AMDA

BENCHMARKING AFRICA'S MINIGRIDS REPORT

©2022

ACKNOWLEDGEMENTS

This report benefited from valuable inputs and review of experts to whom we are very grateful. The Minigrid developers who provided data without which, this report would not have come to light.

ACCESS SA	Husk Power Systems	Renewvia Energy
ANKA Madagascar	Havenhill Synergy	Rift Valley Energy
Ashipa Electric Corp	Nuru Energy	Standard Microgrid
Bboxx	Nal Offgrid	Sunkofa Energy
Community Research and Development Centre [CREDC]	RVE.Sol / Kudura Power East Africa	SteamaCo
Ensol	REI Cameroon	WeLight
Energicity	Redavia	Winch Energy
Engie Power Corner	Rubitec Solar	Virunga Power
GVE		

LEAD ANALYSTS AND AUTHORS

Elena Adamopoulou - Economic Consulting Associates
Adrian Pilco - Economic Consulting Associates
Joan Chahenza - AMDA
Jessica Stephens - AMDA

FUNDING FOR THE REPORT

This report was made possible through the funding from the DOEN Foundation, Shell Foundation and Good Energies.

Cover Page Photo Credits

On the left from top to bottom, Guinea Energy, Nuru and on the right from top to bottom, Husk Power Systems, Energy City, Winch Energy.

In 2020, the Africa Minigrid Developers Association (AMDA) released the inaugural Benchmarking Africa's Minigrids Report. It is a comprehensive and valuable tool that has allowed more informed decision-making by governments, donor institutions and investors, whilst providing minigrid companies, suppliers, system integrators, EPC companies, and other ecosystem players with an in-depth understanding of their performance compared to their peers.

As the centrepiece of our commitment to improve the policy and financial environment for private minigrid developers, AMDA is proud to publish the report's second edition, which provides a broad database of industry performance as well as expert advice and recommendations based on best practices and industry needs.

Building on three years of data, the second edition presents an in-depth analysis of changes that occurred in the industry in 2020 and 2021, including the impact of the COVID-19 pandemic, and uncovers emerging opportunities for achieving immediate scale and long-term sustainability. Insights in the report also offer a high-level roadmap for all stakeholders, from minigrid developers to policy makers, on the actions required to grow the industry.

With less than a decade to go, we are clearly off track to reach Sustainable Development Goal (SDG) 7 by 2030. Despite some progress, the International Energy Agency (IEA)'s Stated Policies Scenario projected that in 2030, 660 million people will still lack access to electricity. The COVID-19 pandemic stunted progress towards universal electrification. According to the World Energy Outlook 2020, the number of unelectrified people in Africa increased by more than 13 million people in 2020. This means the access rate will have to more than triple between now and 2030. In Africa alone, this would mean connecting around 85 million people every year.

Renewable minigrids are a critical part of the solution. Minigrids are currently electrifying off-grid towns, parts of cities, rural and remote communities, and are increasingly interlinking with national grids to provide more stable power within existing weak grid networks. This modern, renewable infrastructure has the potential to ensure stable, consistent power throughout the continent, while also building climate resilience and mitigating carbon emissions.

According to the new report, minigrid developers in Africa managed to almost double the number of connections in the middle of a global pandemic. While still small in comparison to the scope of the energy crisis, minigrid developers now provide some of the most reliable and stable electricity on the continent to more than 500,000 people, healthcare facilities, schools and businesses.

The industry is also seeing revenue steadily increasing the longer assets are deployed. We have observed revenue increase every year that the sites are operational. Minigrids that were operational prior to 2019 have an average monthly revenue of $8.30 per customer, and it is not unreasonable to expect this number to exceed $10 per user per month after 5 years of operations. The revenue growth over time, coupled with the need to connect a half a billion people, sets up the industry to potentially generate more than $5 billion in revenue annually.

We have an opportunity to build dynamic, smart and renewable energy infrastructure that helps grow communities and economies. However, in

order to realize this potential, the minigrid industry needs the support of governments and donors, and we need to ensure that investors understand the true potential of the market.

This report highlights key issues that the sector needs to address in order to maximize the potential of minigrids. These include:

1. Current regulatory structures are not appropriately designed for decentralised infrastructure and will not allow the sector to deploy quickly enough to achieve universal energy access on any reasonable timeline. Dramatic simplification and shortening of licensing timelines, as well as bulk licensing of portfolios rather than individual sites is urgently needed.

2. Concessional capital commitments are not being honoured / deployed. Only $10 million of donor money was disbursed to developers in 2020. This is a slow trickle that is inhibiting growth and doesn't align with global objectives to develop renewable and resilient energy systems for universal electrification.

3. Billions of dollars continue to be poured into parastatal utilities that are failing to deliver quality services, yet minigrids which are outperforming utilities on service, connection rates and costs remain marginalized. This disparity is a major reason why the previous two points are problems, and is also completely solvable. If commitments to universal energy access are real, this must change quickly and dramatically.

We hope that the insights provided in this report will spur action. AMDA is actively seeking collaboration as we continually strive to find ways to address the barriers that prevent minigrids from scaling up as fast as they need to, and more broadly to further our work to speed up the industry's progress.

