



***Global Solar and  
Water Initiative***

## **O&M TOOLKIT FOR COMMUNITIES: SOLAR POWERED WATER SUPPLY SYSTEMS**



## Installation

This section of the toolkit outlines the things that community users should look out for during the set-up of solar-water pumping systems. Committee members and scheme operators are encouraged to work with system installers and donating agencies to ensure the five measures below are adhered to.

### 1. Exposed Control Box:

The control box **SHOULD** be **safely mounted** onto a solid structure, with all its wires insulated.



### 2. Exposed Wires:

Electricity wires **MUST** be insulated at all times; wires **should not** be exposed.

In case exposure, contact an electrician.





### 3. Mounting of solar panels:

Ensure solar panels are **properly secured** on to an appropriate **mounting frame with enough reinforcement** to mitigate the risk of theft and strong winds blowing off panels.

In case of loose mounting, contact a welder to reinforce the installation.



### 4. Completed Name Plates:

Ensure system **details are displayed** on the borehole name plate. This information is important, especially, in case of need for pump repair or replacement.



### 5. Unsecured Solar Panels:

System Components including solar panels, the pump and storage tanks **MUST** be safely secured by a lockable fence manned by a security guard at night.



## Operation & Maintenance

This section of the toolkit details the steps that the scheme operator and the water point committee members should take to ensure that the system is running efficiently.

### 1. Regular Cleaning of Solar Panels:



Regularly clean the panels to remove accumulated dust and other debris like bird droppings. This will improve the rate of pumping. Cleaning should be done with a soft sponge, and water. **DO NOT USE SOAP.**

Cleaning should be more regular during the dry season.



### 2. Trimming of trees:

Trees around the solar panels should be regularly trimmed to ensure that they do not give a shadow that blocks the panels from receiving maximum sunlight.



### 3. Overflowing Tank:

If the tank does not have a valve to cut off water supply when it gets full, the system operator should shut down the pump as soon as the tank is full to prevent overflows.



### 4. Clearing the area around the borehole and Solar Panels:

The compound where the solar panels and pump are located should be kept clean and free of litter and debris. Any tall grass should be trimmed to deter theft and vandalism.



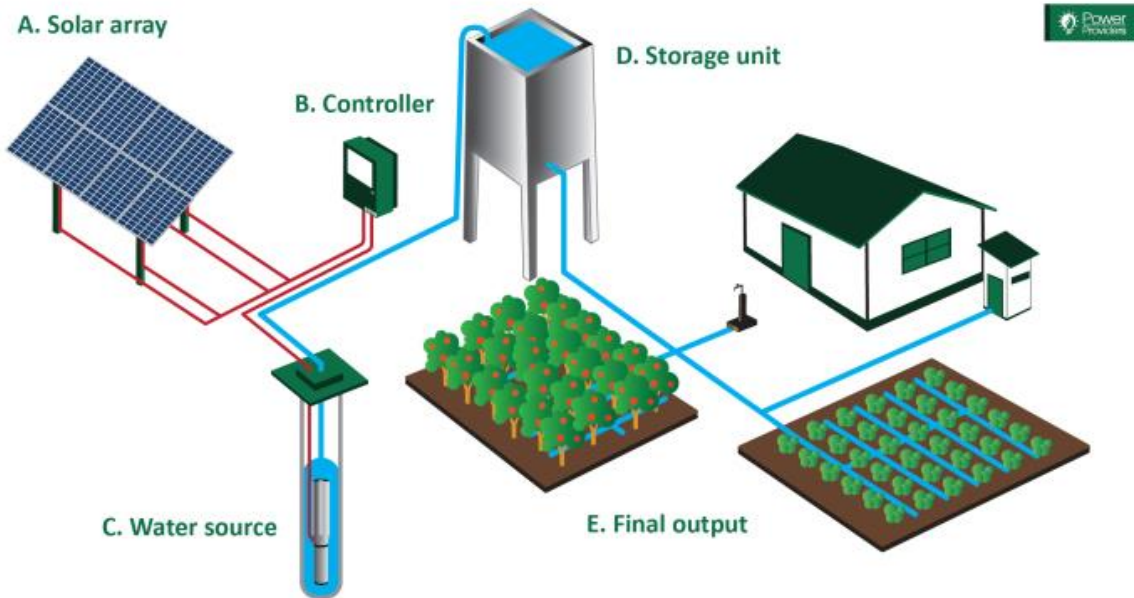
### When to call a technician

- When the pump is making unusual noises.
- When there is any change in the rate of pumping- The system is pumping less water than it used to yet the solar panels are clean.
- When a bi-annual maintenance check needs to be performed.

