



# PUTTING STARS ON THE MAP

THE INNOVATIVE  
BUSINESS MODEL:  
JAZA ENERGY

REVOLUTIONISING LAST  
MILE ACCESS THROUGH  
BATTERY RENTAL





Jaza Star Diana from Mdimba Hub in Mtwara holding a Jaza pack.

Jaza Energy is a Canadian company bringing affordable electricity to last-mile customers in remote villages in East Africa through a network of solar energy hubs. Each hub provides rechargeable battery packs for up to 300 households. To date, Jaza has deployed 78 hubs across Tanzania providing power for about 39,000 people.



About half of the Tanzanian population lives on less than \$1.90 per person per day.

# 77%

of Jaza's customers are below the Tanzanian poverty line.

## Reaching Last-Mile Customers

Less than 40% of Tanzanians have access to electricity, and the number is significantly lower in rural areas.<sup>1</sup> About 60% of those who live in off-grid areas rely on kerosene,<sup>2</sup> which is expensive and has a negative impact on health, especially for women and children. Kerosene is also a significant source of atmospheric black carbon.

The government of Tanzania has made expanding access to energy a national priority. In recent years, the solar home system (SHS) market has grown rapidly and there are over 100 mini-grids now operating in the country.<sup>3</sup> However, most rural communities still lack access to reliable electricity and many people living in villages with a mini-grid or national grid access cannot afford the connection fees. Large parts of the country remain trapped in darkness when the sun sets.

<sup>1</sup> [World Bank database \(2018\)](#)

<sup>2</sup> [Lighting Africa country report \(2018\)](#)

<sup>3</sup> [Power Africa Off-Grid Solar Market Assessment - Tanzania \(2019\)](#)



One innovative solution for bringing electricity to bottom-of-the-pyramid customers in rural or remote areas is rechargeable batteries. The flexibility and affordability of battery rental has the potential to make electricity accessible to the poorest customers. Portable batteries also offer an attractive alternative, or complementary, source of power for SHS owners.

<sup>^</sup> A busy day at Mambaba Hub in Mtwara.

*Our job at Jaza is to put stars on the map.*

Jeff Schnurr, Jaza CEO

Jaza Energy is helping to revolutionise off-grid energy access in Tanzania through the development of a network of solar energy hubs that offer battery packs for home lighting and other household energy needs. In the process, Jaza is reducing CO<sub>2</sub> emissions by displacing kerosene and creating job opportunities for young women in rural areas.

Battery packs provide

## Tier 1

energy access that powers lighting and household appliances.



Battery rentals address one of the biggest challenges to solar e-waste management by ensuring efficient take-back and collection processes.

# Battery-as-a-service Model

JazaEnergy's business is based on an affordable battery swap model. Jaza's network of solar energy hubs in remote villages offer portable battery packs and recharging services. Most batteries are used for household energy needs but 16% of customers use them to support small businesses and entrepreneurial activities.

Each Jaza pack includes a 200W lithium ion battery that can power lights, mobile phones, TV, radio and other small appliances with a power output below 11V. Jaza's software and hardware engineers design the battery packs and battery management software. The components are manufactured in China and shipped to Tanzania, where they are assembled locally. This enables Jaza to implement battery repairs and upgrades in-country.

By maintaining ownership of the batteries, Jaza can effectively manage disposal of e-waste. The company monitors usage to ensure batteries are well-maintained and fully utilised. End-of-life batteries are collected at the hubs and recycled or disposed of safely. Circuit boards and battery cases can be reused.



Jaza initially charged a substantial down payment for each battery but this deterred customers and limited growth. In 2020, the company shifted its approach to require only a nominal registration fee backed up by a guarantor. This made the product more affordable upfront and tapped into existing social capital in the community.

<sup>^</sup> Jaza Stars Raheli and Kelvina with Jaza packs inside the Titye Hub in Kigoma.

By refining its pricing model and extending its reach to lower-income households, Jaza battery swaps increased by over

**440%**  
during 2020

Jaza also developed and launched a new battery in 2020 that is specifically designed for low-income customers. The battery has a smaller capacity of 60 Wh, lasting 1-3 days and each swap is priced lower than kerosene. The one-time sign-up fee is just \$1, with \$0.22 daily fee for rentals. In this case, less is more as the smaller battery makes energy access affordable for households with daily incomes as low as \$0.75.

