ENERGIZING FINANCE
RESEARCH SERIES

SUSTAINABLE ENERGY FOR ALL

Dalberg

ENERGIZING FINANCE: TAKING THE PULSE 2021

POLICY BRIEF

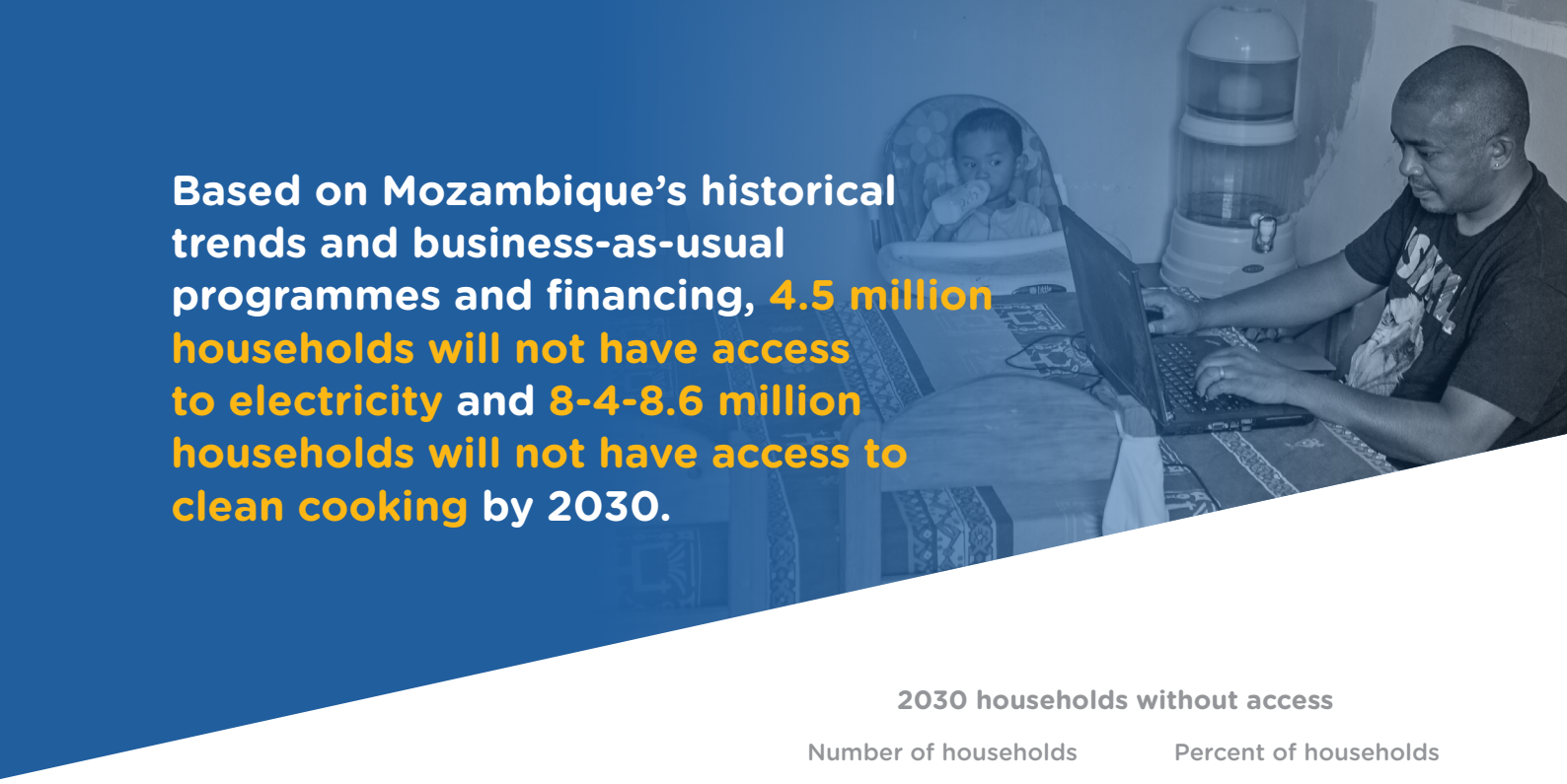
MOZAMBIQUE

ENERGIZING FINANCE
RESEARCH SERIES

The Energizing Finance research series consists of in-depth primary research and analysis by Sustainable Energy for All (SEforALL) and partners that examines supply and demand for finance across two key areas of energy access: electricity and clean cooking.