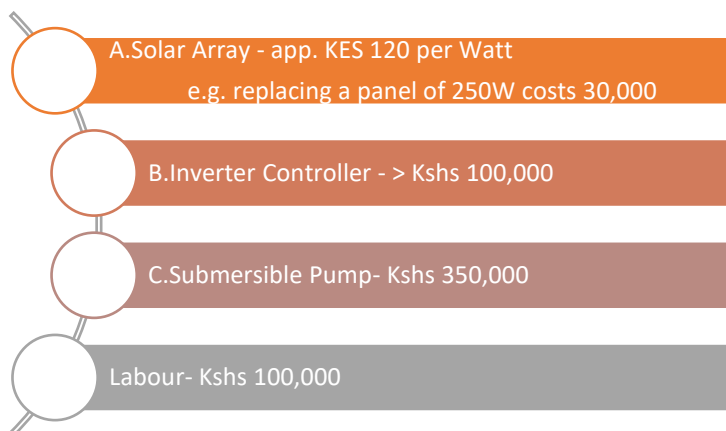


## Financial Management

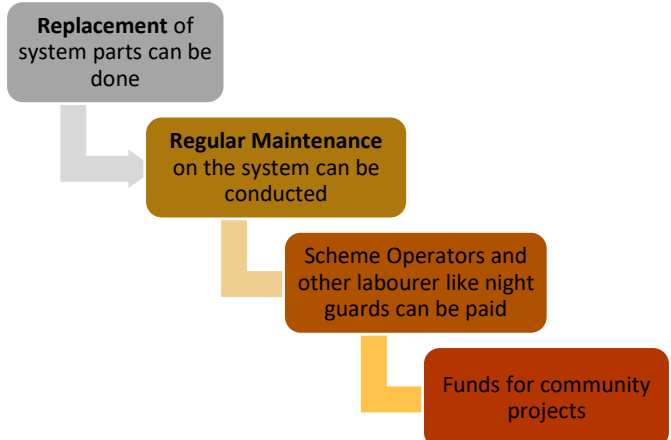
This section details the prices of various solar powered water system components and demonstrates why water point leadership must ensure that they are collecting and saving water fees. Failure to collect adequate money from the community will mean that if a system component fails the committee will be unable to replace it resulting in extended periods of non-functionality (no water access).



### Prices of system components: why you MUST have water point savings



### Why make sure you are collecting and saving water fees?



\*\* These are estimated values for a system with 130m total dynamic head and a yield of 8m<sup>3</sup>/hr. System Component costs normally depend on the size of the array as well as the type of pump used.



## 1. Storing of Collected Money:

Money that is collected **SHOULD NOT** be stored in a wallet or the treasurer's home. It is recommended that the money should be immediately transferred to the bank. This can be easily done through mobile money banking (Mpesa, Airtel Money, Equitel).



## 2. Accountability and withdrawing of saved money:

There should always be at least two signatories when withdrawing from the bank account. Approvals must be granted by the committee and documented in meeting minutes.



Three signatures



One signature



## Checklist and Important Numbers

This section highlights the required documents and necessary numbers that scheme operators and committee members **MUST** maintain.



### **Important Telephone Numbers**

- Installation Technician \_\_\_\_\_
- Certified PV Installer \_\_\_\_\_
- Certified Pump Expert \_\_\_\_\_



### **Important Documents**

- ☐ Bank Account Registration Documents
- ☐ Equipment Warranty Certificates
- ☐ Equipment repair logs
- ☐ Pumping log / register



### **Important Training**

- ☐ Financial Management Training
- ☐ Systems Operation Training (The scheme operator and members of the committee should be trained on how to operate the system on a day to day basis)