Jessica Stephens
Chief Executive Officer,
Africa Minigrid Developers Association (AMDA)

INTRODUCTION

Minigrids continue to gain traction as an integral component of the global energy ecosystem. With over 590 million Africans still living without access to electricity, major institutions such as the World Bank and the International Energy Agency (IEA) estimate that minigrids are essential to providing electricity to approximately half of all unelectrified communities in Africa.[1] As governments revise their electrification plans, there is growing interest to mainstream minigrids, while donors and foundations continue to publicly commit funding to the industry and new businesses emerge to support the overall ecosystem. However, despite the increasing interest, scale has remained elusive. This report aims to provide clear, neutral and quantitative evidence that can support decision makers as they determine pathways to universal electrification.

The United Nations Sustainable Development Goal 7 (SDG 7) calls for affordable, reliable and modern energy services for all by 2030. Even though electricity access in Sub-Saharan Africa (SSA) has more than doubled between 2000 and 2019, less than 50% of the population has access to electricity. Minigrids represent a significant opportunity to help governments ensure universal electrification for their citizens while bolstering local economies and improving their climate resilience. The IEA's latest geospatial analysis[2] asserts that together with off-grid solar systems, minigrids are the least-cost solution for half of all the new connections required to meet SDG 7, or approximately 450 million people by 2030.

While the IEA, World Bank, The International Finance Corporation (IFC), and a growing number of governments and other donors recognize and promote minigrids as an essential tool in creating climate-resilient energy systems and ensuring universal electrification, the growth of the sector has been slower than anticipated. Despite this, the African minigrid market is behaving predictably both as a nascent industry, with price reductions emerging as investments increase, and also as a rural electrification sector. Public funding has proven to be an essential catalyst for bringing in private investors and kickstarting cost reductions through the scale-up process.

With this report, the Africa Minigrid Developers Association (AMDA) presents the key findings report of the second edition of its Benchmarking Africa's Minigrids series. Nearly all AMDA members submitted data across 2020 and 2021 for this effort, representing 35 companies across 12 countries. This data includes information from nearly all established market leaders and newer companies, representing approximately 85% of the private sector developers operating in Africa that have commissioned sites. The data presented here covers up to 12 years in some cases. We focus on key metrics such as installed and operating costs, financing, revenue per user and quality of service that give a concrete indication of the sector's health.

[1] World Energy Outlook Special Report in collaboration with the International Monetary Fund

[2] Geospatial Analysis - Offshore Wind 2019, World Energy Outlook Special Report, IEA

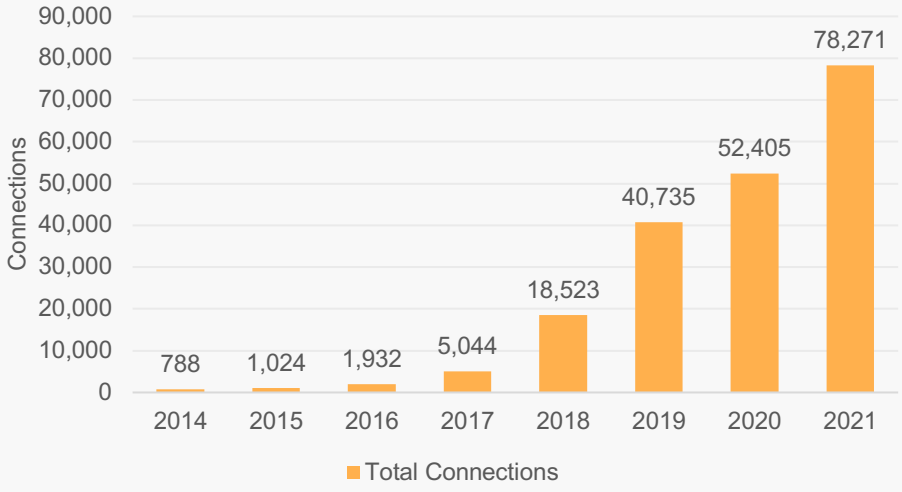
This key finding report highlights the macro and micro changes within the sector, including the impact of the COVID-19 pandemic, and highlights potential new opportunities for growth and long-term sustainability.

The insights and results presented follow a rigorous process of data collection and analysis conducted across Sub-Saharan Africa by AMDA in partnership with Odyssey Energy Solutions and Economic Consulting Associates (ECA).

This summary report highlights key findings from the larger report and provides data and insights on the performance and prospects of private minigrid companies across Africa, as well as key insights into the barriers the industry is facing and what can be done to overcome them.

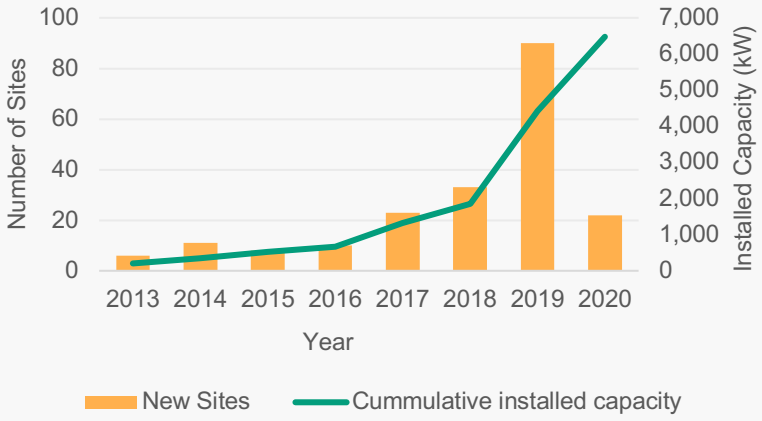
The sector is witnessing the emergence of market leaders as developers expand into new markets and build out off-grid project pipelines. The last two years have also seen the emergence of under-the-grid and integrated minigrids as a key element to improve access to electricity in areas where the existing grid is weak. Even as the world was ravaged by COVID-19, the industry managed to increase both the number of minigrids and the number of connections across the continent. Between December 2019 and December 2021, the number of connections almost doubled from 40,700 connections to more than 78,000, a 95% increase in the connection rate.

