

# SOLAR IRRIGATION PROJECT



Most families in the Lower Shire are subsistence farmers who are dependent on growing enough food each year to provide for all their needs. However, weather patterns have changed, and much suffering has been caused during the last twenty years from unreliable rains. Although there have been a few years when excessive rain has caused flooding, the greatest problem has been caused by insufficient rain.

In a normal year, the rain should commence at the beginning of November when seeds are planted and continue until the end of March. The harvest is gathered in during April. In recent years the rain has sometimes stopped at the end of January and during one year the rain did not start until early in February. For the rest of the year there is rarely any rain at all, and nothing can be grown except for cassava, a drought crop, or the few plants which can be grown on land close to a river.

We set up a pilot wind-pump irrigation project in Saopa Village during 2007. This proved to be extremely successful. Following this success we provided for a total of eleven wind-pump irrigation systems in Malawi and two in Mozambique. Unfortunately, the winds have increased in recent years and have been damaging these wind-pump structures. In September 2018, we, therefore, provided our first solar irrigation system.

These irrigation systems provide a low-technology, easy to maintain, free to run, way to bring about greatly increased food security. As these irrigation systems draw water up from a well, they can be set up throughout the Lower Shire and not just beside a river as with many other methods of irrigation. They are also better for the environment as they circulate ground water instead of taking water from rivers.





These irrigation systems will not only enable farmers to grow a more reliable crop each year during the rainy season but also a second crop during the dry season. This means that if flooding destroys crops during the rainy season, farmers can grow a replacement crop during the dry season when it is very unlikely to flood.

These solar irrigation systems are constructed and operate as follows: a well is constructed to a depth of 80 metres on the highest area of land within the chosen location. The large solar panel is then set up close to the well. The energy produced by this panel drives a pump which draws water up from the well. A Jooste or an Afridev pump is used to draw up the water because the spare parts for these pumps are available in local markets.

After the water has been drawn up from the well, it is then piped underground to a large plastic water storage tank. There is a tap on the side of this water storage tank which allows water to be drawn off into drainage channels and plastic piping, which direct the water toward different farmers' fields on a rotation basis. One solar irrigation system can irrigate 200 acres of land. Farmers construct mud channels in each field which can be blocked and unblocked to direct the water to all their crops.

The first crop from our wind-pump irrigation system in Saopa Village produced a total yield of 210,000kg of Masika maize which is 4,200kg per acre. (The wind-pump system only irrigated 50 acres of land.) This yield is slightly higher than the highest quoted yield for this hybrid type of maize. The value of the total crop produced from this first planting was Malawi Kwacha (MK) 21,000,000, or £32,558 and thus £65,116 could be earned each year from growing two crops.

As the solar irrigation systems irrigate four times the area of land (200 acres), the potential sale value of the crops produced in one year could be as high as £260,000. (The value of the crops and the exchange rate into pounds sterling will vary from month to month.)

The current cost for one solar irrigation system, drainage channels, and plastic piping, together with construction and a year's oversight and maintenance is MK16,875,000 (£15,189.00).

We are encouraging communities who operate this irrigation project to sell some of their extra crops and to use the money raised to fund other projects within the village.

Price and Exchange Rate are dated 3rd October 2022  
Exchange Rate: £1 = MK1,110  
(Sterling prices have been calculated to the nearest pound.)