



## KUNGWINI SOLAR FISH FARM – Harnessing the power of the Sun

Due to load shedding and an erratic supply of electricity from the grid, UJ PEETS developed a hybrid solar photovoltaic (PV) prototype to meet an all-year-round electricity demand. The system ensures efficient waste and water management in aquaponics to facilitate fish and plant growth as a sustainable business for the Kungwini Solar Fish Farm.

Aquaponics is a fast-growing closed-system food production technology that integrates recirculating aquaculture with hydroponics. Aquaponic systems offer several benefits, including efficient resource (e.g. water and nutrient) utilization. Dissolved waste nutrients excreted by the fish are taken up by the plants, reducing waste discharge into the environment. For this to be effective, an uninterrupted supply of electricity and water is imperative.

KWO was supplied with a hybrid installed prototype (i.e. uses both solar energy and grid electricity). The prototype comprised of solar panels, control switches, an inverter and a battery bank to store excess energy. The smart inverter indicates whether the electricity supply is from the grid or solar. The system is essential to providing a continuous power supply for the air injector and water pump, enabling optimal fish growth.

UJ PEETS Station Engineer, Dr Tafadzwa Makonese comments: “We are excited about this installation and are currently monitoring its progress. We hope to implement similar systems elsewhere to reduce waste into the environment and for efficient resource utilization by creating a circular economy. Typically, this has the potential to reduce pollution risks and impacts. All thanks to solar energy - a precious resource on the African continent.”

The fish farm will provide an alternative income stream for the residents of the Paul Jungnickel Home for adults under the auspices of the Kungwini Welfare Organisation (KWO). KWO also contributes to improving the quality of life of the vulnerable residents in nearby communities by offering social services and educational projects, including agriculture, horticulture and early learning centres.

More information on KWO is available on their website: [www.kwo.org.za](http://www.kwo.org.za)