



ENERGIZING FINANCE  
REPORT SERIES

# TAKING THE PULSE

UNDERSTANDING ENERGY ACCESS MARKET NEEDS  
IN FIVE HIGH-IMPACT COUNTRIES





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# FOREWORD

This new report, *Taking the Pulse: Understanding Energy Access Market Needs in Five High-Impact Countries*, provides a pathway to elevate financing support for enterprises delivering decentralized renewable energy and clean cooking fuels and technologies to vulnerable populations in Asia and Africa.

The report findings are specifically geared for government leaders, donors, development finance players and energy access enterprises that all play critical roles in accelerating access to electricity and clean cooking—two cornerstone priorities of the globally agreed Sustainable Development Goals.

Our findings are especially relevant for countries in Asia and Sub-Saharan Africa, which have significant energy access gaps and promising opportunities to close those gaps more quickly and at less cost by boosting financing support to decentralized energy access providers. We offer specific recommendations on what's needed.

While many studies have estimated amounts of investment needed to meet energy access goals, none have attempted to systematically capture what developing countries are committing to on energy access and, most importantly, how much is going to decentralized energy access solutions.

This report is part of a unique and broader research effort

by Sustainable Energy for All, the World Bank, the African Development Bank, Climate Policy Initiative, E3 Analytics and Practical Action Consulting, that for the first time begins to answer these critical questions.

This report, by Practical Action Consulting and E3 Analytics, presents much-needed evidence on how enterprises delivering access to electricity and clean cooking are being financed in five countries – Bangladesh, Ethiopia, Kenya, Myanmar and Nigeria. These countries represent five highly different energy access markets from the 20 high-impact countries whose effort to increase access to electricity and clean cooking can make the biggest difference on a global scale. Each offers unique lessons for increasing finance flows to Tiers 1-3 access solutions, as set out in the World Bank's Multi-Tier Framework—specifically, improved cookstoves, cleaner fuels, solar lanterns, solar home systems and lower capacity solar mini grids.

The report's biggest takeaway is that overall finance flows are way too low and that enterprises themselves, while still growing and sometimes thriving, face complex financing challenges that differ widely from country to country, with varying levels of debt, equity and grant funding needs.

Despite declining production costs and improved reliability of decentralized solar, finance flows to enterprises in this sector are a fraction of what is needed to scale their businesses exponentially, especially to serve rural areas

where demand for their products is greatest. We offer specific recommendations for elevating finance levels, including steps that will make it easier for enterprises to access capital more readily and at reasonable costs.

In the case of clean cooking, the challenges are far bigger, with enterprises being effectively starved of finance. Fixing this financing gap will require significantly more attention from governments, donors, customers, NGOs and investors who will need to coalesce around bolder market-based solutions. The report also takes a first effort at assessing the overall cost requirements for advancing to cleaner fuels, including LPG, ethanol and natural gas, presenting estimates on finance flows that will be needed from consumers, governments and the private sector.

Our research comes at a critical juncture in achieving – or falling short – on global energy access goals. We have just 13 years left to achieve universal access to affordable, reliable, sustainable and modern energy by 2030. Yet, based

on the latest 2017 Global Tracking Framework data, just over one billion people globally still lack access to electricity and three billion lack access to clean cooking. A big segment of these populations is in the five countries we targeted.

These numbers are astounding and unacceptable. Lacking access to electricity means food cannot be refrigerated, vaccines cannot be kept safe and school children cannot do homework at night. Similarly, indoor cooking pollution from burning charcoal, wood and other fuels kills millions every year, while depleting already diminished forest cover. There is a larger economic toll, too. Countries that leave these populations behind undermine long-term economic development as well as national security.

We can and must do better to accelerate energy access progress. We hope this report guides its readers on the pathways for doing so.



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# EXECUTIVE SUMMARY

Some 1.06 billion people lack access to electricity and 3.04 billion lack access to clean cooking technologies worldwide (IEA and World Bank, 2017). Delivering modern energy services to all citizens by 2030 is a key Sustainable Development Goal agreed by the United Nations.<sup>1</sup> Achieving it requires major shifts in how financing is provided to enterprises supplying decentralized energy services and a systemic change in global financial mechanisms supporting the sector. This report provides a first-of-a-kind analysis of key unmet financing needs and discusses the barriers that need to be addressed so that private enterprises can deliver energy access solutions at an exponentially larger scale.