As a result of these changes in technology and pricing, the acquisition rate of customers per hub increased from 10 new customers per month to 140 per month in 2020. The company now has an inventory of 12,000 batteries.

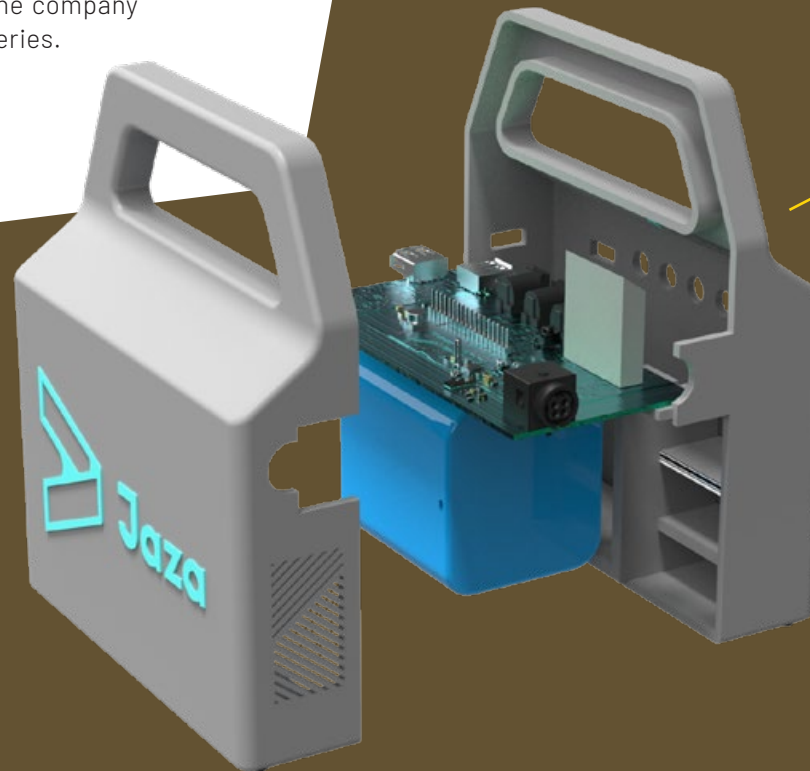
Jaza developed a new battery specifically for lower-income customers

- Daily service
- Powers 4 lights + TV and stereo
- 60 Wh capacity / 2x daily usage

Jaza doubled down on first time in-home energy customers:

- Priced lower than kerosene with \$1 sign up fee
- \$0.22 daily fee
- Targeting customers with \$0.75 daily household income

Unit economics and hub level payback went from 54 to 24 months with a 200% increase in 5 year hub profits.



## FIND OUT WHAT THE CUSTOMER NEEDS

Customer feedback initially indicated that Jaza should be producing more powerful batteries to support larger appliances and energy needs. But these batteries cost more and Jaza realised they would be pricing themselves out of their own target market.

In order to maintain their focus on rural customers at the very base of the pyramid, the company's leaders decided to not only listen to what customers were saying but also focus on the data showing how customers were using the batteries to verify product fit.<sup>4</sup>

Many of the rental batteries were being swapped or returned without utilising all their energy. Even though customers said they wanted additional features, what they really meant was that they could not afford the product.

When Jaza launched its smaller-sized battery and more affordable pricing model, the customer base rapidly expanded and walk-in customers drove rentals to maximum capacity.

The number of customers served per hub has more than doubled, from fewer than 100 to 200-300 households. This has a tremendous impact and proves that poor, rural consumers are a viable market given the right product and service.

*There is an assumption when it comes to energy access that "anything is better than nothing" but this is not true. The product should solve the customer's pain point.*

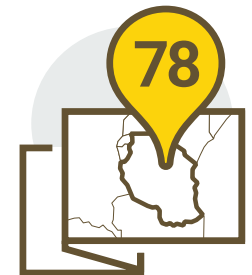
<sup>4</sup> Jeff Schnurr: "[How we stopped listening to customers, started hearing them, and got to product/market fit](#)"

## Solar Energy Hubs

Jaza hubs are one-stop energy shops managed entirely by local women. The rooftop solar panels generate enough energy (3 kW) to charge hundreds of battery packs and the hubs serve as important community distribution points.

When Jaza started operations in Tanzania, they looked at a Facebook-generated data set to identify communities in the Pemba region that had an optimal density of 1,000 households within a two-kilometre radius. They then worked with local savings groups in potential communities to identify possible hub locations. Within three weeks they had identified 40 potential sites. As Jaza expanded into the Mtwara and Kigoma regions, the site selection process focused more on direct contact with potential communities and local government leaders to identify possible hub locations. Hubs are primarily located in a local market or shopping centre in the villages.