Chart 1: Total number of connections



The number of operational private sector minigrids grew by 39% from 288 in 2019 to 400 sites in 2021. Over the two years, while much of the world economy was contracting, the minigrid industry in Africa was able to grow, more than doubling the number of people with access to modern electricity to over 500,000 people, businesses, hospitals and schools.

Chart 2: Installed capacity and new sites added



While the COVID-19 pandemic slowed down the growth of the minigrid sector in 2020 and 2021; developers were able to continue building sites, almost doubling the number of connections on the continent. Albeit this growth in the wake of COVID was impressive, the rate of sector growth began to slow in 2019 as the rate of concessional capital deployment slowed.

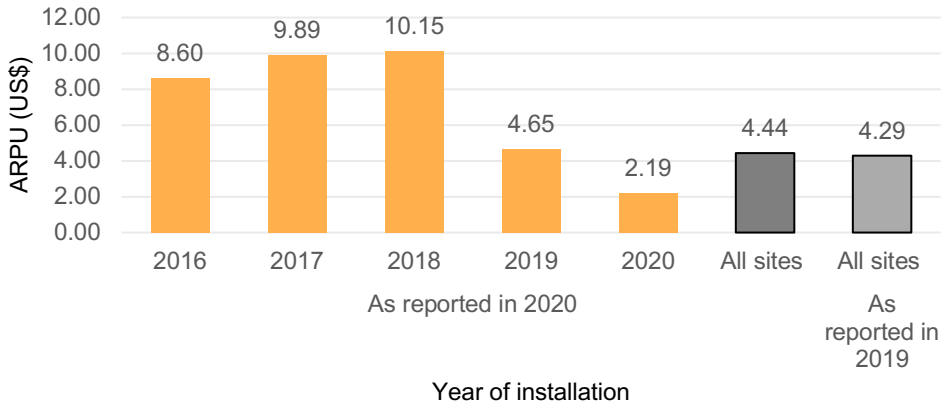
The growth between 2019 and 2021 translates into almost 40,000 new connections, bringing vital renewable electricity to small businesses, households and health facilities that will help Sub-Saharan Africa (SSA) contain the virus and boost its post-pandemic economic recover

REVENUES & OPERATING EXPENSES (OPEX)

Revenues are consistently growing, and operational costs are dropping. This trajectory indicates that the industry is approaching financial viability.

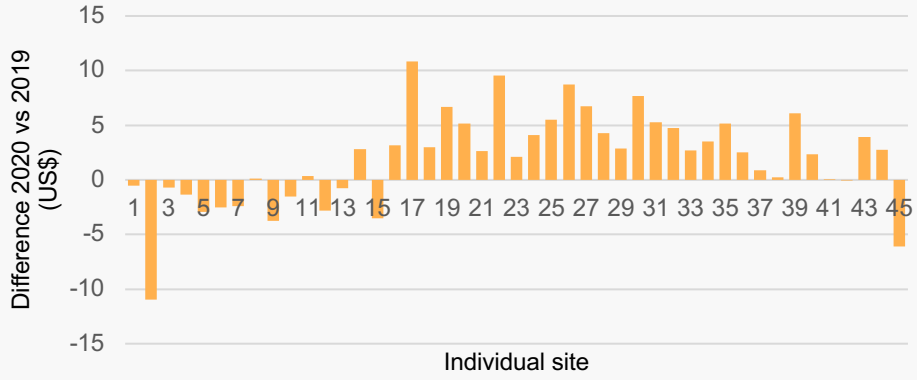
Based on the latest data, the Average Revenue Per User (ARPU), a key metric of industry sustainability and business success, increases the longer customers are connected to minigrids. For sites that were commissioned before 2019, monthly ARPU is currently $8.30. By comparison, ARPU in the previous AMDA report stood at $4.29. The steady growth of ARPU confirms that revenues and consumption increase over time, a major sign of long-term industry viability. These encouraging numbers are contrasted against highly subsidized national grids with very low revenues. While data here is hard to come by, Kenya Power and Lighting Company (KPLC), Kenya's national utility, has reported its rural ARPU as hovering just under $1.00 per month.

Chart 3: ARPU of sites by year installed



Between 2019 and 2020, we were able to track year-on-year revenue performance for sites as well as examine the effect that expanding the grid and adding new customers had on ARPU. Chart 3 above highlights the improved revenue figures for sites tracked between 2019 and 2020. While not all sites saw overall improvements in revenue, more than 70% of sites saw revenue increases.