Based on nearly 100 in-depth interviews with senior-level officials from enterprises, non-governmental organizations (NGOs) and development finance institutions (DFIs) working in energy access—combined with economic and financial data from each country—this study illustrates how enterprises delivering access to electricity and clean cooking are being financed in Bangladesh, Ethiopia, Kenya, Myanmar and Nigeria. These countries represent five highly different energy access markets across Sub-Saharan Africa and Asia. They also belong to the 20 high-impact countries whose efforts to increase access to electricity and clean cooking can make the most difference on a global scale (IEA and World Bank, 2015).

Each country analysis presented offers unique lessons for increasing the flow of finance to the energy access sector. The core of the analysis focuses on energy access solutions found in Tiers 1-3, which include improved wood and charcoal cookstoves in the cooking sector, as well as solar lanterns, solar home systems (SHS) and lower capacity mini-grids in the electricity sector (Bhatia and Angelou, 2015). Insights are presented on: enterprises' current financing structures; their reliance on debt, equity and grants; the main barriers they face to scaling-up; and the volume and composition of finance needed to reach national energy access targets.

The energy access sectors in the five surveyed countries are highly complex, with most enterprises operating on thin margins in high-risk environments with few protections against downside risks; whether economic, environmental (e.g., droughts) or political. Despite these headwinds, many enterprises are not only operational—numerous enterprises are growing and some are even thriving.

Due to declining production costs and improved reliability of decentralized technologies and appliances—as well as better customer analytics, growing consumer finance, and increasing government recognition of the potential for decentralized electricity and clean cooking solutions—the prospects for achieving a market-driven scale-up of these energy access solutions are stronger than ever.

## THE COSTS OF ACHIEVING NATIONAL ENERGY ACCESS TARGETS

In 2013-14, annual average financing in the 20 high-impact countries for electricity and clean cooking was \$19.4 billion for electricity access and \$32 million for residential clean cooking (SEforALL, CPI and the World Bank, 2017). Current flows remain a very small fraction of what is ultimately needed to achieve universal energy access, including in the five countries surveyed in this report. This report shows that to reach national targets for Tiers 1-3 energy access in the five countries surveyed, annual finance needs are estimated at approximately \$3.97 billion.

The cost of achieving government targets for electricity access is highly dependent on the targeted Tier of access (Table ES.1). Per the World Bank's Access Investment Model (AIM), the per-household cost of providing Tier 1 electricity access is roughly 50 times less expensive than higher service Tier 5 access (World Bank, 2017a). And although Tier 1-3 access does not provide electricity supply around

the clock as fully or reliably as higher Tiers, it can trigger significant development gains in terms of public health, education, gender equality, business opportunity and overall human wellbeing.

In the clean cooking sector, the gap between needs and actual supply of finance for meeting national targets is even more substantial. Across the four countries for which cost estimates have been conducted (Bangladesh, Ethiopia, Kenya, Nigeria),<sup>2</sup> the total estimated costs of meeting clean cooking targets—including both technology and fuels—stands at \$18.44 billion per year through 2030. Current annual spending for residential clean cooking across the 20 high-impact countries stood at a mere \$32 million, indicating how large the financing gap in the clean cooking sector is (SEforALL, CPI and the World Bank, 2017).

While unmet financing needs to achieve universal energy access are enormous, they do not seem insurmountable when compared with each country's GDP.

Table ES1 - Cumulative cost of meeting government energy access targets (\$, billion, 2017-30) - Annual cost as a percentage of GDP in brackets

Country	GDP (\$ billion)	Tiers 1-3 Electricity (\$ billion)	Tiers 1-3 Cooking (\$ billion)	Tiers 4-5 Cooking (\$ billion)
Bangladesh	221	6.11 (0.20%)	20.93 (0.68%)	55.13 (1.78%)
Ethiopia	72	13.78 (1.37%)	24.94 (2.47%)	30.43 (3.02%)
Kenya	71	14.99 (1.51%)	11.52 (1.16%)	17.75 (1.78%)
Myanmar	67	2.21 (0.24%)	7.91 (0.84%)	13.64 (1.46%)
Nigeria	405	18.44 (0.33%)	31.26 (0.55%)	66.23 (1.17%)

<sup>1</sup> In September 2015, world leaders agreed on 17 Sustainable Development Goals (SDGs). SDG 7 calls for access to affordable, reliable, sustainable and modern energy for all by 2030.

<sup>2</sup> In Myanmar, no clean cooking enterprises were identified for inclusion in the surveys.

Table ES.2 provides an overview of the costs per capita from two perspectives, based on average annual commitments between 2013-15 (SEforALL, CPI and the World Bank, 2017) and on estimates of annual future cost requirements to meet national targets, based on 2014 population numbers. These numbers show the significant per capita spend increases required to achieve and maintain national clean cooking access targets in each country surveyed. It should be noted that the in-country surveys may not capture all finance flowing, especially from untracked or informal market segments, and this is therefore indicative

of the scale of the market gap but not definitive.