As an early-stage company, Jaza has placed high importance on tracking operations in order to understand what constitutes a successful hub. The Jaza battery packs have an integrated



As of the end of 2020, Jaza had installed 78 hubs across the Pemba, Mtwara and Kigoma regions, providing power to about 39,000 people.

circuit to monitor usage and charging. Each hub operator is equipped with a smart phone and management app to record every battery swap transaction linked to individual customer IDs. As a result, Jaza hubs are publishing new data every three seconds.

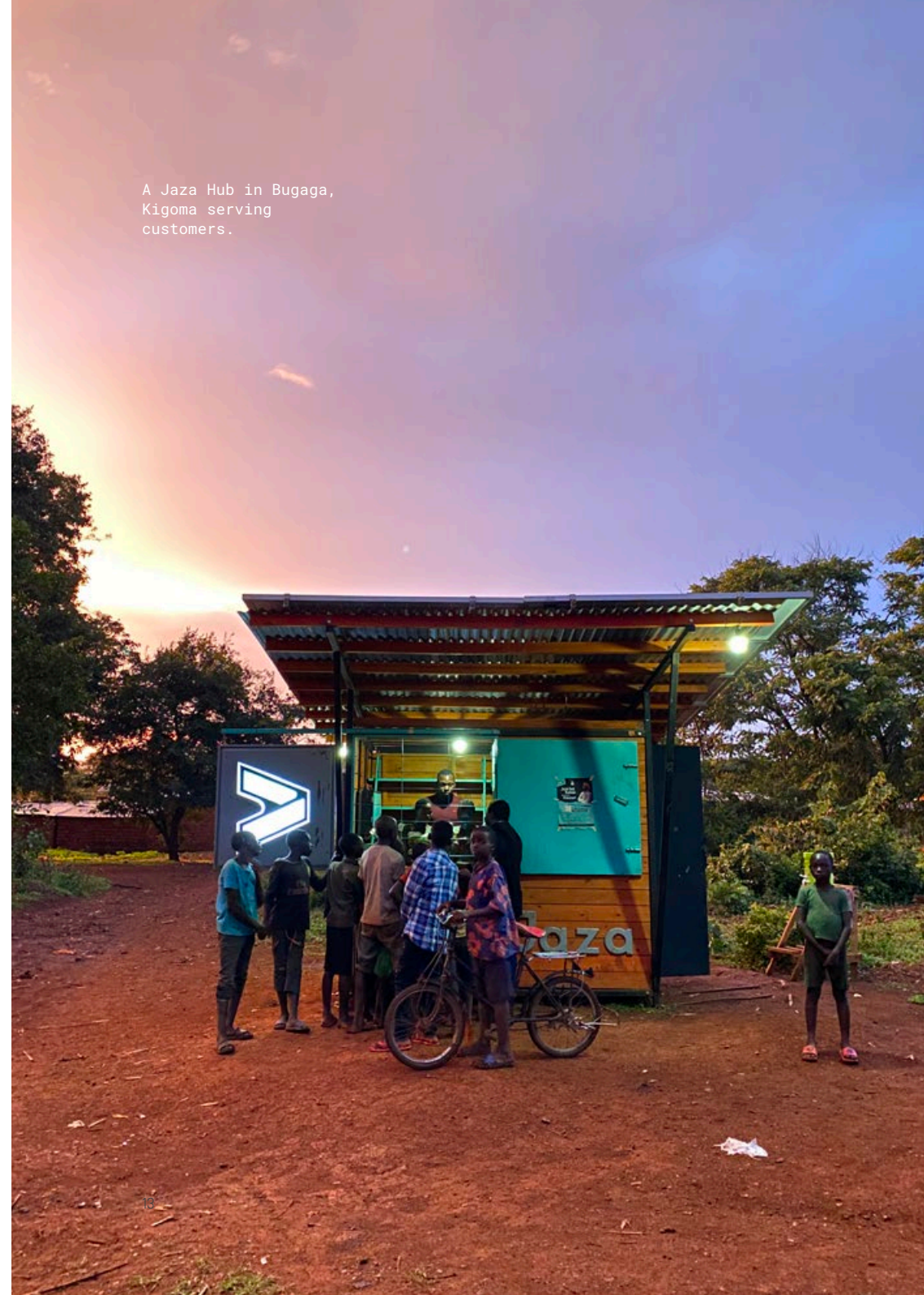
All the data is analysed on a weekly basis, enabling Jaza to maintain an optimal team-to-hub ratio and offer customers the most affordable prices. The Jaza team is constantly exploring how to make their customers' lives better, with solid data on battery usage and swap times helping them strengthen their business model.

