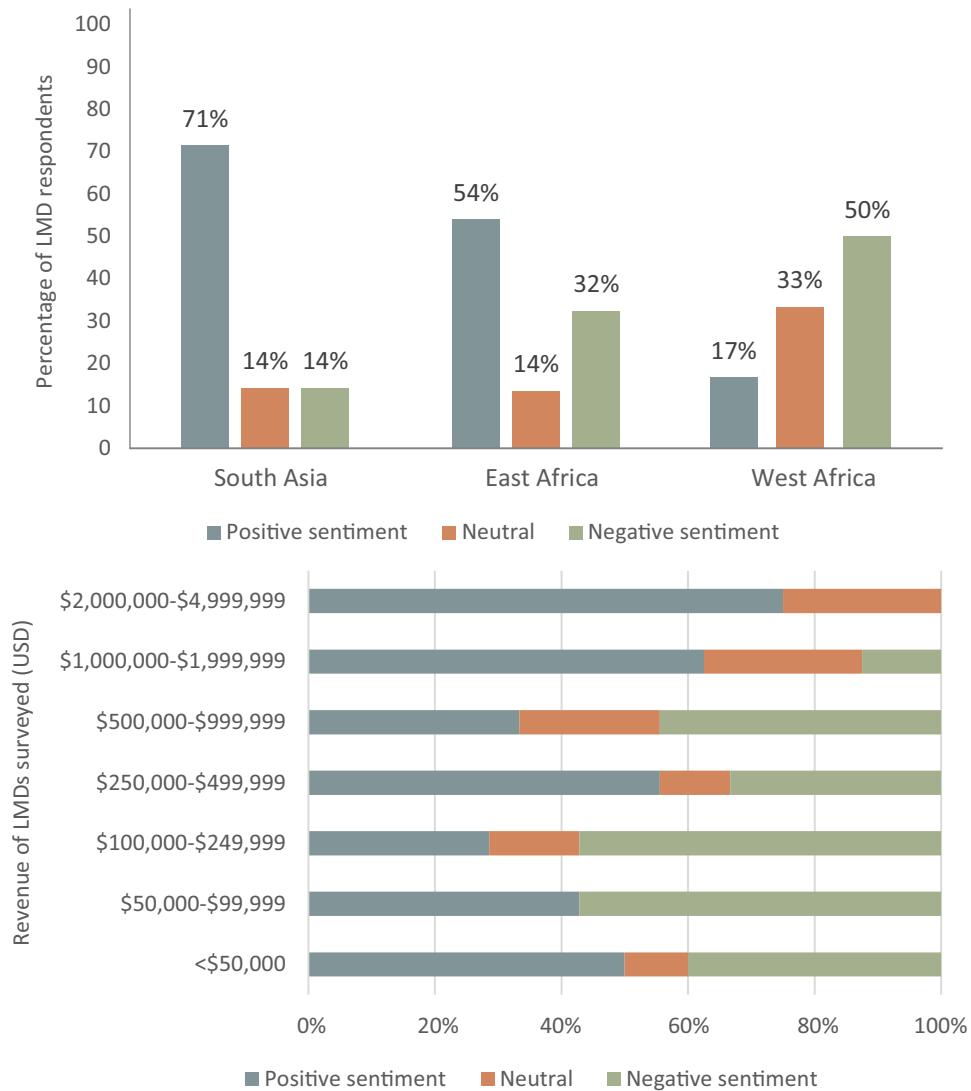


Figure 8: To what extent do you agree with the statement: 'My company is represented in policy or programme development processes designed to support the sector I work in'? Answers by region and company size

In some countries the introduction of large-scale subsidy programmes, implemented directly by government rather than through the private sector, has undermined LMDs' businesses. An LMD in Ghana found that government provision of fertilizers to farmers with a 50 per cent subsidy made it 'almost impossible to compete'. A Latin American LMD asserted that '*the government [electrification programme] has focused on [easier to reach areas], which has forced [us] to work in much harder to reach areas*'. Kenya's announcement of a new subsidy programme for LPG in 2018 was damaging for a number of LMDs due to its effect on consumer willingness to pay and investor confidence, even though the programme ultimately did not go ahead.

In other cases, new regulations have successfully driven the transition to clean technologies and benefited LMDs. Several East African LMDs cited regulation phasing out unclean fuels as having positively impacted their operations. For instance, Kenya's 2017 ban on logging and Rwanda's ongoing action to address deforestation have increased demand for alternative clean fuels. LMDs in Latin America selling water and off-grid solar products reported that government recognition of access to water and electricity as fundamental rights was helping to raise the profile of other socially beneficial products as well: '*greater understanding at the macro level means people don't just talk about electricity now but also cooking, sanitary water, etc.*'. Recognition of the role of beneficial products and LMDs in contributing to the SDGs is a critical step in achieving greater support for the last mile distribution sector.

Encouragingly, LMDs report increased stakeholder interest in reaching the last mile, and improved understanding of the role of LMDs in doing so. This is leading to new partnership opportunities, especially in East Africa. As one LMD reported, '*distribution is getting more attention ... financiers are more interested in innovative ways of reaching the last mile than before*'. Another highlighted that '*big players [such as multinationals] are deepening their understanding of community-level dynamics*', and are therefore increasingly interested in partnering with local companies, given their local market knowledge and strong social networks. LMDs also report increasingly positive perceptions of social enterprise amongst potential business partners and customers: '*operating as a social enterprise in an NGO world has become easier, less challenging, and has opened up opportunities for new partnerships*'.

4. Deep dive: Procurement

Procurement is a critical challenge for LMDs, who struggle with a lack of information on products and suppliers, unfavourable payment terms, and with maintaining efficient stock levels whilst importing in small quantities.

4.1 Limited product and supplier information

'When we started our operations, our biggest challenge was building a trusting relationship with our suppliers. Because we were young, our first supplier took advantage of us and charged us way over the market price', Tieme Ndo, LMD in Ghana

Many beneficial products are evolving rapidly, making it hard for LMDs to keep up to date with the latest innovations. In the clean cooking sector, for example, Envirofit brought out six new cookstoves in the space of six years (2008–14) (Envirofit, 2015). Off-grid solar manufacturers release new iterations of products every 18–24 months, and the number of manufacturers in the sector has increased from 60 to over 300 between 2010 and 2017 (GOGLA and Altai Consulting, 2018). In the efficient appliances sector, research conducted by the Collaborative Labelling and Standards Program (CLASP) and the Energy Savings Trust indicates a similar trend.⁷

Many LMDs struggle to adequately assess manufacturers' processes, reliability, and trustworthiness

Many suppliers of beneficial products have limited track records as they are relatively new to the market. They are often based abroad and can be unresponsive to LMDs' attempted communications. LMDs do not have the capacity to conduct in-depth checks regarding a supplier's manufacturing process, reliability, or trustworthiness. For example, among the 35–40 clean cookstove manufacturers in sub-Saharan Africa today, 80 per cent did not exist 5 years ago and one-third started their operations in the past 2 years (ESMAP and CCA, 2015). Most LMDs are unlikely to be able to visit suppliers' facilities in person when those suppliers are based abroad and, if suppliers fail to adhere to contracts, it is not easy for LMDs to claim damages. Mwezi, for instance, an off-grid solar LMD in Kenya, found that 80 per cent of the TVs they had imported were faulty straight out of the box and spent months trying to get them replaced. LivelyHoods, an LMD in East Africa, reported: *'I have been trying to resolve a problem with some of our faulty cookstoves for weeks, but every time that I call the number on the box, I get no reply. I do not know how else to contact the suppliers, but my customer is getting increasingly frustrated – they have not been able to use their cookstove for a long time and I'm not sure how to resolve the problem'*.

Certification could help to overcome these challenges, but few standard or certification schemes exist outside of the off-grid solar sector. For example, 80

per cent of improved cookstove manufacturers in Kenya are small- and medium-sized enterprises producing artisanal goods that are rarely – if ever – tested for their performance or subjected to quality controls. Navigating suppliers' offerings can be challenging and LMDs risk ordering products that do not perform as stated or fail early. This can lead to a negative customer experience and damaged sales performance. In the absence of reliable information, LMDs are forced to rely on suppliers' brand reputations, which can mean they miss out on superior products from less well-known manufacturers. According to Copia, an LMD in East Africa, '*Where possible ... we ensure that we have quality standard approvals in place; for other locally sourced products, however, it is very hard to get quality accreditation ... meaning Copia has to extensively test these products internally before listing in our catalogue*'.