The differences in per capita costs are caused by a range of factors—including by the total access gap—as well as by differences in the country-specific targets in terms of the share of the population that will achieve access under each Tier. Note that the bulk of the analysis included in this report is based on the cost per household and that the number of inhabitants per household ranges from 4.4 to 5.1 in the countries surveyed.

Table ES2 - Estimated costs of meeting electricity and clean cooking targets, per capita

Country	Average annual finance commitments for electricity (Tiers 1-5), per capita, 2013-15* (\$)	Estimated annual costs of meeting electricity targets (Tiers 1 – 3 only), per capita through 2030 (\$)	Average annual finance commitments for clean cooking, per capita, 2013-15* (\$)	Estimated annual costs of meeting clean cooking targets, including both technologies and fuels per capita through 2030 (\$)
Bangladesh	33	2.34	>0.1	33.76
Ethiopia	13	7.12	0.12	39.79
Kenya	24	16.37	0.15	29.00

\* Data sourced from SEforALL, CPI and the World Bank (2017).

Due to data gaps in determining appropriate average values for the costs of achieving Tiers 4 and 5 of electricity access that would reflect country-specific factors such as grid extension costs, population density, national fuel mix, etc., the totals for the cost of Tiers 4 and 5 of electricity access have not been included here.

While the total investment requirements are large, it must be underscored that investors respond to opportunities, not to funding needs. A critical challenge in the energy sector is therefore to convert the energy access challenge—for both electricity and clean cooking—into investable opportunities. Table ES.3 highlights some of

the key features and challenges that will factor into seizing these opportunities.

This research took a rather novel approach to estimate the shares of debt, equity and grants (D:E:G) that would be needed for enterprises focused on Tier 1-3 energy access in each of the five countries surveyed for the electricity and clean cooking sectors. The objective of this approach was to present an indication of the type of financing needed by these types of enterprises to inform governments, donors, investors and other stakeholders on the nature of the finance instruments and structures that will be necessary to close the energy access gap (Figure ES.1 and ES.2).

Table ES3 - Key market features and enterprise challenges

Country	Key market features and enterprise challenges
Bangladesh	<ul style="list-style-type: none"> <li>• Low-cost debt financing provided by IDCOL (priced at 6-9 percent and offered in local currency) widely used by energy access enterprises.</li> <li>• Only market with significant shares of debt in enterprises' capital structure.</li> <li>• Many large and highly diversified companies active in many different parts of the energy access sector.</li> </ul>
Ethiopia	<ul style="list-style-type: none"> <li>• Comparatively small and under-developed energy access market.</li> <li>• Primarily equity financed.</li> <li>• Lack of local debt available to small and medium enterprises.</li> <li>• Lack of a functioning foreign exchange market remains a major barrier.</li> </ul>
Kenya	<ul style="list-style-type: none"> <li>• One of the most dynamic countries in the world for energy access and PAYGO solar markets; active mobile money market.</li> <li>• Primarily equity financed. Equity often the founder's own funds combined with additional equity from friends and relatives; international investors, funds and foundations playing a growing role.</li> <li>• Lack of local debt and local currency financing available to small and medium enterprises.</li> </ul>
Myanmar	<ul style="list-style-type: none"> <li>• Comparatively small and under-developed energy access market.</li> <li>• Primarily donor financed with small shares of corporate equity.</li> <li>• Planning heavily weighted toward Tiers 4-5.</li> <li>• Small clean cooking sector, despite the large need for clean cooking.</li> </ul>
Nigeria	<ul style="list-style-type: none"> <li>• Large and complex energy access market with many players, but comparatively few investors.</li> <li>• Primarily owner equity financed. Virtually no equity from friends and relatives.</li> <li>• Large recent negative impact of economic downturn and currency fluctuations.</li> </ul>

### MAIN FINANCE BARRIERS FOR ENERGY ACCESS

Lenders' high collateral requirements remain a powerful barrier for small and medium enterprises (SMEs) in energy access enterprises trying to obtain finance. This factor was highlighted by respondents in all five countries surveyed.

Currency issues remain problematic in many countries. Fluctuations in exchange rates lead to unpredictability in the unit cost for imported equipment and associated costs that are incurred in US dollars (USD). This volatility makes it all-but-impossible to offer stable, predictable pricing for customers and has significant negative impacts on customers' own ability to pay.

In Ethiopia, the central banking restriction on access to foreign currency, specifically USD, further restricts companies from importing sufficient quantities of products, as these are usually priced in USD. Such delays have direct and sizeable impacts on enterprises' ability to meet customers' needs continuously throughout the year.