Energizing Finance: Taking the Pulse 2021 estimates the finance needs of enterprises and consumers to reach universal energy access by 2030 in three countries: Ghana, Mozambique and Vietnam.

Taking the Pulse shines a light on both the volume and type of capital - debt, equity, grants and affordability gap financing – challenges to achieving universal access and recommendations on actions required to achieve SDG7. This Policy Brief is based on Taking the Pulse analysis for Mozambique.

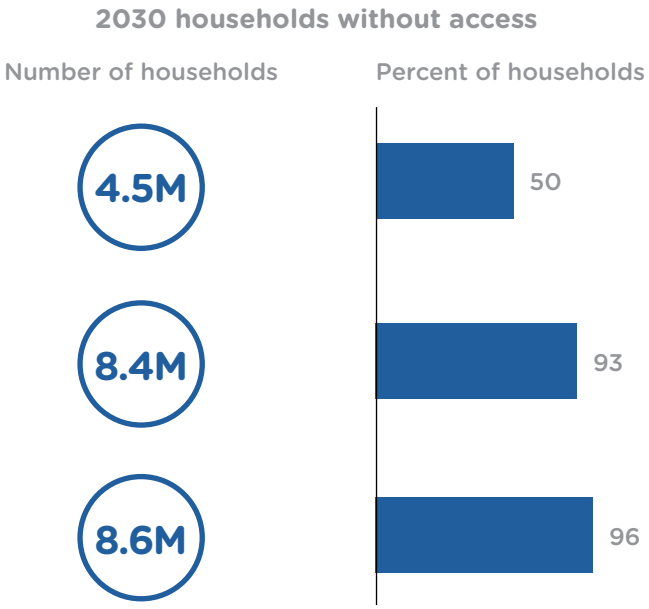


Based on Mozambique's historical trends and business-as-usual programmes and financing, 4.5 million households will not have access to electricity and 8-4-8.6 million households will not have access to clean cooking by 2030.

Tier 1 electricity access
equivalent to 3-4 lights, phone charging and powering a radio

Tier 2/3 clean cooking access
improved cookstoves

Tier 4 clean cooking access
"clean" fuels – LPG, ethanol, electric cooking



Universal energy access can yield significant economic, health and emissions benefits

- Avoid Deforestation
- Carbon Emissions Prevented
- New Economic Opportunities
- Women Empowerment
- Improved Health; Reduced Co-Morbidities and Deaths
- Time Savings

Achieving universal access to electricity in Mozambique

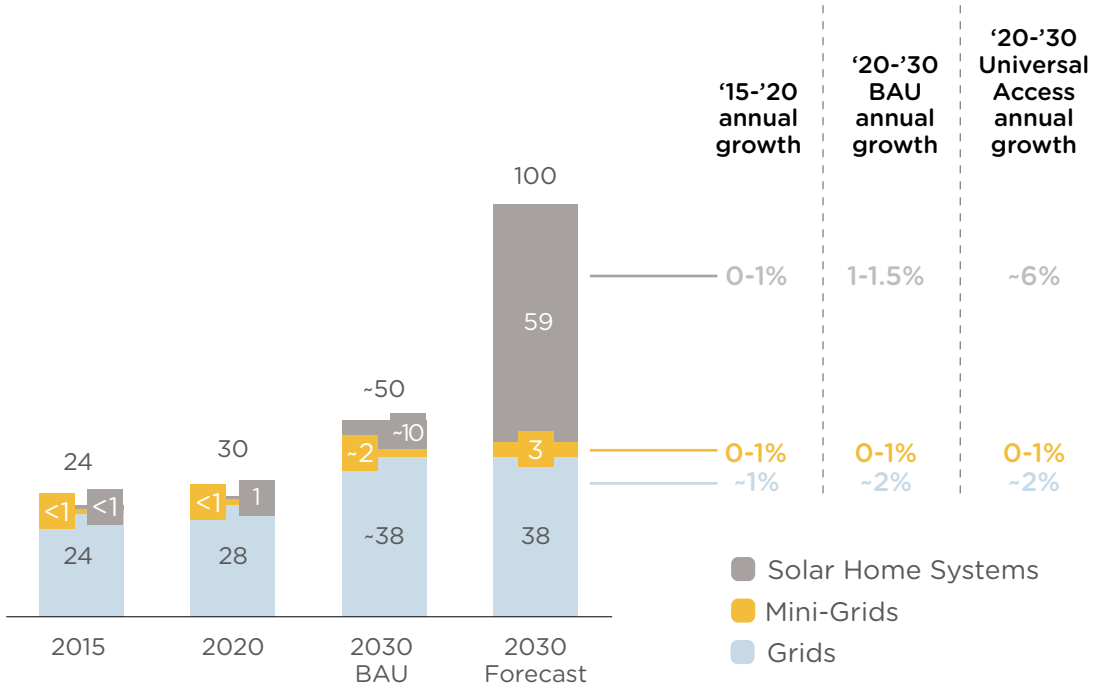
Electrification in Mozambique has progressed at a slow pace over the past 20 years through grid expansion but will fall short of universal access.