Box 2: LMD product field trials – generating insight for distributors and manufacturers

Like many LMDs, Mwezi has had unforeseen challenges with products they have ordered over the years. After procuring a quality-certified solar product and encountering a high rate of product failure, Mwezi decided to run their own field tests. They explained: '*Manufacturers conduct product tests, but these are typically in lab conditions. When you get to the field, that's a completely different matter*'. With time, Mwezi realized this could be a revenue-generating opportunity: '*We now offer field testing for manufacturers who are eager to get customer feedback, test price points, and see how their product fares at the last mile. It's a really valuable exercise for manufacturers and allows us to sample a number of different products before deciding which is best suited to our customers' needs*'. Essmart, Pollinate Group, and other LMDs offer similar field testing services to manufacturers.

4.2 Unfavourable payment terms

Suppliers, who are themselves often constrained by working capital, tend to offer preferential payment terms only to their most important clients. LMDs selling low volumes miss out, as illustrated by the fact that just five LMDs surveyed have managed to secure stock on credit. Payment terms faced by LMDs importing from China typically require 50 per cent payment upon order and 50 per cent payment upon delivery at the port, with lead times of three months or more between order placement and fulfilment by sea freight. This leads to high working capital requirements.

Of all LMDs surveyed, only 5 had successfully secured stock on credit

4.3 Managing small-scale importation

LMDs placing smaller orders face higher importation costs, on a per product basis, than companies placing larger orders. A partially empty container can dramatically increase the cost of importation per product. Insurance, freight,



Awareness of and demand for clean cooking solutions, including LPG gas cannisters and stoves, is increasing; with consumer financing mechanisms and pay as you go technology increasing their affordability.

and in-country transport are all higher on a per product basis when volumes are small.

LMDs risk ending up with unsellable stock. LMDs often need to meet large minimum order quantities, which can be risky and unaffordable. They may not be able to sell large volumes within warranty periods, or before product performance deteriorates – batteries deteriorate when unused, for example. In some sectors where there is rapid innovation, products can even become obsolete before LMDs are able to sell them. If LMDs have to store stock for a long period of time, the cost of storage can be unsustainable.

They also run the risk of stockouts. Stockouts are fairly common amongst LMDs, caused by limited working capital and thus limited order capacity, or by unforeseen delays in the importation process. Unforeseen delays at the port can occur when products are categorized, and taxes are applied inconsistently. Disputes over product categorization and taxation can take months to resolve. According to Mwezi, '*one of our orders got stuck in the Mombasa port for almost a year due to customs issues. But once we got our products, they were sold out in less than a month! It's frustrating that the thing stunting our growth is not a lack of demand, but rather a logistical complication*'.

4.4 Procurement – emerging solutions

Product certification

Product certification schemes, such as Lighting Global's quality assurance framework in the off-grid solar sector, have helped LMDs gain access to reliable product information and to make more informed procurement decisions. Such schemes need to be extended to cover other beneficial product categories. The Collaborative Labelling and Standards Program (CLASP) has developed test methods covering a range of off-grid appliances, and published product performance data through the Equip Data platform, with a view to potentially developing new voluntary appliance standards in future (Efficiency for Access, 2019). The Clean Cooking Alliance has similarly worked on developing clean cooking standards and labeling (CCA, 2017). In other product categories, progress in addressing this issue appears to be limited or non-existent.

Certification schemes need to do more to instill trust in customers and encourage them to buy higher quality products

Existing certification schemes have their limitations. LMDs highlighted the fact that they do not help to assess supplier reliability, and they are of limited use when seeking to convince customers to purchase a more expensive, higher-quality product. Consumer-facing labels are rare and even when they do exist, LMDs are uncertain about whether end users would trust them. Binary 'pass,/

fail' certification risks creating a two-tier market where certified products are unaffordable for many, while non-certified products end up in a race to the bottom on price. Fixed certification costs are cheaper on a per product basis for large manufacturers, making it harder for smaller, new entrants such as LMDs seeking to work with original equipment manufacturers (OEMs) to compete.

Certification schemes could be extended and improved to more effectively meet the needs of LMDs in the following ways:

- **Enhanced field testing** of products, including longer-term testing to more accurately assess durability, and more stringent monitoring of how warranty requirements are met.
- **Tiered certification**, rather than binary certification, to help LMDs and their customers better navigate the trade-off between quality and price.
- **Consumer protection codes of conduct**, such as that set up by the GOGLA, to reassure LMDs of supplier reliability and give some recourse in case of dispute.
- **Tiered testing fees** to make certification more affordable for smaller OEMs, increasing the number of products being tested and certified, and offering LMDs – and therefore their customers – greater choice.

Wholesaler partnerships

The existing logistics networks of larger companies can be leveraged to make stock available in-country, on more favourable terms. TOTAL, through its affiliate Total Access To Energy Solutions (TATES), and its entities in many countries, has been a leading distributor of off-grid solar products over the last 10 years. It has recently developed an offer for medium to large PAYG distributors in sub-Saharan Africa, which could be inspiring for LMDs. Through wholesale partnerships, TATES provides an end-to-end importation service – including product sourcing from the supplier, possible provision of credit, freight, customs clearance, and, on occasion, warehousing. Margins are charged to cover all direct costs, as well as unforeseen ones, but are sufficiently attractive for distributors to continue partnering with TATES to get PAYG products to the last mile.

However, extending such wholesaler partnerships to LMDs would not be without its specific challenges, mainly relating to LMDs' small order size – the minimum order quantity for TOTAL is still a full container. LMDs may also lack the financial track record required to be considered credit-worthy, but these challenges could be overcome with further innovation and adaptation.

Centralized purchasing agreements can streamline the procurement process and reduce prices for LMDs

Centralized purchasing

Under a centralized purchasing agreement, a group of LMDs come together to jointly order a container. In theory, this enables them to benefit from streamlined procurement processes and possibly even better prices. This model has been demonstrated in the health sector, as shown in Box 3 below.

Box 3: Exploring centralized purchasing in the health sector

VIA Global Health has successfully set up an end-to-end procurement service, including a catalogue of products, managed logistics, and streamlined payment processing. They vet manufacturers and only source quality-certified products. Recently, VIA has been experimenting with demand aggregation – combining orders and placing larger orders with manufacturers in order to access lower prices. Based on prior purchase histories, VIA proactively reaches out to potential LMDs to encourage participation in shared orders. CEO Noah Perin thinks there could be potential to replicate the model in other product categories: ‘We really want to see whether there are other sectors, such as agri-inputs, for which a solution like VIA would help. The challenge at the moment is that these are sectors that we have a limited understanding of, so we are currently looking for other actors who know these markets well and may be interested in exploring this prospect together’.⁸

In more nascent markets, volumes might still be too low to cover the costs of centralized purchasing. As markets mature, manufacturers and wholesalers would be more likely to make stock available in-country themselves, limiting the potential gains from a centralized purchasing arrangement.

Centralized purchasing could nonetheless provide LMDs with another procurement option and help to create competition amongst wholesalers, driving improvements in prices and terms. Any centralized purchasing platform would need a clear value proposition for LMDs, grounded in either improved prices, better terms, quicker/easier access to stock, or other added-value services.

5. Deep dive: sales efficiency

Achieving sales efficiency is a constant struggle for LMDs

LMDs face a high cost of sales as they seek to serve remote areas and establish trust with risk-averse customers, whilst often seeking to provide consumer financing as well as quality after-sales services. Achieving sales efficiency – defined as the maximization of sales revenues compared to sales-related costs – is a constant struggle. A sales force takes time and investment to build, and recruitment, training, management, and retention are among the biggest challenges faced by LMDs. Addressing these issues is key to building a viable sales force, where agents sell enough to justify their costs and earn enough to keep ‘churn’, and associated recruitment and training costs, down.

5.1 Salesforce recruitment, training, management, and retention

‘One of our top barriers to growth is difficulty in recruiting, training, and retaining field and sales staff.’ Hydrologic Social Enterprise Co. Ltd, LMD in Cambodia.

Recruitment: 57 per cent of LMDs surveyed mentioned lack of access to qualified, motivated, and skilled staff as one of their top barriers to growth. Recruitment of mid-level sales managers and sales agents was particularly challenging, with Kidame Mart, an LMD in Ethiopia, commenting that: *‘We need more skilled staff at the field level, sales agents and managers who are able to analyse sales and customer data more effectively’*. Educated middle managers are often unwilling to spend their time in the field, and the promotion of best-performing agents is risky as it entails losing a good sales agent who may not become a good manager.

LMDs are rapidly evolving organizations that often switch value propositions, product lines, distribution channels, geographical areas, or software platforms.