In addition, it is notable that access to finance remains much harder for female than for male entrepreneurs across all surveyed countries, for both cooking and electricity access enterprises.

Although several important commonalities could be found—such as the need for working capital, better access to foreign exchange, as well as the crucial importance of mobile money for reducing customer acquisition and loan

Figure ES1 - Estimated cost and D:E:G shares to achieve national targets for Tiers 1-3 of electricity access (\$, billion, 2017-30)

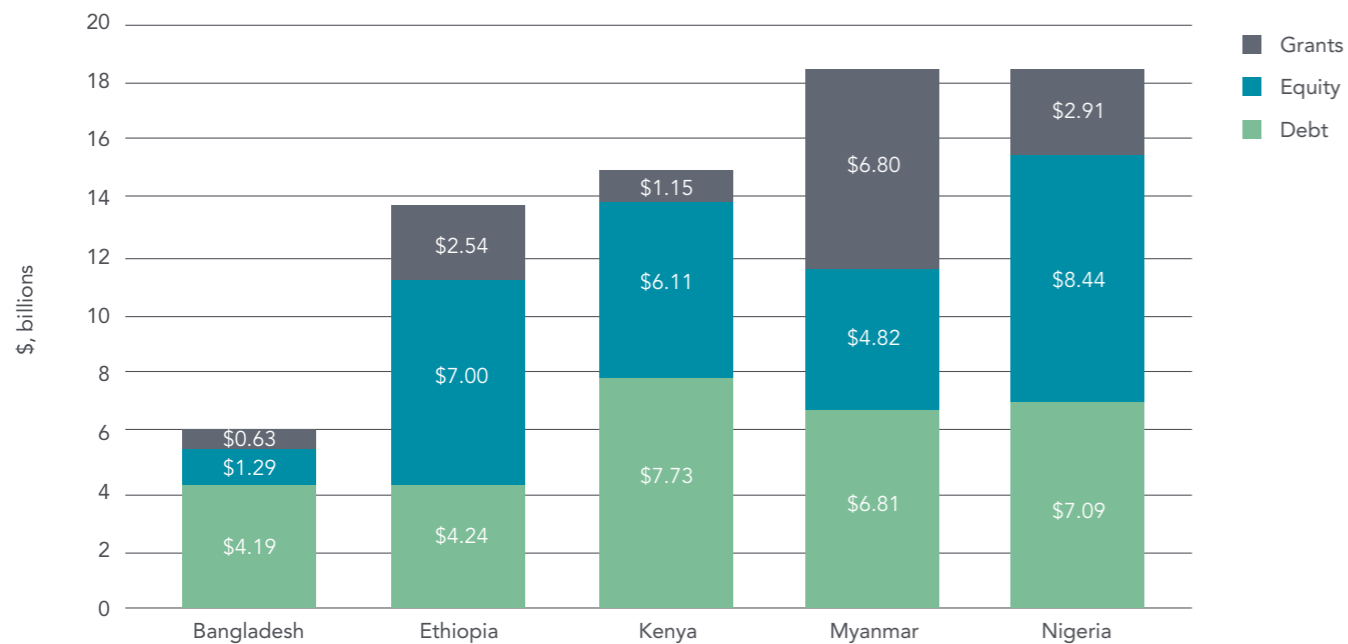


Figure ES2 - Total estimated cost and D:E:G shares to achieve Tiers 1-3 of national clean cooking targets, including both technology and fuel costs (\$, billion, 2017-30)



Note: due to the inability to secure interviews from cooking sector enterprises in Myanmar, no D:E:G ratio data was gathered. As a result, Myanmar has been left out of the cooking cost estimate. The cost of meeting Tiers 1-3 cooking access in Myanmar is estimated at \$7.91 billion, including both fuel and cookstoves.

collection costs—each individual market differed markedly from the other. In Kenya, for example, private international equity from impact and venture capital investors plays a significant role, while this remains a comparatively small part of the market in the other countries surveyed. In Myanmar and Bangladesh, very little private capital was identified from international investors, with most funds coming from development finance institutions, government-backed infrastructure or development agencies.

### ELECTRICITY

At the heart of improving the energy access sector’s “investability” is the creation of strong enabling environments—particularly in the energy, investment and banking sectors—through the establishment of effective and transparent rules. Given the levels of debt, equity and grants estimated across the five countries for electricity and clean cooking access, it is imperative that governments, donors, investors, development finance institutions, the private sector and civil society organizations collaborate. Actions across the national policy and regulatory system in the energy, banking, investment and trade arenas must be looked at holistically to accelerate needed finance flows. Clear policy and consistent government planning about grid extension and mini-grid development remain critical to provide more certainty for enterprises, as well as donors and NGOs.