In a business-as-usual (BAU) scenario, Mozambique is expected to reach 50 percent electrification by 2030, leaving 4.5 million households without electricity access. These households are located in low-density, rural and remote areas and face higher household affordability challenges.

Filling this 50 percent baseline or Tier 1 electricity gap[1] will primarily be achieved through standalone solar. The existing mini-grid electrification programme with development partners will only provide access to an estimated 2 percent of households based on the current mini-grid framework. Approximately USD 1.1 billion in finance beyond the BAU scenario is required to achieve universal Tier 1 electrification, including incentives for the private sector to reach consumers in the hardest to reach areas (41 percent or USD 444 million) and addressing the household affordability gap (59 percent or USD 629 million).

Beyond funding, it will be critical to resolve broader ease of doing business factors to help set the stage for private sector growth, including the removal of import duties and VAT on solar home systems, changes to the regulatory framework for mini-grids (efforts are ongoing to develop a new framework)[2] and technical assistance for local companies to build capacity and overcome entry barriers.

FIGURE 1
Estimated Ghana electricity access 2015-2030e (percent of population)[3]



[1] The World Bank's Multi-Tier Framework defines Tier 1 access as 12 watt-hours of electrical energy per person per day and lighting performance of 1,000 lumen-hours per person, enough power to illuminate three to four lights, charge a phone, and operate a radio.
[2] A new mini-grid regulatory framework supported by Brilho has recently been adopted in September 2021 but this new framework has not been incorporated into the BAU scenario.
[3] Grid (Tier 3 – Tier 5), Mini-Grids (Tier 3 – Tier 4), SHS (Tier 1 – Tier 2)

FIGURE 2

Cost of universal Tier 1 access to electricity (USD million)

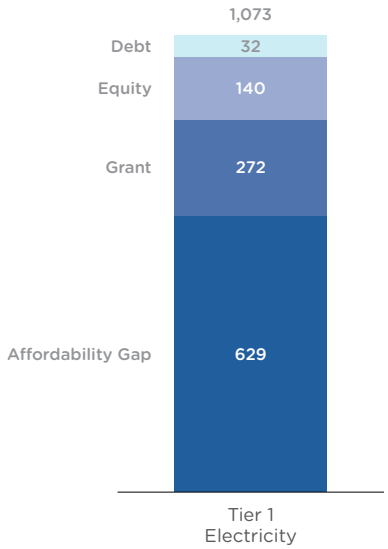
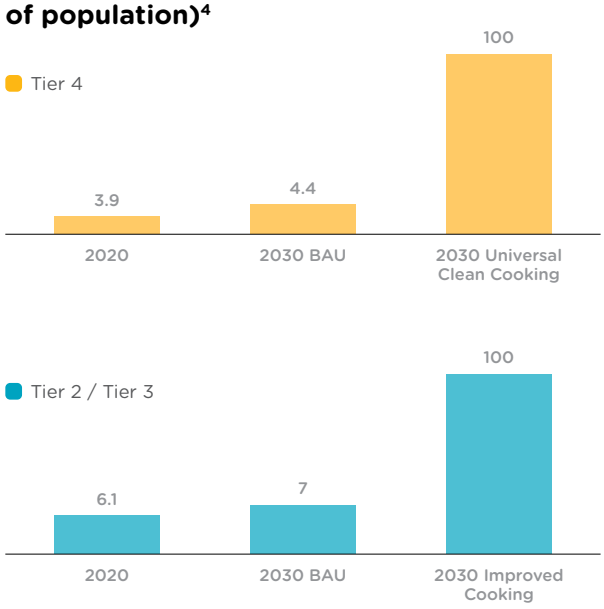