Training: Given the dearth of proven, experienced talent, LMDs are forced to recruit on potential and invest heavily in training around products and marketing strategies. LMDs are rapidly evolving organizations that often switch value propositions, product lines, distribution channels, geographical areas, or software platforms. Every time such changes are made, training is needed. According to Naya Jeevan, an LMD in Pakistan, *‘What we would need most to help our business grow would be support in delivering rigorous sales and customer relations training to our sales agents; right now, they get very sporadic and short-term training, but we need an ongoing capacity building programme’*.

Management: Limited visibility of agent activity makes it hard for LMDs to manage their agent networks, especially in areas with limited mobile or mobile data coverage. Real-time or close to real-time data on sales activity, customer interactions, and agent locations is needed to optimize sales agent travel routes, manage sales agent inventory and cash flow, and quickly address

after-sales service issues. According to Tieme Ndo, an LMD in Ghana, *'Our agents are the face of our organization, but how do we track whether they are doing a good job? We find it extremely challenging to get information on their encounters with the smallholder farmers, both in terms of quantity and quality'*.

Retention of sales agents and more senior staff is particularly challenging for LMDs

Retention: Agent retention is challenging given the field-based, highly mobile nature of the job, limited opportunities for career progression, and the fact that LMDs are often unable to offer high salaries or commission. Indeed, LMDs report that the key reason sales agents leave is that they do not make enough money. This is true regardless of whether companies have the right company culture and rewards in place. Retention is also a challenge with more senior staff. The more qualified a member of staff, the higher the risk they will be poached by a competitor, with one LMD commenting that *'retaining talented staff when they can move onto a multinational and get paid more is really difficult'*.

Research by Hystra across 50 LMDs has suggested that full time agents need to generate at least US\$14,000 in sales revenue per year in order for LMDs to be able to pay them enough.⁹ Adequate compensation is essential to keep 'churn', and associated recruitment and training costs down. Retaining full time sales agents becomes significantly more challenging if they earn less than around \$8 per day full-time (equivalent to \$237 per month or \$2,850 per year). As LMDs are typically not able to sustainably allocate more than 20 per cent of sales revenue to agent commission or salary, ensuring \$2,850 income per year per full-time agent requires sales of at least \$14,250 in revenue per agent. Figuring out the unit economics at the agent level, and generating enough revenue to not only cover the agent's remuneration but all the indirect costs of training, managing, and supporting the agent, is a prerequisite to creating a sustainable agent network.

Forty-two per cent of surveyed LMDs compensate agents on a commission-only basis, whilst a further 52 per cent use a mix of commission and fixed salaries. The obvious advantage of commission is that the risk of non-performance lies with the agent rather than the LMD, but it does little to help address retention challenges. A commission-based model with high churn can incur higher recruitment and training costs, compared to a model where agents have a partly fixed salary. In addition to salary and commission, LMDs provide a wide range of benefits to help agents cover costs and contribute to remuneration. These include phone credit (68 per cent) and/or mobile phones (46 per cent), which help reach out to clients



Talented sales agents, such as those used by SPOUTs of Water in Uganda, are invaluable but can be difficult to hold on to, given the mobile nature of the job and limited opportunities for progression.

and report on sales efficiently, as well as travel allowances (64 per cent), which are essential to motivate agents to cover sufficient ground to make new sales, health benefits (38 per cent), and insurance (30 per cent).

5.2 Sales efficiency – emerging innovations

Enhanced software platforms

We need support in developing decent IT systems and platforms, in [customer relationship management] and human resources management especially. We're doing everything in-house today, which uses up huge amounts of resources', Bidhaa Sasa, LMD in Kenya.

Sales and payment management platforms, such as Angaza and PaygOps from Solaris Offgrid, are the most commonly used pieces of software amongst surveyed LMDs. In addition to managing customers, they help LMDs manage sales agents, technicians, and inventory. Other providers include Enventure, and Kopernik, which offers an online catalogue of affordable, simple tools to help LMDs collect data, communicate with clients, and measure impact. Financial Inclusion on Business Runways' 'PAYGo NEXT' project is developing a suite of applications that leverage artificial intelligence and machine learning to improve the efficiency of PAYG distribution (BFA Global, 2019).

Areas where software is beginning to play a role, and could play an even more significant role in future, include:

- **Training platforms:** For instance, EduMe is a data-light app with a simple user interface to deliver training, motivational messages, and up-to-date product specifications. Sales agents using the platform on a pilot for Greenlight Planet saw a 116 per cent increase in their sales performance.¹⁰
- **HR platforms:** Shortlist has developed a recruitment technology platform for companies in Africa and India, which have already benefited manufacturers of beneficial goods such as Envirofit (cookstoves) and SunCulture (solar irrigation), helping them with an automated screening solution tailored to the company's needs and culture. Such platforms are also working on improved job-matching, meaning LMDs are more likely to identify people with the right character traits and long-term potential.¹¹
- **Monitoring and tracking platforms:** What3Words is a global address system that enables LMDs to locate and track customers that do not have an address, such as those in slums or refugee camps.

Software to manage sales and payments is increasingly important; yet many solutions remain unaffordable to LMDs, driving them to develop their own

However, many LMDs still have to develop their own software solutions as there are not enough affordable options on the market. iluméxico developed its own solution using Nearpod, an educational content platform for elementary schools, to produce their own digital learning content. Similarly, Ecofiltro in Guatemala is currently working to link up multiple platforms to create a holistic software solution for management of the whole business.

Box 4: TaroWorks and iluméxico – Using data collection tools to save time and money

TaroWorks was born out of challenges the Grameen Foundation faced in getting information to and from their sales agents. The team realized that data collection tools were needed not only by the Foundation but across the NGO and social business sectors. They designed a solution based on salesforce.com, a leading customer relationship management platform, making it accessible offline for agents in areas without mobile data. Their product provides LMDs with almost real-time data to enhance business management and decision-making.

After iluméxico introduced TaroWorks they reduced their time collating and analysing data from 21 hours a week to just 5 hours. The management team built their own dashboards with key metrics on sales, repayments, and default rates. They are now able to track agent performance remotely and are better positioned to appraise credit risk in their customer portfolio.

Software could be improved in a number of areas to more effectively meet LMDs' needs, such as:

- **Affordability:** More basic versions of existing platforms and services could be made available to LMDs at lower cost.
- **Product agnosticism:** Platforms should be designed to work across the wide range of products that LMDs sell.
- **Offline functionality:** Given limited mobile data availability in many last mile areas, offline functionality is needed.
- **User friendliness:** Platforms need to be as simple as possible for use by staff and agents who may have limited experience with computers and apps. They should be made available in local languages.
- **Feedback loops:** LMDs are bound to encounter problems when introducing a new platform, and providers should be on hand to support them in addressing these issues.

Enhanced training services

Specialist training providers are starting to emerge, enabling LMDs to outsource and improve the quality of their agent and technician training. For example, the Enlight Institute in Uganda, founded in 2018, is seeking to solve human capital challenges for LMDs. Originally envisioned as a 'traveling training academy', it has run solar technical and sales trainings for over 100 young people and women across Uganda, many of whom have since been placed at solar companies. It has also developed pico solar technician certification standards for the Ugandan government, and launched a holistic recruitment, training, and coaching model in partnership with several LMDs. In the long run, Enlight Institute aims to collect data on their trainees, and build profiles and success criteria for typical LMD roles.¹²



Global Distributors Collective

Opportunities for LMDs to come together to learn and collaborate, such as at the GDC's member event in Uganda in July 2019, are key to such organisations developing more effective and efficient ways of reaching the last mile.

opportunity and help LMDs avoid 'reinventing the wheel'.

Some more socially motivated LMDs have made training materials freely available to other organizations, and even helped others replicate their models. For example, SunnyMoney has partnered with ElleSolaire to help strengthen their women-led last mile distribution model in Senegal and has committed to 'open sourcing' its model. Given the social motivation of many LMDs, and limited direct competition between them, there is more appetite to share experiences and support each other than there is in other sectors. Events for peer-to-peer learning and experience-sharing can capitalize on this

Cost-sharing to unlock economies of scale

LMDs could join forces in areas such as training or after-sales service, to share costs and unlock economies of scale. The limited competition amongst many LMDs means there is an opportunity to collaborate more closely for mutual benefit. For example, the high cost of setting up a dedicated after-sales service can be hard to justify for a single LMD, and LMDs operating in neighbouring areas are already teaming up to share the cost of technicians. This kind of partnership could potentially be expanded to serve a larger number of LMDs, or to work across a broader range of product categories. Other areas where LMDs are already sharing costs include the organization of joint sales agent training, and the development of shared marketing content, such as product catalogues, that can be quickly and easily tailored for each organization.