Chart 4: Differences in monthly ARPU in 2020 vs 2019



Year-on-year growth in ARPU also increased. Based on a subset of minigrid sites tracked over the two calendar years 2019 and 2020, ARPU increased by $1.93. However, data showed that adding new customers into existing sites slowed ARPU growth to some extent. First time energy consumers use considerably less power than established customers, which impacts overall sector ARPU. While it is encouraging to see healthy revenue growth, the first two to three years of operating a site generate considerably lower revenues, which will have a larger impact on newer and smaller firms. This points to the potential opportunity for demand-side subsidies for developers to onboard newly acquired customers.

OPEX costs are gradually declining. In 2020, the range of OPEX per customer per month was between $1-4. This decreased between 30-60% from the figures in 2019, which ranged from $ 2.50 – 6.00. The decrease was forecasted in our previous report[3]. As the sector scales and we see developers operating more sites that are in closer proximity to each other, we expect economies of scale and operating efficiencies to bring these figures down even further.

Scale and efficiency, combined with rising consumption and revenue growth, point to a future of financial viability. At least two developers are projecting that they will achieve operational profitability at the country level before the end of 2022

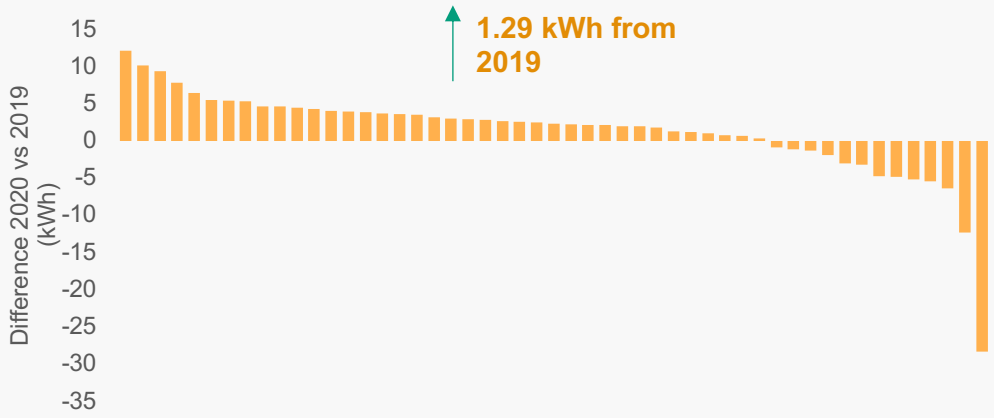
CONSUMPTION

Consumption patterns are unsurprisingly following the same pattern as revenues; the longer users have access to electricity, the more power they are likely to consume. This is true for all customer types, not only commercial customers.

For customers that were connected before 2019, the average monthly consumption is 8.9kWh. By comparison the consumption in the previous AMDA report was 6.1 kWh per month. The steady growth in consumption indicates that the longer people have access to a stable electricity supply yields greater consumption of power, a key aspect of ensuring long-term commercial viability.

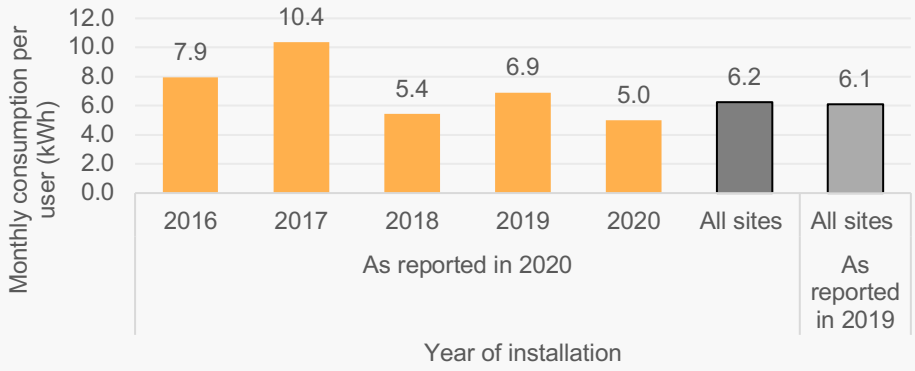
Chart 5 below highlights the improved consumption figures for sites tracked between 2019 and 2020. More than 70% of sites saw an overall improvement in revenue, the monthly consumption increased by 25% (1.29 kWh). As you can see from the chart below, consumption figures for the first year of operation are lower than established minigrids.

Chart 5: Differences of monthly consumption per user in 2020 vs 2019



[3] AMDA-Benchmarking-2020-.pdf (africamda.org)

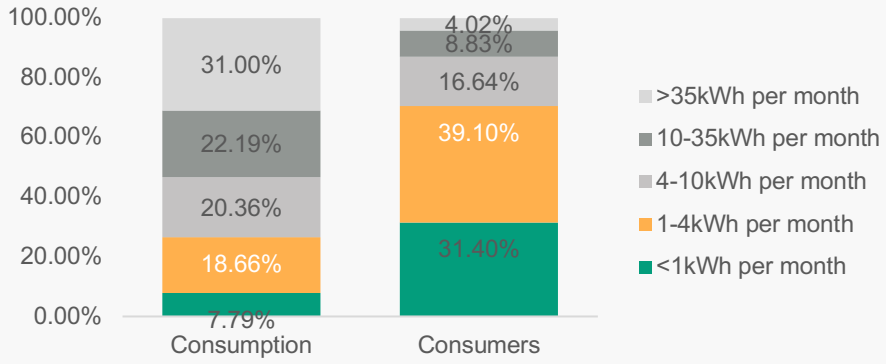
Chart 6: Average monthly consumption per connection in 2020 by year when minigrids were installed



Even when factoring in the lower consumption rate in the first years of electrification, the overall consumption was still 6.2 kWh in 2020.

