



Solar powered irrigation pump in ghana

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The urgency of the climate crisis is felt across sub-Saharan Africa. As droughts and floods become more common and severe, crops fail and traditional rain-fed agriculture is becoming increasingly unreliable.

Irrigation could hold the key for farmers seeking to ensure food security for their families and to derive an income from their harvests. However, just 4% to 6% of sub-Saharan Africa's cultivated land is currently irrigated, according to British think tank ODI. Irrigation is largely concentrated in more developed African countries and with large-scale commercial farmers.

If rolled out at scale, solar-powered irrigation systems hold huge potential. They work for smallholder farmers, who account for 80% of sub-Saharan Africa's farms, according to the UN Food and Agriculture Organization. But they also displace expensive and polluting diesel pumps and can, if managed correctly, contribute to efforts to manage scarce water resources well for the long term.

Drip irrigation can target water where it is most needed and battery energy storage enables farmers to water plants during the evening, minimizing loss to evaporation. Farmers can also use systems to charge small devices such as mobile phones, enabling them to access accurate weather forecasts and agronomy advice in real time.

Chiefly, there is the issue of affordability. Farmers need to be able to pay the upfront cost of a solar-powered irrigation system and to pay for the duration of its use. When compared with the diesel-fueled irrigation pumps many farmers use today, the total lifetime cost of solar powered irrigation systems can be substantially lower. We estimate farmers can save 40% to 60% on irrigation costs.

As we see across the off-grid solar sector, adopting a pay-as-you-go (PAYG) approach - or, in our case, pay-as-you-grow - has the benefit of allowing farmers to pay for their systems over time, as their income increases due to better harvests.

The reputation of this model has been tainted, however, by the use of sharp selling practices designed to force customers to sign up for systems regardless of affordability. To avoid this, training is key and it is crucial to separate sales and credit teams, aligning key performance indicators and compensation to ensure that there is a balanced approach between customer acquisition and portfolio health. It is also critical that sales agents get paid their commission over time so that they are incentivized to help screen potential clients.

It is also important to structure payment plans according to customer needs, using a variety of methods to better understand their circumstances, including ID verification and cross checking a potential customers' credit history via the Credit Reference Bureau. We also use a proprietary credit-scoring algorithm.



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Even with appropriate pre-sales care, there is always a risk that customers may fall behind on payments. Dedicated relationship managers with advanced training and business intelligence are crucial in providing after sales support, monitoring customer accounts, and providing personalized support should they identify any early signs of concern. As a last resort, having the technical capability to repossess systems helps create lending controls.

Appropriate payment plans are important but so too is keeping the upfront cost of solar pumps low for customers and, to this end, SunCulture is pioneering the use of carbon revenues. We are the first African solar water pump company to receive certification from Washington-based sustainability standards organization Verra. SunCulture believes that this route will become an increasingly established source of revenue for irrigation, nature-based solutions, and initiatives across the wider climate adaptation sector. For that shift to happen, someone has to go first.

Moving on from affordability, maintenance is the next key challenge, particularly in remote and rural areas where farms can be hard to reach and the availability of trained technicians is limited. By managing the lifecycle of pumps from design through manufacture, finance, installation, and maintenance, companies can work with farmers to ensure that pumps are able to continue to function in often challenging local conditions, season after season.

Internet-of-things (IoT)-enabled technology enables trained teams to monitor pump performance and conduct maintenance remotely. This is complemented by strategically located sales and service centers and a distributed team of field engineers able to rapidly respond to maintenance issues, expand local capacity and minimize downtime for farmers reliant on irrigation for successful harvests.

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