The solar lantern product market is mature, highly competitive, increasingly global in nature and a key part of achieving energy access gains in all five markets surveyed. Solar lanterns remain the most widely used and affordable solution available for Tier 1 electricity access, undercutting kerosene, torches and candles for basic household lighting needs. Solar lantern enterprises face challenges, however, in accessing working capital and consumer finance. The working capital need is frequently exacerbated by issues surrounding foreign exchange markets, currency volatility, import duties and VAT regimes. Significant energy access gains could be achieved by simplifying import procedures and tariffs, reducing or eliminating value-added taxes and

introducing dedicated working capital facilities for enterprises working in this field, as well as by improving their access to foreign currency.

The rise of pay-as-you-go (PAYGO) companies in the SHS market signals a major shift from prior business models. PAYGO companies can provide reliable, affordable electricity access at a fraction of the upfront cost of traditional grid extension and often in a fraction of the time. In Kenya, the combination of sophisticated real-time analytics, large networks of on-the-ground sales representatives, customized consumer finance solutions and the spread of mobile money has proved to be a powerful combination that is helping make significant gains in electricity access. While the other four countries surveyed show varying levels of adaption and replication of the PAYGO business model, none is nearly as advanced in this regard as Kenya, which remains a market leader. The latter’s success was contingent on a range of factors, including policy clarity, a well-developed financial sector, an active mobile money market, ready access to foreign exchange, a relatively stable currency and simplified import procedures.

The interviews revealed that it is not uncommon for enterprises delivering energy access products and services to also be active in other sectors, including manufacturing, retail, construction and advisory services. Among those interviewed in Bangladesh, many enterprises derive a significant portion of their sales from non-energy access activities. Similarly, several PAYGO companies in East Africa are diversifying their operations. As a growing number of enterprises begin to understand the power of marketing new products and services to existing customers, they are building on continuing customer relationships—and in some cases, credit histories—to sell appliances and productive use technologies, such as pumps and refrigeration, as well as residential and commercial cooking solutions. This diversification can create a stronger customer base, better cash flow, wider business networks and greater adaptability to changing market needs. In addition, spreading high customer acquisition costs over a larger total volume of receivables can strengthen the business case for opera-

ting in rural and remote regions where the financial return on investment is often thin or even negative due to high transaction costs and low per-customer sales volume.

The mini-grids sector as a whole is currently not considered as “bankable” as the solar lantern or SHS market segments. There are several reasons for this, including: 1) a lack of mini-grid developers that have demonstrated a commercially viable and scalable model of mini-grid development; 2) solar lanterns and SHS operate under comparatively few regulatory constraints critical to profitability, such as pricing; and 3) most mini-grids effectively compete with grid-based power either directly or indirectly in terms of price, quantity and quality of service. Since national tariffs are often subsidized, it can be extremely difficult for mini-grid projects to achieve profitability, forcing them to rely heavily on grants or government subsidies. Combined with a host of political and regulatory risks surrounding issues such as the introduction of fixed tariffs or the extension of the national grid, mini-grids continue to be less attractive to commercial investors. However, the development of new regulatory frameworks and supporting policies—such as those recently announced in Nigeria—could galvanize interest and reduce investment risks in this market segment.

## CLEAN COOKING

A small number of surveyed companies providing clean cooking solutions, mainly in Kenya and Nigeria, were making profits. A critical factor to this success was ensuring customers had easy access to finance, since the price of most improved cookstoves on the market sits just above what consumers are willing (or able) to pay in cash. As the use of small-scale consumer finance in the cooking sector becomes more common, the sector’s commercial viability can be expected to improve.

Despite its urgency and the significant health and development gains it can bring, the cooking sector continues to receive far too little attention and finance. Strikingly, none of the major development finance institutions interviewed in Myanmar reported cooking as a priority, even though approximately 50 million people remain without access to clean cooking (EMC, 2015).

Including the costs of fuel is critical to properly assessing the clean cooking market. An asset-based approach to calculating the cost of energy access works relatively well for the electricity sector, particularly for Tiers 1-3. This is the basis upon which projections of the investment needs to achieve universal clean energy access are often based. However, this approach is insufficient to calculate the total costs of achieving clean cooking, largely because most of the costs of clean cooking fuels and technologies are found in the fuels, not in the stoves. On a lifecycle basis, for most basic stoves on the market that range from \$20 - \$60 per stove, the cost of the stove is less than five percent of the total amount that a household will spend on clean cooking fuels and technologies through 2030 in the four countries surveyed for clean cooking. As such, the analysis used for the cooking sector considers the fuels and the costs of the stove. While this results in larger absolute numbers, it provides a more holistic picture of the size of the cooking market.