6. Deep dive: Access to finance

6.1 LMD finance trends

86 per cent, 69 per cent, and 41 per cent of surveyed LMDs have raised grant, debt, and equity funding, respectively

LMDs have been surprisingly successful in accessing external financial support, given their small size, but the kinds of debt and equity needed for growth-stage companies are not widely available. As can be seen in Figure 9, 86 per cent of surveyed LMDs have raised grant funding, 69 per cent have raised debt funding, and 41 per cent have raised equity funding, while 28 per cent have raised all 3 types of capital. The average amount of grant funding raised to date has been \$550,000, but the range varies significantly from \$5,000 to \$2.5 m. The average amount of equity raised is \$1.1 m, from a range between \$20,000 and \$6 m.

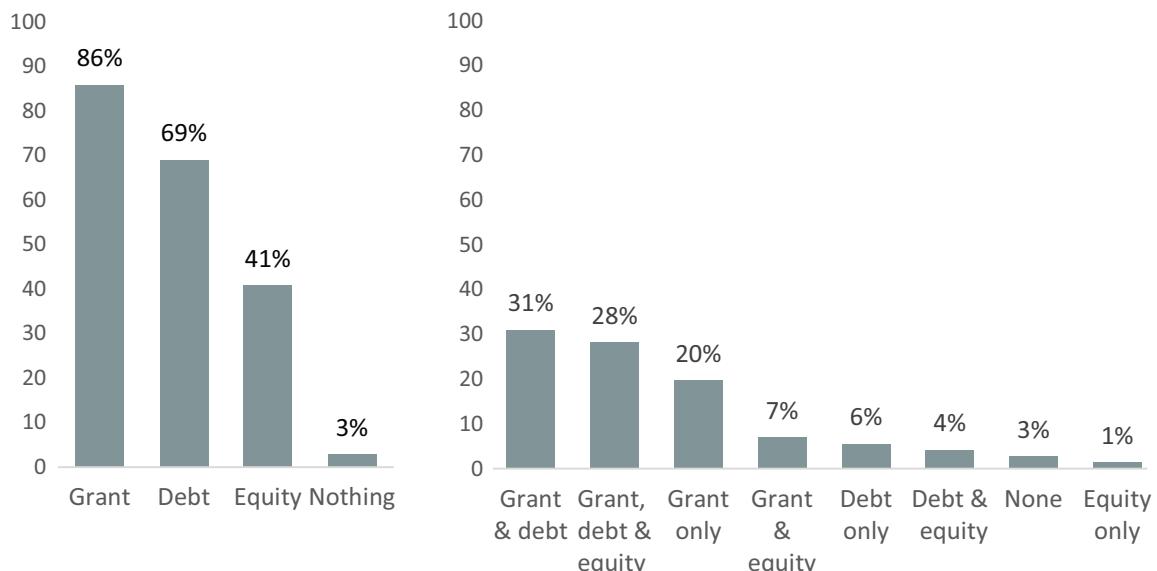


Figure 9: Percentage of LMDs that have raised funding, by funding type¹³

The most common sources of grant funding amongst surveyed LMDs are bilateral aid agencies (44 per cent) and foundations (41 per cent), as seen in Figure 10. The most commonly cited bilateral aid funder is United States Agency for International Development (USAID), which has provided funding to 23 per cent of the surveyed LMDs that have raised grants. Other aid agencies supporting LMDs include GIZ (Germany), DFAT (Australia), and DFID (UK). D-Prize, which offers seed funding to entrepreneurs who propose an innovative way to sell beneficial products, has supported more surveyed GDC members than any other foundation, having provided start-up grants of ~\$10,000 to 8 per cent of LMDs surveyed. NGOs are the third most common source of grant funding for surveyed LMDs, with the Clean Cooking Alliance having supported 8 per cent of LMDs surveyed, through dedicated grant facilities such as their Women's Empowerment Fund and the Spark+ Financial and Technical Assistance Program.

Crowdfunding platforms are the most common source of debt for LMDs surveyed (20 per cent). Eighteen per cent of surveyed LMDs who raised debt have

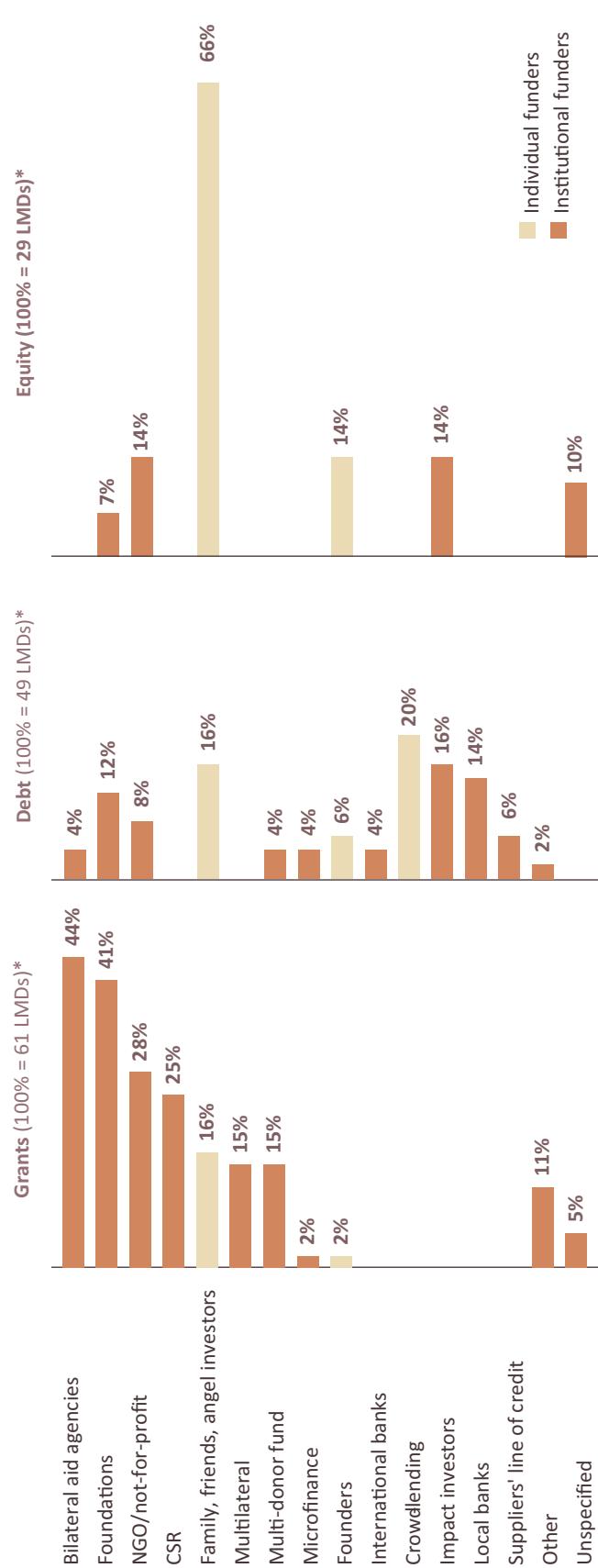


Figure 10: Share of surveyed LMDs that have raised funds, by funder type¹⁴

Local bank loans tend to come with challenging collateral requirements and high interest rates

taken loans from Kiva, an international non-profit lending platform that enables small investors to finance small and medium enterprises (SME) and microbusinesses. Kiva was cited as a source of debt across nine countries. After crowdfunding, the next most commonly cited sources of debt are: international impact investors, such as SunFunder and Microfinance Solidaire (16 per cent); family, friends, and angel investors (16 per cent); and local banks (14 per cent). Whilst loans from crowdfunding platforms or family/friends/angel investors are often available without collateral, they are not of sufficient size or duration to meet LMDs' working capital needs. Local bank loans can be larger and longer term but tend to come with challenging collateral requirements and high interest rates.

By far the primary source of equity financing for surveyed LMDs is individuals – family, friends, and angel investors (66 per cent) or founders themselves (14 per cent). This type of equity makes sense for start-ups but is insufficient for LMDs seeking to grow. The next most common sources are not-for-profit organizations, and impact investors based in Europe and the US, accounting for 14 per cent each. The kind of large-scale, long-term commercial equity needed for LMDs to reach the next stage of growth is not widely available.

Ninety-four per cent of LMDs are looking for additional financial support. On average LMDs surveyed are seeking \$1.3 m, although this varies significantly, from \$20,000 to \$5 m.¹⁵ Eighty-nine per cent are looking for grant funding. Unlike average start-ups, and given the difficulties of unit economics at the last mile, LMDs need grant funding over a long period of time to experiment with innovative distribution models that fit their particular context. Even the LMDs categorized as 'fast growth' are hoping to raise grants to support their expansion.