For the first time, AMDA was able to analyse consumption and consumer behaviour. Users were divided into five categories according to their average monthly consumption. The data shows that 13% of the consumer base accounted for over 50% of total consumption.

Chart 7: Total number of customers and total consumption by consumption category in 2020



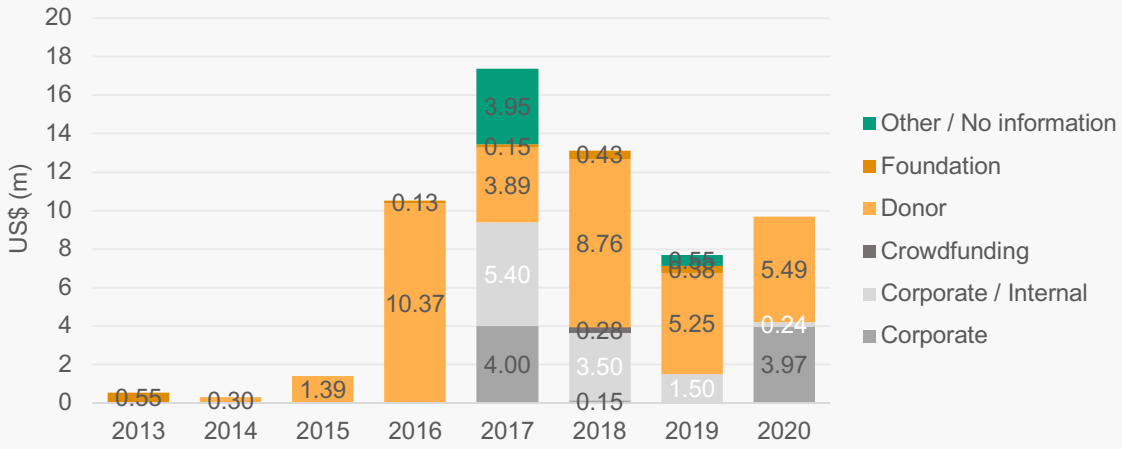
As shown in the graph (chart 7) above, 70% of minigrid customers were low consumers (using less than 4 kWh per month). *Demand distribution is skewed towards high consuming customers*: 53% of the electricity consumed in 2020 was by high consumption customers (using more than 10 kWh per month). It is not surprising that these important anchor customers drive the financial viability of the sites.

Annual industry funding reported from non-equity sources[4] peaked in 2017 at $17.39 million, while it decreased to $10 million in 2020. Despite progress on essentially all business metrics across the industry, factors like perception risk, complex fund design and the time frame required to get through regulatory compliance are hindering the ability to disburse concessional capital.

Rural electrification across the globe has historically required some form of subsidy to bridge the viability gap between the high cost to develop infrastructure and the low-income levels of rural households. Despite this, we continue to see a troubling inability of public and donor capital to flow into minigrid companies that are building sustainable infrastructure. Data shows that only 13% ($208 million)[5] of the $1.6 billion committed to the minigrid industry to de-risk projects, close the consumer pricing gap and connect communities had been deployed as of June 2020. At the end of 2021, the newly launched Global Energy Alliance for People and Planet (GEAPP) pledged $1.5 billion to support the decentralised renewable energy (DRE) sector in developing markets, doubling the total amount of capital that had been pledged previously. This extra capital is absolutely necessary in supporting minigrid infrastructure, and AMDA is committed to ensuring that it will not be plagued by the same issues that are affecting the disbursement of existing capital.

Concessional capital has a crucial role in both unlocking commercial investments by de-risking these projects' investments while supporting the reduction in the connection costs (in the case of CAPEX subsidies) and the reduction in the tariff in the case of demand- side subsidies. However, grant and concessional funding only supplied a portion of the total capital required to build the 78,000 connections we see in 2021.

Chart 8: Funding by type



Note: Corporate refers to funding from a private entity with no legal connection with the developer, while corporate/internal refers to funding from a private entity that has a legal connection with the developer.

4 AMDA does not collect equity investment data due to IP issues

5 State of the Global Minigrids Market Report

The chart above provides an overview of the different kinds of concessional funding supporting the market. As you can see, only $10 million was disbursed to AMDA developers to build projects in 2020, out of a total of only $60 million since 2013. Comparing the $1.6 billion committed to the sector from donors and the $1.5 billion GEAPP commitment at COP26 with the $60 million, it appears very little concessional capital is actually moving to support electrifying rural customers by developing f minigrid infrastructure. This gap raises three important questions:

1. Why isn't the concessional capital being used to build decentralised infrastructure? 2. Where is the concessional capital going? 3. What in the sector – or in the fund structures - needs to shift in order for it to begin flowing?