There is tremendous potential to support the emergence of diversified cooking sector enterprises that can provide partially or fully, vertically integrated solutions to the challenges facing the sector. Much of the clean cooking discourse focuses on the supply of advanced cook stoves, whereas the overwhelming majority of revenues in the sector rests with the supply of fuel (e.g., charcoal, kerosene, lignite, liquefied petroleum gas (LPG)). Supporting clean cooking enterprises could involve the expansion of enterprise and consumer finance as well as larger

investments in the infrastructure required for expanded supply of cleaner fuels such as LPG, ethanol and natural gas. Some businesses in Bangladesh and Kenya are already diversifying to offer cleaner cooking alternatives and more can be expected to do so in the years ahead, particularly when assisted by effective policies and access to adequate funding.

The clean cooking sector requires significantly more attention from governments, donors, customers, NGOs and private investors. The finance needs for the cooking sector—when fuel supply costs are factored in—are significant. In Bangladesh, Ethiopia, Kenya and Nigeria, the cumulative costs of meeting government targets for the cooking sector (Tiers 1-5) by 2030 are estimated to be in the order of \$258.2 billion. Through 2030, over 95 percent of the sector is found not in the stoves, but in the fuels in these four countries.

Greater investment is needed to raise awareness across all stakeholders of the health, productivity and deforestation impacts of current cooking technologies and high-polluting fuels and practices, as well as of the value proposition of saving time and money by switching to cleaner stoves and fuels. It is often difficult for consumers to appreciate the significant impacts that higher efficiency stoves can bring in terms of both time and money; more is needed to make these benefits clear, intuitive and actionable for consumers, particularly those at the lower-income quintiles.

## FINANCING FOR ENERGY ACCESS

Enterprises providing Tiers 1 to 3 electricity access were largely financed via corporate equity (i.e., own funds) and/or grants. Project equity was rarely used by enterprises beyond funding specific productive use projects such as solar-powered pumps. This is a sharp distinction to the

financing of larger-scale electrification projects, including grid-connected renewables—that are flowing via project debt and project equity—and is reflected in the estimates of future equity needs.

Private-sector enterprises active in the energy access sector in Ethiopia, Kenya, Myanmar and Nigeria remain primarily equity financed, with Bangladesh being a notable exception.<sup>3</sup> However, energy access enterprises see their reliance on debt financing increasing in the years ahead and understand debt will be necessary to scale. This stands in stark contrast to the almost complete lack of debt, particularly local currency debt, available to them. Bangladesh was the only country surveyed where debt finance was common and widespread for SMEs working in the energy access sector. The Infrastructure Development Company Ltd (IDCOL) of Bangladesh has been providing the readily available and reasonably priced local currency debt, with the result of Bangladesh’s several energy access enterprises serving hundreds of thousands of customers and reporting annual sales from this sector exceeding \$10 million in 2013-14 and 2015-16. Bangladesh therefore provides one clear example of how greater volumes of debt can be made available to enterprises in the energy access sector.

And yet, across the remaining four countries surveyed, lenders remain unwilling to offer loans to enterprises in the sector, with few exceptions, thus presenting significant financing challenges for those servicing the Tier 1-3 energy access markets. While longer company track records combined with improved analytics and customer data is likely to improve the willingness of banks to lend, loan requirements remain too onerous for most enterprises, particularly local ones. While there is no easy solution for adjusting loan requirements, a softening of lending standards and the admissibility of a wider range of assets

<sup>3</sup> It should be noted that some of Kenya’s larger PAYGO companies that have attracted external financing either declined to take part in the surveys or declined to share key financial information that may have revealed a different pattern, as well as resulted in different Debt:Equity:Grant (D:E:G) ratios for the sector as a whole. In other countries surveyed, it was primarily corporate equity reinvested into the company. In Myanmar and Nigeria, by contrast, virtually no equity from friends and relatives was registered at all, with equity coming directly from proprietors.



(including customer receivables) as factors in the loan evaluation process, could help accelerate local currency lending and improve the availability of local currency debt through demonstrating the “bankability” of local energy enterprises.

Enterprises require: targeted market support mechanisms such as local currency financing or other means to address extreme currency fluctuations; access to consumer finance to help boost the affordability of products and take consumer loans off companies’ balance sheets; and, dedicated working capital facilities to help enterprises scale.