LMDs need grant funding over a long period of time to experiment with innovative distribution models that fit their particular context

Fifty-nine per cent of surveyed LMDs are looking for equity and 64 per cent are looking for debt. Young LMDs that are grant-funded and still experimenting may feel it is too soon to seek equity or debt for their businesses. Older, stable LMDs who still depend on grants are likely to also be looking for debt to fund their working capital, but are less likely to be looking for equity, given their less-commercial business models. Fast-growth LMDs are the most likely to be seeking equity and debt to rapidly scale.

LMDs with at least one founder from the region where the LMD operates are less likely to have raised funds, compared to LMDs where founders are from

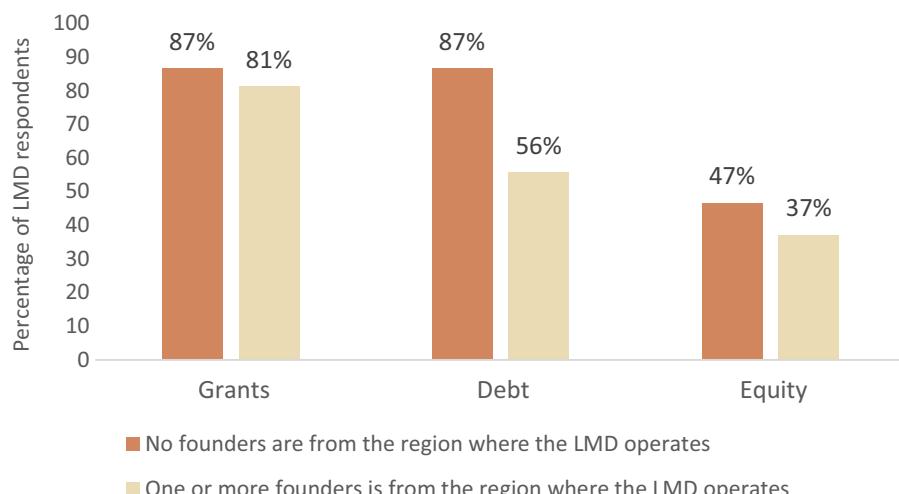


Figure 11: Percentage of LMDs who raised capital, by funding type and founder origin

outside of the region (see Figure 11). This is the case irrespective of LMD size and age. Most notably, only 56 per cent of LMDs with a local founder have raised debt, compared to 87 per cent of those without.

Box 5: Fundraising advice from a fast-growth LMD – Zonful Energy

Zonful Energy, founded in 2016, is an LMD selling solar home systems on PAYG to rural communities in Zimbabwe. Zonful reached annual sales revenue of over \$1 m in 2018 and is on its way to quadrupling that figure in 2019. It has raised over \$2 m in equity funding, over \$1 m in grant funding, and close to \$500,000 in debt from leading impact investors.

William Ponela, Zonful's CEO, attributes this success partly to a holistic value proposition: high-quality products offered on PAYG with impeccable after-sales service that uses: a 24/7 call centre and freelance technicians; an effective marketing model leveraging local leadership structures to endorse the product (leaders are sometimes given demonstration solar systems at their home); and efficient operations leveraging ICT systems from the outset.

William puts Zonful's fundraising success down to a few factors: *'First, you need to have skin in the game – you can't just expect investors to put money behind your venture if you haven't done so yourself. Second, it's all about setting up the right processes to collect data from the outset across your operations. We used early grant money to invest in efficient and automated systems that allowed us to have a trustworthy track record to convince investors. For us as a PAYG business, in particular, being able to show that our client default rates were low was key.'*

'Solar is contagious so if you put a solar system in the middle of darkness people are bound to be curious to find out about the source of the light. The idea of giving systems to local leadership works the same way.'

Source: Interview with William Ponela, CEO of Zonful Energy

6.2 Access to finance: Challenges

'We need funding to finance working capital for inventory, to invest into our internal processes, to train our field and call centre staff, and for assets [we need] for logistics', Solaris, an LMD in Tanzania.

'LMDs face many challenges and so do investors who seek to support them. They have weak balance sheets, limited track record to attract debt and equity financing, they lack profitability, and have large liquidity needs when they offer pay-as-you-go. Plus, they evolve in difficult macro environments, with high import taxes and difficult importation processes', Erin Davis, SIMA Funds.

Reflecting challenges in the broader SME sector, over 75 per cent of LMDs surveyed cite access to finance as a key barrier to growth (KFW, 2019). Based on extensive consultation with LMDs and funders, including both donors and

investors, the key challenges in Table 3 have been identified. They apply across grants, debt, and equity, irrespective of funding source.

Table 3: LMD and funder perspectives on access to finance

LMD perspective	Funder perspective
<ul style="list-style-type: none"> • Minimum investment amounts are too high 	<ul style="list-style-type: none"> • Transaction costs are too high on small investments
<ul style="list-style-type: none"> • Collateral requirements are hard to meet 	<ul style="list-style-type: none"> • Loans are too risky without collateral
<ul style="list-style-type: none"> • Interest rates are too high 	<ul style="list-style-type: none"> • Last mile distribution is high risk, requiring a high return/interest rate
<ul style="list-style-type: none"> • Application process and due diligence requirements are complex and heavy 	<ul style="list-style-type: none"> • High-risk transaction requires extensive application process and due diligence
<ul style="list-style-type: none"> • Funders are too focused on technology or SDG 'silos' rather than last mile distribution across multiple product categories 	<ul style="list-style-type: none"> • LMDs have limited track records • LMD data is not always reliable and/or hard to verify • LMDs sometimes have poor governance/financial management
<ul style="list-style-type: none"> • Foreign exchange risk 	
<ul style="list-style-type: none"> • Lack of market intelligence 	

Minimum investment sizes, collateral requirements, and interest rates: The most common reason for not accessing debt is that collateral requirements are too hard to meet, cited by 27 per cent of LMDs that have not done so. LMDs' main physical asset, namely their stock, is unattractive as a form of collateral since it cannot be easily sold to recover funds. One creative form of collateral being used by companies such as BBOXX in the off-grid solar sector is receivables – the funds the company can expect to receive from PAYG customers in future. This approach could be tested with LMDs that offer consumer financing.

Other reasons given include not needing to borrow (14 per cent), interest rates being too high (9 per cent), not thinking the loan will be approved (9 per cent),

and the minimum investment amount being too high (4.5 per cent). This is consistent with findings of previous research from the Shell Foundation: out of 13 impact investors providing working capital to social enterprises, most would only provide loans to LMDs who required more than \$500,000 and could provide some sort of collateral or guarantee. Only one investor, SunFunder, stated they could provide \$100,000 or lower working capital loans, the average ticket size for many downstream distributors (Shell Foundation, 2018).



Many LMDs, particularly local LMDs, find fundraising applications and due diligence processes difficult and time consuming.

'It is really hard to get a loan as a new business in Ethiopia. The collateral

requirements are impossible to meet being a young company with few assets and the interest rates are too high', Kidame Mart, LMD in Ethiopia.

Transaction costs: For many funders, transaction costs are too high given LMDs' modest investment requirements. LMDs' lack of collateral and of easily verifiable business performance data translates into rigorous due diligence requirements, such as validation of budgeted 'profit and loss', vetting of financial processes, and provision of legal documentation. This is perceived to be too costly, especially since funders often need to work with LMDs to present their business performance data, and their business plans, in an appropriate format.

Application processes and due diligence: LMDs – in particular local ones – often find funders' application processes and due diligence requests to be overwhelming, especially given limited chances of success. Local founders are not always as skilled in developing the pitch decks, business plans, and spreadsheets that many international funders expect to see, despite being talented and passionate entrepreneurs. International funders may be missing an opportunity to capitalize on local teams' exceptional market knowledge and networks, because of the way they appraise businesses. According to PayGo Energy in Kenya, '*grant applications that are more effective are less academic and more commercial, which should give an edge to local teams that really understand the market. As a funder you have to ask yourself, are you looking for an academic or an entrepreneur?*'

Misalignment between LMD objectives and funder objectives: LMDs often work across sectors, meaning they do not fit neatly into the traditional SDG-themed approaches of donors and impact investors, who tend to focus on energy or agriculture for example. With 54 per cent of surveyed LMDs selling more than one product category, funders struggle to justify supporting an LMD as a whole if only one of its product categories is relevant to their objectives. Moreover, many funders are more focused on technology than on 'people-based' models such as distribution and sales. In Burro's experience, impact funders are focused on rapid, risk-adjusted returns with prospects to deliver high multiples by scaling fast. We see deals flowing to disintermediating technology platforms but little appetite for equity investment in the boots-on-the-ground LMDs building out the actual distribution networks. We're huge believers in tech facilitating growth, but someone needs to actually deliver the right product to the right place with the right financing package.