FIGURE 3

Clean cooking access 2020-2030e (percent of population)[4]



Achieving universal access to clean cooking in Mozambique

Access to clean cooking has mostly stagnated over the past five years, and overall access remains low. Just under 4 percent of the population currently cook with clean fuels and technology (Tier 4) and 6 percent are using Tier 2/Tier 3 improved cookstoves[5]. Growth has been primarily driven by government-supported LPG expansion, coupled with a growing market for improved cookstoves.

Despite ongoing efforts, at the current pace (BAU), by 2030 only 7 percent of the population will reach Tier 2/Tier 3 access, and only 4.4 percent Tier 4 access. It is estimated that, at the current pace, the full transition from wood and charcoal to clean fuels could take 100 years or more.

Universal access to clean cooking fuels and technologies (Tier 4) can be achieved through several "clean" fuels including LPG, the focus of the government's strategy to date, ethanol and electric cooking. These fuels have significantly lower emissions and more positive health benefits than improved cookstoves.

Achieving 100 percent access to Tier 4 clean cooking by 2030 requires USD 8-12 billion. The cost is dependent on the type of fuel, and primarily driven by the cost of fuel and stoves. Other major cost drivers include midstream and downstream infrastructure needed to bring clean fuels to new and rural areas, including the development of new bottling plants, storage, cylinder upgrades, and behavioural change campaigns. This cost does not account for any additional investment for the production or importation of LPG.

Accelerating universal household access to Tier 2/Tier 3 improved cookstoves (ICS) – that use wood or charcoal as fuel but have significantly lower emissions compared to traditional cookstoves – requires USD 567 million in new funding. About USD 298 million (53 percent) is needed to close the household affordability gap, and USD 269 million (47 percent) would address the finance needs of the private sector to manufacture and distribute these improved stoves. Climate finance could play an important role in financing.

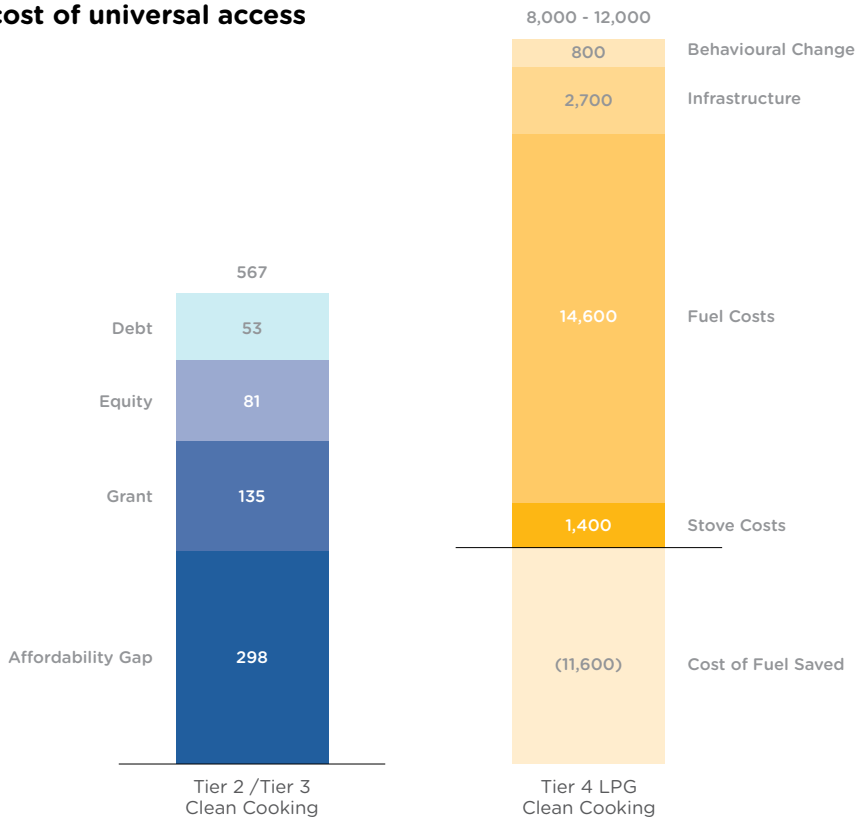
Many ICS players are small companies with limited scale, no access to lower cost international finance and limited local commercial funding. As a result, grants will remain a core source of funding for many players until 2030 to support private players expansion into last-mile areas. Improvements in the ease of doing business will be critical to support market expansion.