Energy access transactions face high transaction costs. However, the pool of potential funders and investors is constrained by small transactions sizes. This basic problem requires urgent attention if finance is to flow at scale. Several interviewees suggested that transactions on the order of \$30-100 million were necessary to bring in larger lenders and investors.

Governments should be assisted in creating enabling environments for energy access businesses operations and investments, including a stable policy environment, light-touch regulatory conditions and supportive conditions for the mobile money sector, as well as business, accounting and management training for local energy access enterprises.

In markets that are generally functioning and scaling well, grant and other donor funds have a significantly greater potential to be disruptive, even transformative. However, donor funds can also be distortive, can crowd out private

sector activity, and are often insufficiently targeted. As energy access markets mature, donor funds should be targeted towards households at the lower quintiles of income to provide affordable, reliable and sustainable energy for those facing the highest relative cost of energy services.

Expectations regarding enterprises’ future reliance on grants were mixed. In some countries, such as Myanmar and Nigeria, the expectation was that grant reliance would remain a critical part of their business model in the years to come. In comparably advanced markets like Kenya, grant funds were seen more sceptically; some enterprises lamented the lengthy application processes and reporting requirements, while others (particularly locally owned companies) expressed concern that grants could jeopardize customers’ perceptions of them as a commercial company.

To achieve profitability, several surveyed companies were targeting urban and peri-urban areas, where the costs of sales, customer acquisition and maintaining distribution networks were considerably lower, leaving many hard-to-reach areas underserved. This is particularly the case in Kenya and Nigeria. Achieving universal energy access will require dedicated donors, DFIs and impact funds to target households at the lower quintiles of income or in very remote areas. This can help ensure that public funds are not distorting market activity that is already being met profitably by private-sector actors, but rather supporting enterprises in their efforts to serve the hardest-to-reach households.



To find out more, please visit [SEforALL.org/EnergizingFinance](https://SEforALL.org/EnergizingFinance)



# ABBREVIATIONS

%	Percent
\$	US Dollar
AIM	Access Investment Model
Bn	Billion
CPI	Climate Policy Initiative
D: E: G	Debt: Equity: Grant
DFI	Development Finance Institutions
IDCOL	Infrastructure Development Company Ltd
LPG	Liquefied Petroleum Gas
MTF	Multi-Tier Framework
NGO	Non-governmental organization
PAYGO	Pay-as-you-go
SEforALL	Sustainable Energy for All
SHS	Solar home system
SME	Small- and Medium-sized Enterprises
USD	US Dollar



# GLOSSARY

**Absolute energy access gap:** the total energy access gap in terms of inhabitants or households considered after population growth. It is assumed that all new citizens being born through 2030 need energy access. The absolute energy access gap refers to the current population needing electricity access plus future population growth.

**Borrower:** the loan recipient.

**Capital structure:** refers to the structure of debt and equity and other funds in a project or company's overall financing. For instance, if a company has \$800,000 in equity and \$200,000 in debt invested, then it would have a capital structure that is comprised of 80 percent equity and 20 percent debt (or 80/20).

**Cash flows:** the revenues generated by a project or venture.

**Collateral requirements:** the requirements imposed by banks and other financial institutions that borrowers demonstrate they have assets sufficient to cover the costs of the loan in the event of default or bankruptcy. Collateral can include land, cash and other hard assets.

**Consumer finance / End-user finance:** finance provided directly or indirectly to consumers that allows them to pay for their energy access products (lanterns, cook stoves, etc.) over a period of time (e.g., 30 days, 90 days, 1 year).

**Corporate debt:** a loan given to an enterprise or company that is issued primarily based on the credit-worthiness of the company itself, rather than of any specific individual project or sector they are active in. In other words, the loan is given to the company to do what it likes, without conditions attached concerning how the money is spent. Corpo-

rate debt is therefore typically only awarded to companies with a proven track record of performance.

**Credit risk:** the possibility that an enterprise or company cannot pay back its loans or financial commitments in time. Companies with a higher perceived credit risk typically pay higher interest rates on their loans, or may fail to obtain loans altogether.

**Debt:** debt is typically provided in the form of loans either to individuals or companies. Providers of debt are considered "lenders," in contrast to providers of equity, who are typically considered "investors." Crucially, debt providers are generally first (i.e., have priority) in the repayment of financial obligations.

**Equity:** private or own funds invested in a specific company or venture. Generally, equity is more expensive than debt (i.e., carries a higher interest rate). In many cases, an equity investment made in a specific company comes with certain implications, including an ownership share or voting share commensurate with the amount of equity invested. Equity investors are sometimes considered "shareholders" or "sponsors" of the company.