*We have built a very customer-focused company and will continue to let our customers lead our product development.*

Radhina Kipozi, Jaza Director of Marketing

Jaza initially provided each new hub with 50 battery packs with a target of reaching 100 households. Based on its data analysis and the customer uptake from improvements in pricing and battery models, Jaza now launches hubs with 300 packs and reaches 200 families within two months of operations. This has improved unit economics, cutting hub-level payback period from 54 months down to 24 months and increasing 5-year hub profits by 200%.

A Jaza Hub in Bugaga, Kigoma serving customers.



## LOCAL PRODUCTION ENSURES QUALITY AND BUILDS RESILIENCE

Jaza constructed the first solar hubs in its own office. As they expanded operations across Tanzania, the company needed to scale-up production but did not want to lose quality control. Jaza therefore trained local carpenters on the structural dimensions and wood quality needed for the hubs. High-quality hubs are now being manufactured at a rate of 10 per month.

The factory in Dar es Salaam creates hub kits that can be stacked so that 8 kits fit on a truck. The hub kits are driven to new sites and each one can be put together in about 3 hours. After assembly, a Jaza team attaches the solar panels and delivers the battery inventory.

All the hub components are sourced locally, including the solar panels, which reduces the lead time in manufacturing and helps create employment. The local production also enabled Jaza to continue its expansion throughout 2020 despite global supply chain disruptions caused by Covid-19.

*The big lesson in this market is that consistency and quality of service matter because those with the lowest incomes have such high pressure on their purchasing decisions.*

## Jaza Stars

Each Jaza hub is operated by two young women from the community, called Jaza Stars. The women work in shifts and are paid a salary in addition to a commission based on the hub's monthly sales.

When Jaza is getting ready to launch a new hub, they post paper advertisements in the community and spread the word through local savings groups and government offices. Jaza has employed more than 150 local women as hub operators so far. Most of them are just 18-25 years old.

All Jaza Stars are provided with training on the mobile app, battery management and sales. The training also includes sessions on goal setting, financial literacy and confidence. The women may deal with up to 100 customers per day and the position can be a little intimidating at times. To provide on-going support and peer learning, the Jaza Stars are connected to each other in regional WhatsApp groups. This has created a strong sense of community and empowerment among the young women working for Jaza.



The hubs are 100% female operated. For 97% of the Jaza Stars, this is their first job.





^  
Jaza Directors Fatime and Radhina with Jaza Stars after a training in the Pemba Region Office.

Jaza invests in the professional development of its employees and Jaza Stars have the potential for career growth. Through the company's Superstar programme, more experienced Jaza Stars help with onboarding of new hires. Superstars typically still work at their own hubs but take on the added role of trainer and mentor. Some Superstars have been promoted to hub managers, responsible for overseeing the operations of three or more hubs. One Superstar is now managing 10 hubs, a level usually reserved for someone with a bachelor's degree. This is a testament to how well Jaza Stars know their job.

*The most important person in the Jazaverse is the Jaza Star.*

Jeff Schnurr, Jaza CEO

## EMPOWERING RURAL YOUNG WOMEN

When Jaza enters a new region, there has been some initial pushback in the communities about the company only hiring women. Jaza has remained committed to this approach based on the understanding that providing income opportunities for women in rural, developing contexts can exponentially increase every measure of impact.

Most of the women hired live in last-mile communities with limited scope and possibilities. Becoming a Jaza Star provides them with new skills and an income that can help support their families or pay for education. It also helps develop their self-esteem and offers a support

network of other working women across their region and country.

If you do enough of something, it just becomes the way things are done. With an expanding network of hubs, it now goes unquestioned in the regions where Jaza operates that the hubs are run by women. Jaza Stars are the face of the company and the source of light for their communities.

*This job has earned me respect in the community. People now see me as part of the solution in solving our energy problem.*

Jaza Star

# Development Impact



Customers switching from kerosene lighting to Jaza packs save an average of \$42 per year, representing about 20% of their annual household budget. Around 16% of Jaza customers use the batteries to power small businesses, increasing local income opportunities.