[4] Authors' calculations

[5] For clean cooking, this report utilizes the MTF framework to define access Tier 2/Tier 3 levels as access to improved cookstoves through industrially manufactured improved cookstoves; and access to Tier 4 levels as access to clean fuels and technology/modern energy cooking services through LPG, ethanol, and electricity. It should be noted that households with Tier 4 access also have Tier 2/Tier 3.

FIGURE 4

Mozambique cost of universal access (USD millions)



Key challenges for universal access to electricity and clean cooking

Primary challenges for Mozambique's progress towards universal energy access include:

Customer affordability. It is estimated that 90 percent of the population is unable to afford a USD 35 improved cookstove on a cash basis, and 40 percent of the population is unable to afford a standalone solar home system over time. VAT and import duties on SHS products make these products up to 50 percent more expensive than in other countries. For clean cooking, this challenge is compounded by the availability of low-cost substitutes (72 percent of households use wood as their primary fuel) and a resulting reluctance to shift to improved stoves.

Last-mile delivery in the hardest to reach areas. The households with affordability challenges are also the ones living in remote, harder to reach areas. This carries additional distribution costs for clean cooking and SHS distributors, resulting in low access to clean cooking and electricity solutions in these areas.

Private sector finance. Local enterprises tend to be pre-commercial and face the same challenges small and medium enterprises face, including access to finance and equity in particular to finance growth; this is complicated by the fact that they are energy companies in a maturing industry less understood by financing institutions.

Market uncertainty and political and economic environment. There are very high setup and operating costs to do business in Mozambique given challenging operating conditions, an unfavourable tax regime and limited information on customer demand. This is augmented by political instability and currency volatility which has created a negative impact on funding availability.

Lack of government strategy for other "clean" fuels or access to carbon finance. The government strategy for clean cooking is primarily focused on LPG and improved cookstoves. It does not define a pathway for other "clean" fuels or support mechanisms to leverage carbon finance.

MOZAMBIQUE RECOMMENDATIONS

Electricity

Affordability Gap

- Remove import duty and VAT for SHS products to improve household affordability
- Consider allocating USD 629 million in demand-side subsidy finance to address household affordability challenges up to 2030

Financial Need

- Commit to financing and incentivizing private sector expansion in harder to reach areas (USD 444 million), including through results-based mechanisms up to 2030

Private Sector Support

- Implement the recently adopted Regulation for Off-Grid Energy Access

Clean Cooking

Affordability Gap

- Expand PAYGO and consumer finance to improve affordability
- Launch USD 298 million in demand-side support to address household affordability challenges up to 2030

Financial Need

- Explore result-based mechanisms to incentivize private sector expansion in harder to reach areas
- Commit USD 270 million in private sector finance for Tier 2/Tier 3 access up to 2030

Private Sector Support

- Incorporate into national clean cooking strategy a pathway for "clean" fuels beyond LPG and support ICS sector growth with clear guidelines
- Create a national carbon credit scheme to increase access to carbon finance
- Support local lending to the private sector through guarantees, first-loss schemes, etc.

Cross-cutting

Gender Balance

- Expand research and development for more efficient and gender specific, human-centred design

Increased Coordination

- Improve coordination between electricity, clean cooking and climate efforts to accelerate growth and leverage the right mix of capital to close energy access gaps

Investors Government Development Partners

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