**High-impact countries:** the 20 countries with the highest absolute gaps in access to electricity and/or clean fuels and technologies for cooking measured by population, as identified in the 2015 Global Tracking Framework (IEA and the World Bank, 2015). For electricity access the countries are: Afghanistan, Angola, Bangladesh, Burkina Faso, Congo (DR), Ethiopia, India, Kenya, Korea (DPR), Madagascar, Malawi, Mozambique, Myanmar, Niger, Nigeria, the Philippines, Sudan, Tanzania, Uganda and Yemen. For clean cooking access the countries are: Afghanistan, Bangladesh, China, Congo (DR), Ethiopia, India, Indonesia, Kenya,

Korea (DPR), Madagascar, Mozambique, Myanmar, Nepal, Nigeria, Pakistan, the Philippines, Sudan, Tanzania, Uganda and Vietnam.

**Liquidity:** the ability of a company to satisfy its short-term obligations, either with cash or by rapidly converting some of its assets (e.g., inventory) into cash. For most enterprises, having enough liquidity is vital.

**Mezzanine finance:** a hybrid form of finance that is neither purely equity nor purely debt, and sits between the two. Mezzanine finance is typically considered a form of debt that enables the investor, or sponsor, to convert their investment into a full equity investment if the company shows signs of failing. This enables the finance provider to gain more control over the operations and management of the company than a traditional loan would allow.

**Multi-Tier Framework:** to measure the quality of the energy supply provided, household relevant energy access finance is allocated to five “Tiers”—from Tier 1 (“very low level of access”) to Tier 5 (“very high level of access”), based on the Multi-Tier Framework developed by the World Bank and supported by SEforALL.

**Own funds / Corporate equity:** Used in this report to refer to the investments made by the owner and the retained profit held in the company derived from trading.

**Pay-as-you-go (PAYGO):** an umbrella term that is most commonly used to refer to the financing or business models behind small solar products or SHS. However, this umbrella term can be misleading, as it includes several variations:

- **Rent-to-Own or Leasing models:** where a customer purchases a solar product and commits to make regular (typically monthly) payments over an agreed period of time. Once the upfront cost of the system or product is amortized, or paid for, the ownership over the system or product is typically transferred fully to the customer.
- **Fee-for-Service models:** where a customer pays for access to a system, or product, or mini-grid based power supply on an “as-needed” basis. When they

need power, they pay a fee and obtain the service, either via an SMS payment, a direct cash payment, or by purchasing a scratch card. In contrast to the rent-to-own model, the ownership of the system does not transfer to the customer.

**Project debt:** a loan or debt instrument issued by a financial institution to finance a project or venture. In contrast to corporate debt, project debt is issued based on the track record of the type of project being financed (i.e., how reliable has the repayment history been on projects of this nature in the past?).

**Securitization:** refers to a structured finance instrument in which many loan contracts (including consumer loans for solar systems, for instance) can be bundled together in packages and sold on to another investor, institution, or fund. The revenues (i.e., repayments) derived from those loans can thereby be packaged into a new financial product, one that will pay a regular revenue stream over the duration of the repayment of those loans.

**Working capital:** Working capital is defined as an enterprise’s current assets (cash flows, receivables, etc.) minus its current liabilities (debts, obligations, etc.). It indicates whether a company has enough short-term capital, or funds, to cover its short-term obligations. Funds that are tied up in inventory, for instance, cannot be efficiently used to pay creditors; this can contribute to a shortage of working capital. The goal for an enterprise is ultimately to have adequate working capital to cover the costs of its operations, as well as to pay short-term debt or obligations (rent, etc.). Having enough working capital can make the difference between a company’s success and its failure. It is particularly important for enterprises where inventory management (i.e., a continuous turn-over in inventory) is core to the business companies that are heavily invested in fixed assets (manufacturing, R&D, etc.).

**Working capital loan or Working capital facility:** The portion of a loan that a bank or financial institution makes available to the borrower that is dedicated to enabling the borrower to finance the cash deficit that emerges between purchasing or manufacturing a given product, and the collection of cash from the sale of that product.



To find out more, please visit [SEforALL.org/EnergizingFinance](http://SEforALL.org/EnergizingFinance)

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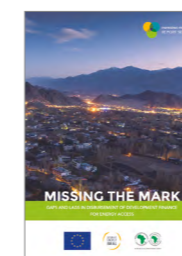
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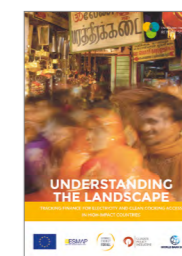
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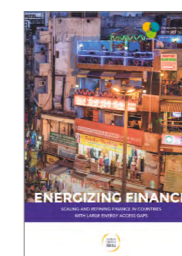
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