Table 9: Funding allocation since 2013

	Capex	Opex	Debt
Corporate	8.17 million USD	-	-
Corporate / Internal	0.64 million USD	-	10.0 million USD
Crowdfunding	-	-	0.3 million USD
Donor	31.31 million USD	4.0 million USD	0.17 million USD
Foundation	1.4 million USD	0.2 million USD	-
Other/ No information	1.3 million USD	3.2 million USD	-

Both OPEX and CAPEX grants account for approximately $50 million of the total concessional money. While this seems like a lot, it is marginal in comparison to investments into the national utility sector, where Nigeria alone received $1.25 billion in 2021 through the Power Sector Recovery Programme (PSRP), of which $500M is specifically allocated to grid expansion.

Minigrids are infrastructure, and, as such, need some level of subsidy. Concessional capital deployment is currently not flowing at a rate that fully supports existing pipelines. While the data presented in this report provides some insights into issues affecting concessional capital deployment, particularly the cumbersome and slow regulatory process, the highlighted issues regarding regulation are not able to fully explain why deployment rates are so low. It appears that concessional funds designed for minigrids are impacting the ability to scale. Further delays in deploying the committed concessional funding will be particularly problematic and will negatively impact the millions of people for whom minigrids are the best energy infrastructure solution.

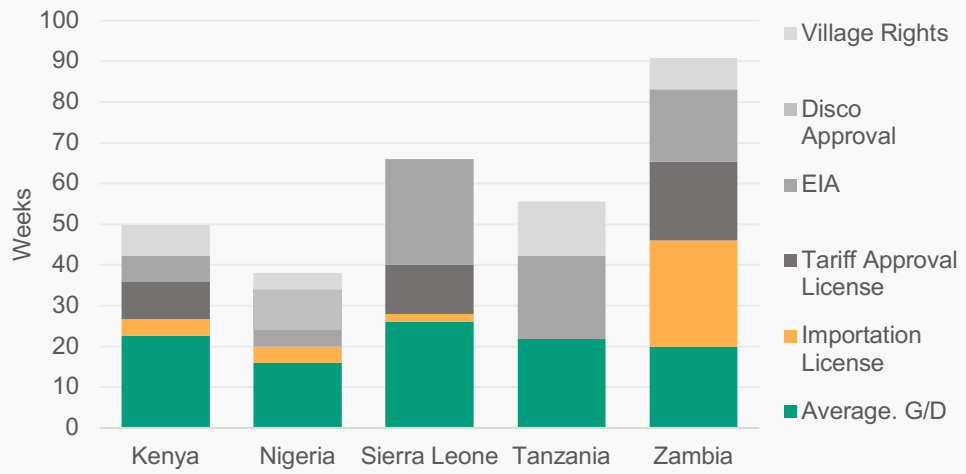
Without support, the industry will be unable to achieve the scale needed to reduce costs and radically increase deployment rates, both of which are needed to achieve SDG 7 and end energy poverty in Africa.

Regulatory and compliance processes are still glacially slow, and this remains a fundamental barrier to accelerating scale. The World Bank indicates that Africa needs 140,000 minigrids by 2030, meaning 17,000 minigrids must be built every year. Yet, so far, only Sierra Leone has been able to license more than 50 minigrids in one year.

Minigrid developers in Africa are regulated by the same regulatory bodies that oversee the national utility companies as well as developers operating under Power Purchase Agreements (PPA's). Similar to traditional utilities and power providers, national regulatory bodies oversee and approve generation and distribution licenses, tariff approvals, importation licenses, rights to operate a business, environmental approvals and local-level rights to use land for the construction and operation of a minigrid.

Unlike traditional utilities and large-scale power distributors, minigrid developers are required to go through the entire licensing process for every site, functionally going through the entire regulatory cycle for every 100kWs installed. This would be equivalent to national utilities going through an approval process for every 300 sites they connect to the main grid. Given the heavy oversight on minigrid development, minigrid developers are not able to operate under truly open market principles, which directly and indirectly impacts investments, bankability, and profitability.

Chart 10: Licensing and approval processing times per country as of 2020



While governments and development organizations recognize the important role minigrids can play in achieving universal electricity access, they are grappling with how to regulate a decentralised energy market. Nigeria has made strides in trying to streamline this process and has the shortest compliance time in the markets surveyed at 31 weeks, with Kenya a close second at 38 weeks. However, the average time to get through regulatory compliance is 58 weeks. That is 58 weeks to obtain Environmental Social Governance / Environmental Impact

Assessment (ESG/EIA) Licensing and Tariff Approval for every 100kW, which in most markets can only be done sequentially.

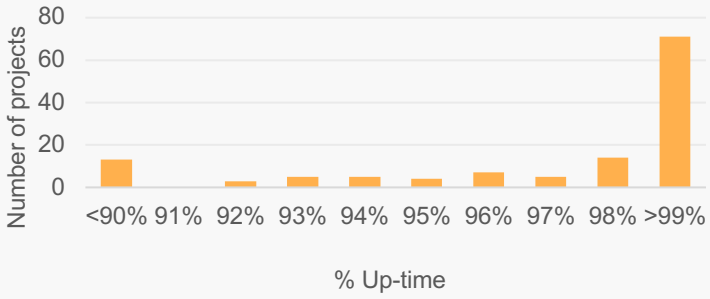
One of the most efficient ways to reduce this timeline is to create a regulatory structure that reflects the decentralised nature of minigrids, and allows for bundling of sites and applying for licenses as part of a portfolio. On average, 80% of the total compliance time is taken up by licensing (26 weeks) and getting through ESG/EIA (19 weeks). If the time required to acquire these two licenses/ approvals is halved, while also allowing developers to submit portfolios of sites that are regionally clustered, the industry could remove this bottleneck to scale, and provide project portfolios to investors that improve the bankability and ticket size of projects.

