

## Rainmaker Solar-Powered Water Pump



### Why to choose this solution?

The Rainmaker is a portable solar-powered water-pumping system designed for small-scale farming and household use. It can lift water to a maximum height of 100 m, with a capacity of seven cubic meters per day, ensuring a steady supply of water for farming and household needs. It can provide sufficient water for up to 1.5 acres of irrigation. It can also be used for livestock and domestic household needs. The Rainmaker pumps a lot of water and does not use any fuel other than sunlight.

### Savings per day or production:

Initially, users of electric water pumps used to irrigate crops had to pay an average of KSh 4,500- 5,000 (USD 45-50) in monthly electricity bills. Running the Rainmaker system now costs KSh 2,500-2,800 (USD 25-28) per month, saving about KSh 2,200 (USD 22) per month, i.e., KSh 73 (USD 0.73) per day.

### Cost in money and in own time to construct:

Costs KSh 50,000 (USD 500). A survey fee of KSh 4,500 (USD 45) is charged when a field agent visits a site, of which KSh 2,000 (USD 20) is a sales analysis fee. Installation usually takes one day, and the technician conducts proper on-site training for end-users.

### Lifetime:

Not specified.

### Maintenance needed:

Post-installation issues such as permanently mounting solar modules of the Rainmaker pump on the roof.

### Resources needed in use:

Water, and solar power.

### Problems and limits:

Entry of cheaper fake and counterfeit products into the Kenyan market affects customer trust and confidence that have been built in their products so far and could have a negative impact on sales.

### Where and how can you get it or make it?

In Kenya, SunCulture, a private company supplying Rainmaker systems, has its main office in Nairobi as well as sales outlets in Eldoret (Uasin Gishu County), Nakuru (Nakuru County), Mitunguu (Meru County), Mutithi (Kirinyaga County), and Matanya (Laikipia County), with more being planned to cater for growing demand. It

supplies its products to all parts of Kenya, with most of their sales done through Facebook, radio, and direct enquiries made at the head office. In Africa, SunCulture has supplied solar water-pumping systems to Zambia (where there is a distributor), Uganda, Somalia, Ethiopia, Rwanda, Nigeria, Ghana and Mozambique.

**Skills needed to produce, install, maintenance, use:**

Production, installation, and maintenance require engineering skills. Use of the system requires training.

**How to use it:**

To be added.

**How to maintain it:**

To be added.

**Climate effect (if any):**

Not specified.

**Where it is used and how many users are there?**

Used in all parts of Kenya.

**Why is it successful?**

An important contribution to their success is that Sunculture has constantly designed and redesigned Rainmaker systems to meet farmers'™ needs. Rainmaker also pumps a lot of water and does not use any fuel. Can be used in several ways, e.g., for livestock and domestic household needs. The pump is suitable for many water sources including wells, boreholes, dams, and lakes.

**If you can make it, a short description, typical problems, materials needed:**

Materials needed include a 24V stainless-steel submersible water pump; 120-Watt portable solar modules; a 480-Watt-hour 24V waterproof battery bank paired with a Weather Smart Maximum Power Point Tracking (MPPT) charge controller in a lockable waterproof portable case; and a brass impact sprinkler with a 10-m radius.

**How to make it (if possible):**

Not relevant.

**How is it delivered and by whom?**

Installation of Rainmaker solar-powered water pumps is done by SunCulture Company, which has a dedicated team of 75 staff of which 60% are male and 40% female, based in various parts of the country. These include 16 full-time field-based technicians and 30 field-sales agents who provide installation services to the customers after conducting surveys. The field agents work in, and report to regional representatives in, three main regions, namely Western, Central, and the Coastal Area.

**Successful financial model**

SunCulture operations are currently supported by grant funding, by income from sales, and by strategic partnerships. Key funding partners include the Shell Foundation, USAID, and Microsoft, among others. The company has also attracted investment from international institutions such as Energy Access Ventures and Partners Group, which has enabled them to add business management, to widen their geographic reach, and to recruit sector-specific partners.

**What policies and strategies helped the success?**

The overall policy environment is favourable for SunCulture operations in Kenya, to which they can import all their products with ease. Imported solar irrigation systems are tax-exempt, and this favourable regulatory framework contributes to lower selling prices.

**More info:**

<http://www.sunculture.com/>

**Sources:**

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**When was the case uploaded?**

2020-08-27

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