Improved Solar-Powered Shallow Wells



Why to choose this solution?
Solar water pumps is a socially and environmentally attractive technology to supply water. It is simple, reliable, relatively cheap, easily understood and requires low maintenance costs. Skills required to install the system are often available locally.

Savings per day or production:
Improved shallow wells help to reduce on financial bills since, it is installed once and there no monthly bills incurred. This also helps to save money in a way that the expenditures of buying gasoline and diesel to pump the water are minimised.

Cost in money and in own time to construct:
The improved shallow well requires 2-3 days to construct. It costs between USh 4,500,000 - 5,000,000 (USD 1,250-1,388) to construct.

Lifetime:
The solar water-pumping systems are designed to last for a period of about 20 years. However, some components of the system, such as the controllers, may have to be replaced within this period

Maintenance needed:
Solar energy systems require periodic inspections and routine maintenance to keep them operating efficiently. Also, from time to time, components may need repair or replacement. You should also take steps to prevent scaling, corrosion, and freezing. While you might be able to handle some of the inspections and maintenance tasks on your own, others may require a qualified technician.

Resources needed in use:
Water-storage containers.

Problems and limits:
It involves higher initial costs because it recquires a solar pump, plumbing work and tank where the water will be stored. Solar panels are popular with thieves and so need to be monitored during the day and at night. It is also necessary to avoid damaging the panels; youngsters throwing stones are a constant problem. The fact that there are in principle no running costs makes it hard to convince users to set aside money to cater for regular maintenance and repairs. These have to be conducted by experts, who are often not available at short notice. As a result, repairs are time consuming. Lower output in cloudy weather and the system must have good sun

exposure between 9 AM and 3 PM.

Where and how can you get it or make it?
JEEP installs and constructs the shallow water wells and these have been installed in all regions in Uganda.

Skills needed to produce, install. maintenance, use:
Needs a technical person to manatain and install.

How to use it:
Not relevant.

How to maintain it:
Not relevant.

Climate effect (if any):
In regards to pollutants released during manufacturing, IPCC (2010) summarises literature that indicates that solar PV has a very low lifecycle cost of pollution per kiloWatt-hour (compared to other technologies). Recycling of solar panels is already economically viable. A solar-based water pump system does not result in greenhouse-gas emissions. Extensive use of solar powered water pumps would reduce greenhouse-gas emissions substantially.

Where it is used and how many users are there?
Over 500 people including institutions are using the solar-powered shallow wells in Uganda. Shallow wells have been installed by JEEP and other companies in central, northern and western Uganda.

Why is it successful?
It is efficient and can be operated easily with no carbon emissions. It is well known and can be used in several ways / institutions i.e hospitals, schools, households. It has greatly contributed to improved access to waters in poor rural communities. Additionally, it has contributed to improved standards of living through increased access to water. The equipment is purchased once and maintenance can be done after 3-5 years.

If you can make it, a short description, typical problems, materials needed:
Technical personnel are required for installation.

How to make it (if possible):
Not relevant.

How is it delivered and by whom?
JEEP installs them.

Successful financial model
Support from donor agencies and other development partners.

What policies and strategies helped the success?
Government programs implemented by different ministries; for example, the Ministry of Energy and Mineral Development, along with the Ministry of Water and Environment, are training communities on thebenefits of solar energy. Training and advocacy is pursued in communities to foster a positive attitude toward environmental conservation. The government, through the Ministry of Health, is encouraging promotion of solar in off-grid, peri-urban, and rural areas. Many solar subsidies and tax waivers have been put in place through the Uganda revenue authority.

More info:

Sources:
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