MINIGRIDS AS THE GROWTH ENGINE FOR LOCAL ECONOMIES

Minigrids continue to outperform national and sub-national utilities on service metrics, including up-time, power quality, number of reliable connections and downstream job creation.

Service quality and reliability underpin the success of business, health and education facilities, and the overall productivity of a given economy. While billions of dollars are being poured into traditional utilities, that subsidy is not helping to improve service provision. In an enterprise survey conducted by the World Bank, businesses in Lagos reported an average of 32.8 power outages per month in 2018 and businesses in Nairobi reported 3.8[6]. Minigrid customers, by comparison, experience less than one outage per month. In other words, national grids experience at least 75% more outages than minigrids do every month, with outages lasting up to 11.6 hours as witnessed in Nigeria. Stable and reliable power supply is also key in mitigating and reducing emissions, as both businesses and households turn to back-up diesel generators to power mills, home appliances, irrigation systems and refrigeration when their primary source of electricity is unstable

Chart 11: Service uptime for all sites since 2012

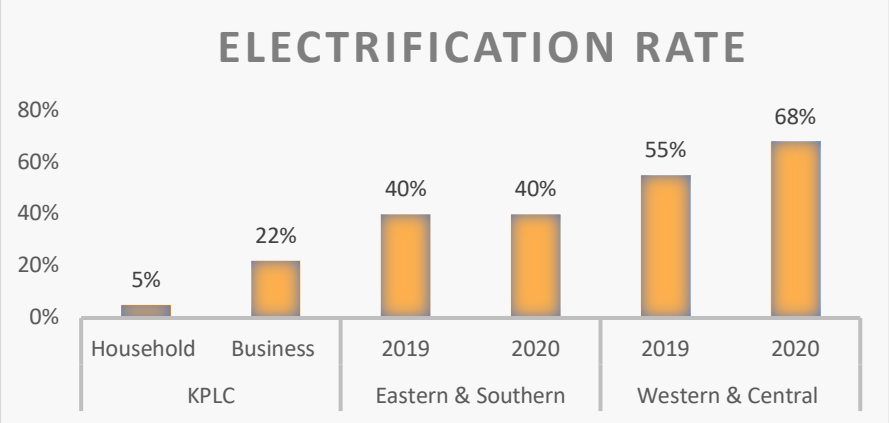


[1] https://www.enterprisesurveys.org/en/data, Measuring "Reasonably Reliable" access to electricity services (wame2030.org)

Our data suggests that minigrid systems have a consistently high service uptime of above 99% for most of the reporting sites, as can be seen in the chart above. The high reliability of supply can be attributed to efficient operations and maintenance (O&M) systems as well as the use of new monitoring and back-up technologies that reduce minigrid outages.

The average electrification rate in communities where AMDA members operate increased in 2020. While connection rates in rural communities served by the national grid are very low[7], this is not the case in areas served by AMDA's members. This increase likely reflects the greater flexibility offered by minigrid developers to reach rural households compared to the reach offered by the national grid

Chart 12: Electrification Rate



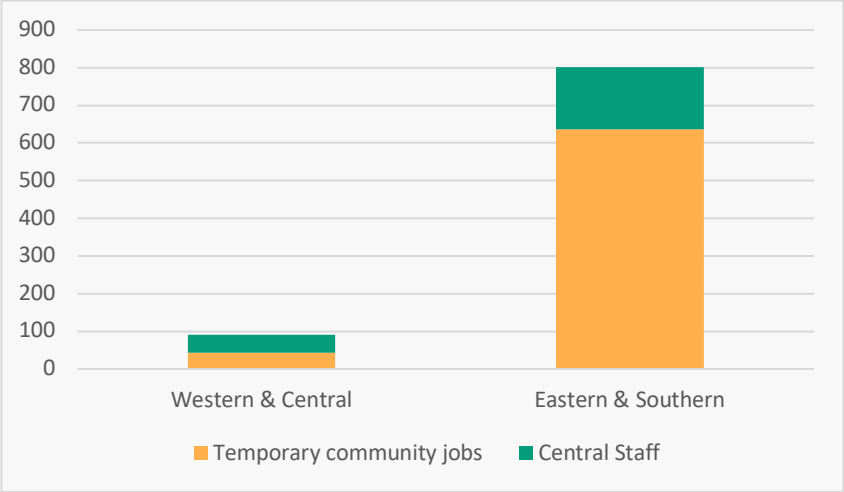
The chart above highlights the difference in connection rates between KPLC[8] and AMDA developers over time. West Africa, with its higher density coupled with the emergence of peri-urban and grid-tied minigrids, is experiencing the highest electrification rate. Utility connection rates are not fully publicized and often reflect households within 1km of existing infrastructure and not households that are directly connected to the grid. This is in comparison to the minigrid connection rate that reflects households and businesses directly connected to a minigrid.