Jaza hubs are 100% female operated. Most Jaza Stars are 18-25 years old and this is their first employment. They receive training and peer support.



78 hubs are providing power to about 39,000 people in last-mile communities



Over 150 Jaza Stars hired and trained. Decent jobs created for local technicians, UI/UX designers and sales staff in Tanzania.



508,299 litres of kerosene displaced resulting in 1,362,926 kg of CO<sub>2</sub>e emissions avoided

# Customer testimonials

**Customer 1** chose the Jaza monthly bundle that costs \$0.34 per day. The Jaza pack powers a TV and subwoofer to create a local cinema that doubles as a day care. Parents drop off their children and pay \$0.10 for them to watch movies while they work.

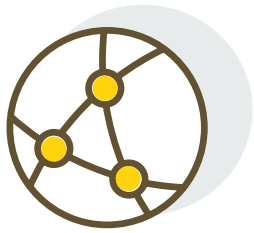
*The Jaza battery swap fee is much cheaper than most PAYG solar home systems where I have to pay a daily fee plus a down payment for the solar product.*

**Customer 2** is a telecom agent who needs his phone charged at all times while he's in the village attending to customers. He uses a Jaza pack with an output of 5V almost as a power bank since it charges his phone much faster, thus increasing his productivity.

**Customer 3** has a small solar home system with a battery nearing its end of life.

*I have been a customer with Jaza since the beginning and have seen their product develop to meet our needs better. I use the battery to power 4 lamps, a TV and charge my phone. The Jaza product is cheaper than replacing the solar home system battery I bought years ago to power my house. I can also get my Jaza energy on rainy days when I can't charge my solar home system.*

# Future Market Potential



The company's leaders envision a world where you can power anything you want with a Jaza pack and where Jaza hubs are distribution points and enablers for other entrepreneurs.

Jaza sees a tremendous opportunity for growth in the coming years. Battery technology will continue to increase in quality and decrease in cost. As functionality and capacity improve, Jaza will be able to offer customers affordable batteries that can power a wider range of appliances and services.

Jaza hubs offer a network of in-community infrastructure across rural regions. The hubs provide a physical location and power source, which can enable other entrepreneurs to offer a wide range of products and services in remote areas.

Jaza hubs are serving as last-mile delivery points for local distributors and, potentially, e-commerce. The hubs initially offered direct appliance sales in addition to battery rental, but Jaza soon realised that local supply chains were more efficient at sourcing products like refrigerators, TVs or productive use solutions. The company now only sells energy efficient lightbulbs with the battery packs, but the hubs play a critical role in catalysing the overall energy ecosystem in their communities.



Jaza hubs also have the potential to serve as charging stations for e-vehicles. As the e-vehicle sector grows in East Africa, companies are looking to expand the market beyond major cities. Jaza hubs offer valuable charging infrastructure in rural, off-grid areas. Jaza is also exploring the market for repurposing batteries from e-vehicles. Batteries no longer powerful enough for vehicles, at 70-80% of full capacity, are more than sufficient for other machinery and appliances and could be used in Jaza packs.

^  
A Jaza pack powering a customer's television in Mtwara.

*One hundred years ago, if you could have bought a 2 kwh battery, North America and Europe never would have built a grid.*

Jeff Schnurr, Jaza CEO

## FINANCING SCALE-UP

Securing financing is one of the main challenges for small companies looking to scale-up their operations. Jaza Energy was awarded EUR 320,000 in grant funding from EEP Africa in late 2019. This helped provide the capital base needed to catalyse a broader equity raise.

In March 2020, Jaza successfully closed a USD 1.7 million round of seed funding. In addition to EEP Africa, the other investors in this round included: Draper Richards Kaplan (DRK) Foundation, Active Impact Investments, Shell Foundation and Ceniarth.

Early-stage companies also need flexible investors so they can continue to adjust operations as they learn more about the market. Jaza's original

scale-up plan focused on building more hubs. After the changes in pricing and technology resulted in a broader customer base, however, Jaza realised that they needed to focus first on meeting the higher demand at existing hubs. EEP Africa grant funds allowed the company to pivot its growth strategy and meet customer expectations. This has created a solid foundation and reputation on which to base further expansion.