LMDs often do not fit neatly into donors' and impact investors' traditional SDG-themed approaches

Foreign exchange risk: LMDs buy products in foreign currency and generate revenue in local currency, creating foreign exchange risk, which puts off investors and sometimes deters LMDs from seeking loans. A decrease in the value of local currencies, from the Zambian kwacha to the Myanmar kyat, has impacted consumers' purchasing power and LMDs' bottom lines in recent years. As Vitalite, an LMD in Zambia, explained, '*after buying products in USD, a sharp drop in the kwacha exchange rate means we lose most of our margin*'.

A lack of market intelligence means funders perceive the sector as high risk, which translates into higher interest rates and more stringent terms for LMDs

Lack of market intelligence: The lack of sector-wide market intelligence contributes to a perception amongst funders that investing in last mile distribution is high risk. It also makes it difficult to appraise the risk of investing in a given LMD. Little is known about LMDs' credit-worthiness or potential for returns in the long term because the sector is still fairly nascent, with too few

success stories or data points to learn from. The absence of market intelligence deters some funders from supporting last mile distribution entirely. For others it leads to a higher risk perception, which translates into higher interest rates and more stringent terms, and funding that is less aligned with LMDs' needs.

6.3 Access to finance – emerging innovations

Dedicated grant-making mechanisms

Donors are yet to fully play their role in de-risking private investment in the LMD sector, but there are a variety of tried and tested grant-making mechanisms to support LMDs. USAID is funding 13 of the LMDs surveyed through a range of initiatives including the Center for Health Market Innovations, the Private Financing Advisory Network-Asia, the U.S. Global Development Lab's Partnering to Accelerate Entrepreneurship (PACE) Initiative, and the Scaling Off-Grid Energy Grand Challenge for Development. The stand-out foundation in the sector is D-Prize, outlined in Box 5. D-Prize holds biannual competitions for distribution-focused pilots, and has seed-funded five of the LMDs surveyed. French NGO Entrepreneurs du Monde is another important early-stage funder, providing grants and technical support to a number of LMDs globally, including Nafa Naana in Burkina Faso, Mivo Energie in Togo, and ATE Co. in the Philippines. The Unilever-DFID TRANSFORM initiative has also targeted LMDs, using a dedicated challenge fund window to support innovations in rural last mile distribution.

Box 6: D-Prize: High-risk early-stage funding for LMDs

Set up in 2013, D-Prize offers early-stage seed support with a focus on providing 'first funding' to new LMDs. It offers small grants of between \$10 and \$20,000 to high-potential entrepreneurs from all over the world wanting to pilot innovative last mile distribution models across a range of sectors. It has funded 140 entrepreneurs to date.

D-Prize bets on long-term growth potential, rather than short-term reach or historical performance: *'We wanted to get away from a typical 12-month grant cycle, where recipients are expected to reach "x amount of households" in that given time, and instead think about 5–10 years down the line.'* It actively works to support local LMDs, with 80 per cent of grantees in their last funding cycle having at least one founder local to the country in which the organization is operating.

D-Prize has an unusually high-risk appetite, and has been 'first funding' for 70 per cent of its grantees and early catalytic support for all. Not all of them succeed, but currently 15 per cent are meeting criteria for 'rapid scale', defined as being on track to distribute proven interventions to 100,000 people within their first five years. D-Prize has been a pivotal early-stage funder for many leading, high-impact LMDs such as Tieme Ndo (Ghana), Essmart (India), LivelyHoods (Kenya), and Altech (Democratic Republic of the Congo).



Small-scale, beneficial products play a critical role in providing people with access to much-needed services, such as in Nepal in the aftermath of the 2015 earthquake.

Results-based financing (RBF) could be an effective grant mechanism to support LMDs to reach last mile consumers. While traditional RBF schemes offer incentives based on sales achieved in underserved geographies, RBF could also offer incentives based on sales to customers that are currently underserved because of low incomes. This concept is currently being tested by the USAID mission in Uganda and the Scaling Off-Grid Energy Grand Challenge for Development, which is developing an RBF scheme that incentivises companies to reach last mile customers with off-grid energy solutions using a 'last mile index'.

Given the range of LMD sizes and funding needs, flexibility and tailoring of grant financing is key. The biggest gap is grant funding for growth, as grants provided to LMDs have largely not been sufficient to enable them to cross the 'valley of death' and access debt and equity. As D-Prize notes, *'The vast majority of our grantees are still looking for grant or concessional funding after they have run their initial pilots with D-Prize funding; they're not yet ready for equity or formal debt. That is also where many grantees find there is a gap ... after the pilot stage, there are only a handful of grant providers offering relatively small ticket sizes that our grantees would need to start to formalize their models.'*

Specialist intermediary investment funds

Specialist intermediary investment funds are beginning to emerge to support the LMD sector, particularly – but not exclusively – in the energy access sector. Equity investors such as VentureBuilder, Persistent Energy, and The Tony Elumelu Foundation are developing the experience and capacity needed both to invest in the LMD sector, and to provide ongoing technical assistance and support to investees as they grow. These funds act as intermediaries by raising capital from larger, less specialized public and private investors, and channelling it into the LMD sector. Explaining their decision to specialize in investing in LMDs, VentureBuilder argued that *'[combining] the local market knowledge and customer bases held by established distributors with the right mix of PAYG expertise, talent development, capital investment, and product partnerships is the key to scale the delivery of PAYG off-grid solar products in underserved markets in sub-Saharan Africa.'*

Specialist intermediary funds raise capital from larger, less specialized public and private investors, and channel it into the LMD sector

Dedicated debt facilities with higher risk appetites have also started to emerge. SunFunder and Charm Impact are two examples of impact investors focusing on early-stage debt for energy entrepreneurs in sub-Saharan Africa and Asia. They use blended finance to provide working capital at a reduced cost. They allow their investees to build a repayment history while helping them align their metrics and key performance indicators with industry standards in order to access larger loans.

Investors can partner with software platforms to access more reliable data on LMD business performance and reduce the risk of investing in LMDs. LMDs are increasingly making use of software platforms for the day-to-day running of their operations, be it for consumer financing or sales management, meaning they are producing reliable, raw operational data that can be leveraged to predict future cash flows and sales growth. SIMA Funds and Angaza have embarked on an innovative partnership enabling SIMA to benefit from reliable data on LMD business performance through Angaza's platform, as outlined in Box 7.

Box 7: SIMA Funds and Angaza – How software can help investors obtain reliable business performance data

SIMA Funds, an impact investor, has sought to complement its existing portfolio of investments in off-grid solar PAYG manufacturers by investing in distributors. They initially struggled with high transaction costs and difficulties appraising risk based on limited information: *'A big frustration until now has been the quality of data – how do I know if it is accurate? How do I know if the way it has been recorded is consistent with other LMDs? This difficulty we and our peers have faced in being able to understand the sector is part of the reason why so many investors ask for 4–5 years of operation as a standard minimum.'*

To address this challenge, SIMA Funds has teamed up with Angaza – a leading technology platform supporting over 200 LMDs to provide end user financing and other services – to access Angaza's wealth of reliable data on LMD performance. In 2020, SIMA and Angaza will launch a dedicated debt facility, which will offer a range of products including inventory financing and quasi-equity loans to LMDs in the clean energy sector. Interested investees will be sourced through Angaza's client database and, with their permission, clients' customer and repayment data will be used to estimate their future cash flows and price a loan. Loan monitoring will be automated via tailored dashboards fed by LMDs' live operational data. While the impact of this partnership remains to be seen, this is an exciting example of the sector's move towards greater collaboration between investors and specialist service providers in a bid to increase funders' ability to navigate and invest in the LMD sector.

Adaptation of existing funding mechanisms

Existing funding mechanisms can be developed with the flexibility to support the LMD sector, or adapted to do so. Tailored financing windows can aim to make smaller investments, whilst accepting higher transaction costs and risks. The Africa Enterprise Challenge Fund has already provided grant funding to four LMDs surveyed and debt to two of them. Under its new REACT SSA Programme it is aiming to provide grants and loans ranging from \$100,000 to \$1.5 m, combined with intensive technical assistance, in nascent markets such as Mali, Burkina Faso, and Liberia. Transaction costs and risks are expected to

be higher than in previous financing windows, which were designed for larger companies and less nascent markets, but the payoff in terms of improved energy access at the last mile is likely to be significantly higher.

Other funders are following suit with, for example, the World Bank's Regional Off-Grid Electrification Project in West Africa and the Sahel considering making start-up grants from as little as \$10,000–25,000 available, alongside a larger-scale financing window for bigger companies. Start-up grants will be accompanied by intensive technical assistance and will be available exclusively to locally owned businesses.