Energy is a catalyst for economic growth, not just by providing the electricity needed to power businesses, but by creating jobs both directly and indirectly. In 2020, minigrid developers created more than 900 new jobs while building and maintaining minigrids.

[7] Averaging 5% for households and 22% for commercial customers, according to Elsvier. 2016. Electrification for "Under Grid" Households in Rural Kenya

[8] Averaging 5% for households and 22% for commercial customers, according to Elsvier. 2016. Electrification for "Under Grid" Households in Rural Kenya

Chart 13: Local community jobs and central staff added in 2020



For every 100kW deployed, 7 permanent direct jobs were created. Job creation is indicative of the substantial potential for minigrids to contribute to indirect job creation and local economic development by increasing the number of high-consumption users, generating new labour opportunities for communities, as well as facilitating income generation needed to sustain higher levels of household electricity consumption.

CONCLUSION

Since 2017, the minigrid sector has experienced a tremendous increase in both the number of connections and installed capacity. While growth rates have slowed, the minigrid sector was able to see a 95% increase in the number of connections between 2019 and 2021. Our data shows that minigrids, as of December 2021, supply over 78,000 connections with a total installed capacity of 7,000 kW.

The quality of service has remained a top priority in the sector, with most sites experiencing virtually no outages. The continued upward trend in service quality provides a stark contrast to the intermittent service provided by national grid operators in several of the countries in which members operate.

Licensing remains a substantial hurdle for developers with projects often taking more than a year for approval - regulatory frameworks are not structured for a decentralised market and require complex regulatory oversight for every 100kW of installed capacity. Given the enormous possibility for expansion, addressing the regulatory bottlenecks is essential to fulfil the sector's potential.

Consumption and revenues are on the rise and the data suggests that increases in both will continue the longer customers have access to a stable power supply. As the sector scales and we see developers operating more sites in smaller geographic locations, we expect economies of scale and operating efficiencies to bring both CAPEX and OPEX figures down even lower. With increased scale and OPEX efficiencies and the current consumptions and revenue growth trends, the sector is coming closer to financial viability.

The sector's track record is impressive, including a proven ability to innovate and expand across geographies and products, reducing costs while increasing service quality. With increased support from governments and development partners focused on climate, resilience and universal electrification, the minigrid sector certainly has the potential to rapidly accelerate growth, but this growth is contingent and public funding can be used to catalyse private sector finance.

Recommendation for decision makers

Minigrids provide governments and donors the opportunity to build the grid of the future, a bi-directional network built with smart, renewable technology that helps grow communities and economies. Growth in minigrid consumption and revenue provides positive signals for the long-term health of the industry as well as broader rural economic growth. The market opportunity is enormous, with more than half a billion potential customers and a mature market that could generate more than $5 billion in revenue annually. However, in order for this potential to become a reality, there needs to be a massive increase in capital flowing into the sector in conjunction with an evolution in regulation and grant structures that are designed to support decentralised and bi-directional grids.

With this in mind, AMDA has identified three key areas for decision-maker action based on the evidence presented in this report:

1. It is evident that providing access to concessional funding for minigrids, be it through grants, subsidies, or concessional loans, is one of the most important actions that governments and donors can take to improve commercial investment and increase the rate of electrification in rural and weak grid communities in sub-Saharan Africa. This funding would have multiple impacts: it would scale procurement and reduce CAPEX & OPEX costs, de-risk projects, close the viability gap and support the reduction in consumer pricing.

Donors, governments and developers need to urgently come together to reach a mutual understanding as to why critical capital is not flowing, unblock any barriers and adapt existing funding programs to support scale.

2. Minigrid regulations need to be adapted to reflect the decentralised nature of the industry. Current regulations are largely based on regulator experiences approving and monitoring small numbers of large energy projects, and must urgently be re-designed to do the inverse - approve hundreds or thousands of small projects over a short period of time. Portfolio or regional licenses, streamlined and digitised processes, smart and remote monitoring technologies, regulatory offices that are staffed to approve hundreds or thousands of minigrids a year and concessions — these must all be under consideration. These changes would go a long way in improving regulatory approval timelines and reducing the costs associated with regulatory compliance, thereby having a positive effect on the rate at which people are connected and the decline in the cost of the power they receive.

3. The sector needs a unified energy ecosystem. The line between minigrids and the grid is blurring. Besides the well-understood role for off-grid communities, in weak grid areas minigrids are increasingly supporting entire towns or are integrated with the grid as last-mile distribution franchisees. Funding of and planning for electrification needs to happen more holistically. Currently, on-grid and off-grid planning is frequently siloed, creating competition between the two electrification modalities when they are often complementary. Competition within government ministries and donor institutions to promote one modality over the other, irrespective of costs and service, not only benefits no one, it directly harms rural communities and their ability to exit out of poverty. Decisions on how subsidies flow and how customers get connected need to be made on the basis of the ability to pay for and maintain the infrastructure, CAPEX costs, customer tariffs, and the quality and stability of power supply.

If donors and development finance institutions (DFIs) continue to pour billions into traditional utilities without mechanisms to ensure improved service, while under-funding minigrids, the grid will remain unstable and minigrid power will be more expensive. We need the best of both worlds and that will only be possible if planning for and funding of electrification is done collaboratively.

© *Standard Microgrid*

CONTACT US

communications@africamda.org