*Raising money is never easy. EEP funding came right before our equity raise, which boosted morale and showed potential investors that we had a portion of the financing already secured.*

## The Energy Ladder Myth

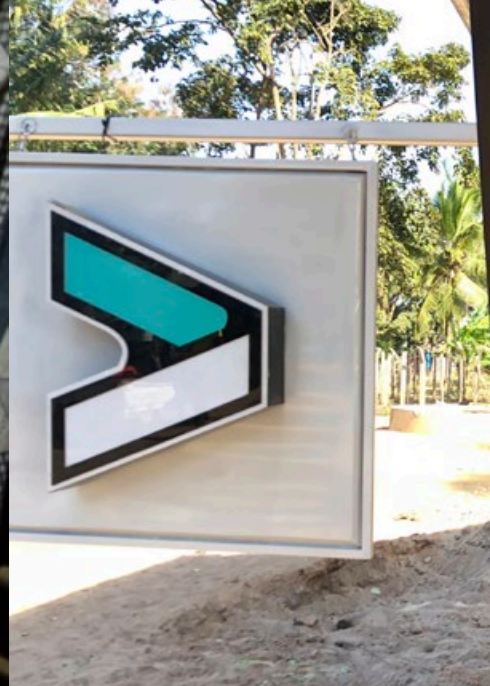
Energy access in Africa has traditionally been viewed as a ladder. An off-grid customer starts with firewood or kerosene, then moves up to a pico-solar lantern, then a solar home system (SHS), and then a mini-grid. Consumers were expected to move in one direction only, progressing upward to more powerful technologies as new energy options appear in the community.

The experience of Jaza in Tanzania has shown that this is not necessarily the case and that energy companies need to adjust their thinking to better meet customer needs.

Jaza's first hubs were in the Pemba region, where 70% of communities have access to the national grid. Based on the energy ladder theory, Jaza targeted communities that were not near the grid. However, Jaza soon realised that only 15-20% of households were connected to the grid and the rest were still using kerosene. The majority of households could not afford to connect to the grid, which can cost several hundred dollars.



Consumers are moving up and down the energy ladder or even using an energy mix.



^  
A customer using a Jaza pack to light her home in Pemba.

In the Mtwara region, most communities are still off-grid but 30-40% of Jaza customers previously had a SHS. Many SHS customers were already growing tired of replacing the battery, which has a lifespan of 3-5 years, or dealing with broken systems. Some households began building their own SHS from used components to save money, but the lack of reliability was an issue. The option to rent a battery, securing reliable power without the risk of owning the battery, starts to look very attractive.

Jaza also benefits from having customers with SHS experience. These customers already understand the benefits of solar power and know what level of energy their household needs on a daily basis.

The battery-as-a-service model offers customers a flexible and secure energy source that more directly meets their budget and needs. Consumers in Tanzania are moving up and down the energy ladder or even using an energy mix. Some customers use their Jaza packs as a second, portable solution that complements rather than replaces their other sources of energy.

This approach to energy also opens new growth opportunities for Jaza. There is already high market penetration in Kigoma, the third region Jaza entered, with lots of pico systems, SHS and solar panels. Rather than being crowded out, the Jaza pack is successfully finding its niche among low income consumers who want reliable energy with limited risks.

^  
Jaza Stars Fadhirah and Haruna serving customers at Mambaba Hub in Mtwara.

## Acknowledgements

The EEP Africa team expresses thanks to the Jaza team members interviewed for this case study: Jeff Schnurr, Fatime Kombo, Radhina Kipozi, Richard Machera, Cynthia Bavo, David Wasonga, Christopher Ngomuo, and Nickodem Simchimba. We also thank the Jaza Stars and customers interviewed in Mtwara.

## Credits

Photos: Jaza Energy, Faith Chege (p.21)

Text: Tracy Dolan, Maggie Knorr

Design: Miguel Oliveira

## Disclaimer

This material has been funded by Austria, Finland and NDF. The views expressed in this publication do not necessarily reflect the donor governments' official policies.

Copyright © EEP Africa 2021

## Contact Information

Nordic Development Fund  
Fabiankatu 34  
00171 Helsinki  
Finland

[info@eepafrica.org](mailto:info@eepafrica.org)  
[eepafrica.org](http://eepafrica.org)

---

EEP Africa is hosted and managed by the Nordic Development Fund (NDF) with funding from Austria, Finland and NDF.

 Austrian  
Development  
Agency



Ministry for Foreign  
Affairs of Finland



Nordic  
Development  
Fund

[www.jazaenergy.com](http://www.jazaenergy.com)