Bundling of financial and technical support

Financial support can be combined with capacity building to de-risk investors' portfolios and maximize chances of success. Tailored technical assistance and capacity building needs have been identified by LMDs across a range of areas from senior management to sales agent training: 95 per cent of surveyed LMDs are seeking more non-financial assistance to grow. The top two areas where LMDs are seeking technical support are sales, marketing, and customer relationship management (33 per cent) and technical training on issues such as installation, maintenance, and after-sales service (22 per cent). Such support would help LMDs improve their performance and reassure investors. Some donors and investors are recognizing this opportunity and taking concerted steps to address LMDs' capacity building needs. For example, VentureBuilder – a collaboration between specialist consultancies Catalyst and Open Capital Advisors – is seeking to combine early-stage equity investment with a comprehensive package of support (VentureBuilder, 2018).

Third party technical assistance providers and accelerator/incubator programmes can also play a vital role here. Examples include Whitten & Roy, which provides tailored sales training for LMDs, and GDC founders BoP and Hystra; both of whom have extensive experience supporting LMDs in a range of challenging markets, globally. The Miller Center for Social Entrepreneurship has also developed a

dedicated accelerator programme for LMDs. The Miller Center's programme is built around an 'LMD Playbook', a 12-module course drawing on best practices from accelerator alumni, and coupled with structured and continuous support from mentors who help LMDs apply learning in practice. Jocelyne Agbo, founder of Farm on Wheels, an LMD in Nigeria, said: *'what I am finding most valuable about the LMD Playbook course is the hands-on mentorship; it's unlike other training courses out there and has really enabled us to improve our core structure, which we had not changed since we ran our initial pilot. As a result, we are now much better placed to scale.'*



Market intelligence is necessary to help investors understand the market potential of the last mile and better appraise investment risk.

Improved market intelligence

Market intelligence could help investors better understand market potential at the last mile, and more accurately appraise risk. The off-grid solar industry has benefited enormously from regular sales and impact reports, coupled with biannual deep dives into the state of the sector. More recently GOGLA, the Consultative Group to Assist the Poor, and Lighting Global have come together to develop harmonized PAYG performance metrics and a market attractiveness index, with a view to ‘enhancing data uses, improving operations and business models, and facilitating access to finance’ (Lighting Global, 2019). More standardized LMD performance and portfolio health metrics would make it easier to analyse and compare LMDs, enabling financiers to make more informed investment decisions and provide feedback to LMDs on how to strengthen their businesses.

Box 8: Opportunities for investors to help close the last mile distribution funding gap

It is evident that LMDs in their early stages are generally able to access grants and small amounts of capital through their personal networks. However, larger-scale institutional capital is scarcely available to fund their next stage of growth.

There is space for one or more specialized investors to close this gap, with a last mile distribution sector focus to achieve economies of scale and geographical scope for risk mitigation and diversification.

As the sector builds knowledge and confidence on successful business models, such funds would need to propose blended finance mechanisms – a mix of donor funds committed to supporting better access to beneficial goods, and of commercial capital (both debt and equity) ready to accept the remaining risk. Amounts could range from \$50,000 to a few million dollars, in order to accompany LMDs throughout their different stages of growth – the larger deals being in principle more profitable, helping to pay for the next generation of smaller deals. In a first stage, donor funds would help to lower the commercial risk, pay for technical assistance that would increase the chances of success of the fund’s investees, and possibly develop the knowledge base necessary to create adapted due diligence processes. Partially automating these processes would reduce transaction costs; for example, with a benchmarking tool that would allow to both rapidly assess a company performance and its technical assistance needs. Regional relays would then conduct the final company assessment (and later, when needed, manage trick recoveries).

7. Conclusions and recommendations

This report has shone a light on a part of the last mile distribution sector that has long been overlooked. It has shown that LMDs play an important role in market creation and improving quality of life for low-income consumers, and that if they can be supported to scale, this would make a significant contribution to the SDGs. The LMDs surveyed are clearly targeting a low-income and hard-to-reach customer segment, with quality, beneficial products. Their size, age, and growth trajectories are varied, with some being young and still experimenting; others being older, small, and stable; and some – including both younger and older organizations – exhibiting exciting and fast growth. They use distribution strategies that are well suited to market creation, and a wide range of predominantly below-the-line marketing tactics. Most seek to offer high-quality after-sales service, including warranties, and consumer financing through both cash payments and mobile money. Whilst further research is needed, self-reported figures for the numbers of people reached highlight the significant potential of the sector to contribute to achievement of the SDGs.

All LMDs struggle with procurement, sales efficiency, and access to finance, but promising potential solutions and emerging innovations are showcased throughout the report, and these could be scaled up by LMDs with the right support from other stakeholders. **In order to unlock the full potential of the LMD sector, urgent action is needed.**

Aid agencies and foundations can play a vital role in providing flexible grants, as well as in de-risking commercial investment in the sector. De-risking measures could include first-loss

facilities, guarantees, or provision of grant-funded technical assistance to investees. They can also support the sector through enhancing product certification schemes and quality assurance frameworks, improving market intelligence, funding social impact research, and fostering use of more harmonized business performance metrics. Networking and matchmaking activities would help LMDs build new partnerships and learn from each other, to avoid reinventing the wheel.



In 2015 in Nepal, beneficial products were distributed to communities in the post-earthquake operation. These kinds of products were particularly important given the lack of centralised services available at the time.

Investors are encouraged to build the data and experience needed to invest in LMDs, either directly or through

specialist intermediaries. In order to make collateral requirements easier to meet, investors could accept some LMDs' receivables as collateral. Particular efforts must be made to overcome the barriers that local LMDs face when seeking debt, to capitalize on their exceptional local market knowledge and networks. Manufacturer interest in finding ways to offer better terms and credit to LMDs, and interest from software companies in using their data to de-risk investments, both represent further opportunities for creative innovation, as we work towards an increasingly efficient, unbundled supply chain for beneficial products. Longer-term, larger-scale investment – coupled with intensive technical assistance and capacity building – is needed.

In order to unlock the full potential of the LMD sector, urgent multi-stakeholder action and effective partnerships are needed

LMDs are encouraged to continue testing the promising solutions identified in this report, in partnership with other stakeholders. They can do more to learn from and collaborate with each other, to unlock economies of scale, and implement best practices. **Manufacturers** are encouraged to design, test, and iterate products in consultation with LMDs and their customers, and to build long-term strategic partnerships with them. **Service providers** such as software and training companies are encouraged to continue developing the low-cost, tailored platforms and services that LMDs need to thrive. **Governments** are encouraged to recognize the role of LMDs in contributing to development goals, and to ensure they are specifically included in dialogue between the public and private sectors. It is important to consider the impact that policies, programmes, and subsidy schemes will have on LMDs, to avoid unintended consequences and where possible to work through them to build sustainable markets. For the most mature product categories, such as off-grid solar, meaningfully enforced, mandatory quality standards are needed to help keep poor-quality products out of the market.

Further research is needed to broaden our understanding of the LMD sector as a whole, and to look in more depth at specific business model challenges. Regular sales data collection would give a sense of the size of beneficial product markets, and enable us to start monitoring trends over time. Customer research would verify last mile customer characteristics, including the social impact of beneficial products and the sector's overall contribution to the SDGs. Product category research is lacking in some areas, such as health, nutrition, and sanitation, and the differences between markets for consumable and durable goods – and the interplay between them – needs to be better understood. Focused business model research in specific areas, for example around staff retention or governance, could also yield valuable guidance for LMDs and help establish a benchmark for the sector. The ways in which LMDs help to build markets, the challenges they face, and their potential solutions all warrant further scrutiny, exploration, and innovation.

LMDs' role in building markets, the challenges they face, and potential solutions all warrant further scrutiny

Finally, expanding the scope of the survey to include all kinds of companies engaged in last mile distribution – such as retailers, manufacturers with proprietary distribution, MFIs, multinationals, and others – would allow for a more comprehensive view of the sector as a whole. Only by better understanding the sector, and its opportunities for intervention, can we catalyse the urgent action needed to unlock its significant potential towards meeting the Sustainable Development Goals.

Annex 1: Beneficial household products that contribute to the SDGs

Product categories and their social impact

Off-grid solar lights and home systems: LMDs sell a range of off-grid solar products, from single light solar lights to larger solar home systems that come bundled with appliances such as radios, torches, and televisions. Solar lights can deliver significant savings on inefficient lighting and phone charging, whilst larger solar home systems deliver a significantly higher service level for similar monthly expenditure, whilst boosting productivity (Rom et al., 2017; GOGLA et al., 2019). GOGLA estimates that 108 million people currently enjoy improved energy access from products sold by participating affiliates, and that this represents only about a third of the overall off-grid solar market (GOGLA et al., 2019).

