

## **Solarizing Key Agricultural Value Chains in East Africa**

### **A Game-Changing Discovery: The Solar Irrigation Potential in Laikipia**

George Gichuki was trapped in a costly cycle. As a horticulture farmer in Solio Village 5, Laikipia County, he faced a relentless reality: every few days, he would drive 16 kilometers to buy petrol for the pump that kept his 2.5-acre farm alive. The dry climate left him no choice but irrigation, yet the petrol-powered system was bleeding his profits.

"We had to buy fuel seven days a week, thirty days a month just to irrigate the farm," George recalls. "It was costing me an average of 250,000 Kenyan Shillings monthly. At that rate, I could only afford to water part of the farm. The rest had to wait."

Profitability seemed impossible. Every shilling spent on fuel was a shilling lost to unpredictable prices and the grinding reality of smallholder farming economics.



*Figure 1: Dried water pan that was used for irrigation before installation of the solar irrigation system*

Everything changed when George joined the DREEM Programme's farmer capacity-building activities. Through training organized by KCIC through the

programme's Spoke Partners, Kenya National Farmers' Federation (KENAFF), Dairy Training Institute (DTI), and AGILE Consulting, he was introduced to productive uses of solar energy. But the prospect felt distant and uncertain.

"I was skeptical," he admits. "Could solar really work here? Would it be affordable? Would the investment actually pay off?" The real breakthrough came during a peer learning visit to Solio Ranch Settlement, where George witnessed solar-powered irrigation systems operating in real farming conditions. Technology providers demonstrated different solutions, walking farmers through installation, maintenance, and economics. Most importantly, George saw other farmers like him who had already made the leap.



Figure 2: Farmer training at Solio Dairy Cooperative in November 2025

"After seeing how the solar system worked and learning from other farmers who had adopted it, I realized it was something I could also do," he says.

Armed with confidence and the numbers to back it up, George invested in a solar-powered irrigation system in February 2026. The decision was no longer a gamble, it was proven.



Figure 3: Farmers visiting exhibition booths at a peer learning events

Since installation, the impact has been dramatic. George has completely eliminated his fuel dependence, reducing his monthly irrigation costs from 250,000 Kenyan Shillings to zero. For the first time, he can afford to irrigate his entire 2.5-acre farm year-round, growing fruit trees, vegetables, and cereals like maize without the constant anxiety of fuel costs.

"I no longer worry about fuel prices or whether the pump will start," he reflects. "The investment has given me real confidence in planning farm operations."



Figure 4: Installed solar-powered irrigation system at George's farm

George's success has created opportunities far beyond his own fields. His neighbor, Nancy Rose, who grows potatoes, now has reliable access to water from George's farm. The difference is remarkable: her harvest has jumped from

100 to 130 fifty-kilogram bags per acre, and she can now plant potatoes year-round instead of being limited by the dry season.

"The community has realized that solar is achievable," George notes. "People see it works, and that it's affordable and reliable."

George has also created direct employment, now employing two workers on his farm to help manage the expanded production made possible by reliable irrigation.

With irrigation now predictable and affordable, George is reinvesting the monthly savings of 250,000 Kenyan Shillings into expanding production—a cycle of growth that petrol could never have enabled. More importantly, his farm has become a living demonstration of solar's potential, inspiring neighbors and the wider Laikipia community to see renewable energy not as a distant dream, but as an achievable, profitable reality.



*Figure 5: Solar irrigated vegetables growing on George's farm*