Clean cookstoves and fuels: Cooking technologies include improved cookstoves, advanced gasifier cookstoves, and cleaner fuels such as liquid petroleum gas (LPG), biogas, and biomass pellets (IEA, 2011). These products reduce indoor air pollution caused by cooking over an open fire or with rudimentary biomass stoves. Sustainable Energy for All (SEforALL) estimates that on average 84 million people gained access each year from 2014–16, but notes that this only marginally outpaced population growth (IEA et al., 2019). A step change in the annual access growth rate, from 0.5 per cent to 3 per cent, is needed to achieve universal access by 2030 (IEA et al., 2019).

Water filters and purifiers: Point-of-use water filters and purifiers can be lifesaving for families that lack access to clean drinking water. Drinking from untreated surface water sources can expose families to waterborne diseases, including typhoid, cholera, dysentery, and diarrhoea. An estimated 800 children die each day from preventable water- and sanitation-related diseases (United Nations, 2019). Although exact figures are not available, awareness and uptake of point-of-use treatments remains low (UNESCO, 2019).

Nutrition products: Fortified foods or nutritional supplements have been specifically formulated to fulfil the nutritional needs of infants and young children. These products can be critical in combatting malnutrition, which kills an estimated 3.1 million children under age five and leaves 165 million stunted each year (Hystra, 2014). Many products, such as iron folate tablets,

are for pregnant or lactating women, and some, such as iodized salt, are for the whole family.

Agricultural products: Also contributing to improved nutrition and improved livelihoods, LMDs are a key distribution channel for a range of agricultural inputs and equipment, including seeds, fertilizers, herbicides, irrigation pumps, and manual sprayers.

Electric appliances: Appliances convert energy access into energy services that improve quality of life. Fans provide comfort in hot climates, while mobile phones, radios, and televisions enhance connectivity and access to information (Global LEAP et al., 2016; Urmee and Harries, 2011; World Bank, 2008).

Health products: LMDs are also an important distribution channel for health products, including medicines (paracetamol, antimalarial pills, etc.), antibacterial soap, eyeglasses, menstrual hygiene products, and contraceptives. Health products contribute to SDG 3 on Good Health and Wellbeing, while contraceptives are key to sexual and reproductive health.

Access through beneficial products: Off-grid solar and clean cooking market penetration in Ethiopia, Rwanda, and Cambodia

The SEforALL multi-tier framework measures access to electricity and clean cooking on a graded scale – providing insight into the size of markets for off-grid solar products and clean cookstoves, as well as willingness to pay – in Ethiopia, Rwanda, and Cambodia.

In Ethiopia, off-grid solar has provided electricity access to over 20 per cent of the population – roughly 14 million people. In Cambodia, 13 per cent of the population has gained access through off-grid solar. In Rwanda, 4 per cent of the population has gained access through off-grid solar. **Off-grid solar markets in all three countries have made a substantial contribution to achievement of the SDGs.**

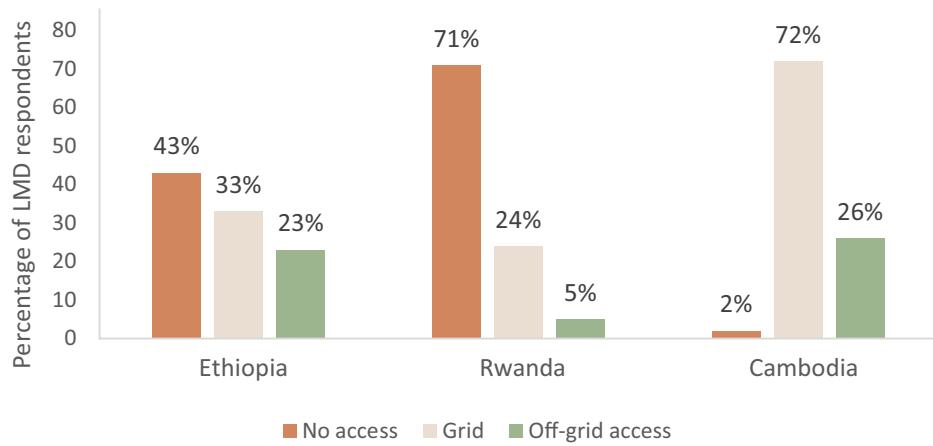


Figure 12: Access through grid and off-grid solutions

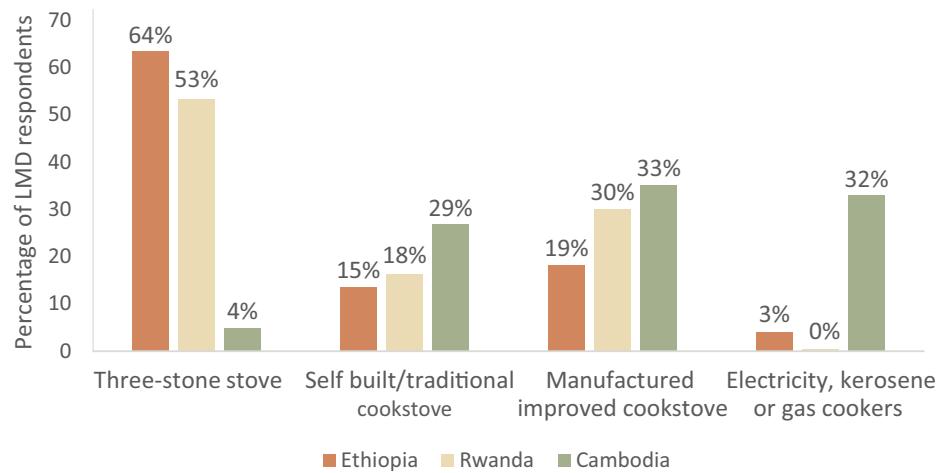


Figure 13: Primary cooking technology

In Ethiopia and Rwanda, roughly 80 per cent and 70 per cent, respectively, cooked with inefficient three-stone or traditional biomass cookstoves. In Cambodia, this figure was much lower, at 32 per cent. Across the three countries, where there has been progress in the shift to cleaner methods of cooking, this has been driven by distribution of improved biomass cookstoves. Only in Cambodia was there a sizeable penetration of costlier alternatives, such as electric or gas cookers. **Improved cookstoves have also already made a substantial contribution towards the SDGs in all three countries.**

Endnotes

1. The remaining 11 per cent come from South East Asia (5 per cent), Central Africa (3 per cent), Southern Africa (1 per cent), and other (2 per cent).
2. These figures are based on open-ended questions that did not require the interviewee to disclose amounts of funding received. Only 62 LMDs answered the question in ways that were appropriate for inclusion in this analysis.
3. 12 per cent use both independent retailers and proprietary retail networks.
4. Sample size = 72. Totals are >100 per cent as LMDs use multiple distribution channel types and multiple partner types.
Sample size for 'proportion of LMDs by partner type' = 27. 'Community organizations.' includes SACCOs, cooperatives, and savings groups.
5. Sample size = 72.
6. This course was a series of webinars on marketing and distribution for the BoP by Hystra, sponsored by the ÉLAN programme in DRC.
7. Source: Interview with researchers on CLASP's Low-Energy Inclusive Appliances programme.
8. Source: Interview with Noah Perin, CEO of VIA Global Health.
9. These included the companies studied by Hystra (2013, 2014), and individual assignments with additional LMDs between 2014 and 2019.
10. Source: Interview with EduMe.
11. Source: Interview with Shortlist.
12. Source: Interview with Enlight Institute.
13. Sample size = 70.
14. Total adds up to more than 100 per cent as some LMDs raised funding from multiple funder types.
15. Sample size = 27; one outlier removed.

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Last Mile Distribution

State of the sector report

The *Last Mile Distribution: State of the sector report* offers a unique window into the challenges, priorities and opportunities for last mile distributors. It provides tangible recommendations for donors, investors, and other stakeholders on how to engage with, invest in, and support the sector.

This research comes at a critical time. Billions of people around the world still lack access to beneficial products such as solar lights, improved cookstoves, water filters and agricultural tools and equipment. This report highlights the vital role of last mile distributors in creating markets for, and effectively reaching last mile customers with, such products.

Based on a survey of 72 Global Distributors Collective (GDC) members from 30 countries, as well as a series of expert interviews, this is a first-of-its kind study and an essential resource for those working in the last mile distribution sector.

'The data in this report is astoundingly useful.'

Leslie Labruto, Head of Global Energy, Acumen

'This report is essential reading for organizations committed to achieving the Sustainable Development Goals through a sustainable, market-based approach.'

Lieselotte Heederik, Co-founder, Nazava (GDC member)

'This research is critical because it allows us to better design and implement activities that address the challenges faced by smaller companies on the ground. The timing could hardly be better.'

Michael Franz, Team Leader, GET.invest

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