



PROJECT PROFILE

Off-grid solar solution for drinking water treatment makes affordable and sustainable water supply in Zanzibar a reality

Access to clean and affordable drinking water is a major challenge for people throughout the Global South, including regions of Tanzania and Zanzibar. This need is especially acute for people living in rural areas. Similarly, agriculture, which is the main economic activity in these regions, depends on a reliable, affordable and sustainable water supply.

This is where the Berlin-based company Boreal Light GmbH comes in. They developed a solar-powered water desalination system that connects to existing water sources like wells or boreholes. In a cost-effective manner, polluted or salty water is transformed into drinking water, thus assuring a sustainable water supply for local communities.

The technology design for the project was kept as simple as possible in order to optimise costs, operation and maintenance for future operators without compromising the quality of the drinking water supply itself. Solar power is deployed for the drinking water treatment and pumping processes, pumping brackish water out of a borehole. The desalination process uses reverse osmosis.

Afterwards, the pumped water is filtered and treated in several steps until it is potable.

Boreal Light manufactures the desalination systems in Berlin. In Tanzania, its subsidiary WaterKiosk Africa Ltd. installs the systems. Additionally, the operation of the system is monitored from Germany using a remote monitoring system. This guarantees the longevity and functionality of the system.



Drinking water desalination system using reverse osmosis.



Opening ceremony led by Dr Mngereza Miraji (second from left), Secretary General of Zanzibar's Ministry of Water, Energy and Minerals.

The first reference project in Tanzania, realised as a consortium with PURION GmbH, at a school in Nungwi enables the production of 10,000 litres of drinking water per day – more than enough to cover the daily demand of the school's 3,000 pupils plus the staff. Forty per cent of the water is sold at a fair price to neighbouring towns. Salt water, a by-product of the drinking water treatment process, is used either to irrigate a vertical vegetable garden or as service water on the school grounds.

The grand opening of the RES project took place on the 4th of January 2022. A delegation led by the Secretary General of Zanzibar's Ministry of Water, Energy and Minerals, Dr Mngereza Miraji, attended the inauguration ceremony. During which he

announced that Zanzibar is to become the first island state in the world to use solar energy for its entire drinking water production, treatment and distribution.

“Zanzibar is to become the first island state in the world to use solar energy for 100 per cent of its drinking water production, treatment and distribution. The government is taking the next steps to make this a reality by undertaking the project and teaming up with Boreal Light GmbH.”

Dr Hamed Beheshti, Founder and CEO
at Boreal Light GmbH

Company Description

Boreal Light GmbH is a Berlin-based company specialising in renewable energy solutions for water treatment. Dr Hamed Beheshti and Ali Al-Hakim founded the young company in 2015. The three core competencies of Boreal Light are fully solar-powered systems, simple design and affordable costs. The company stands for clean drinking, irrigation, fish farming and sanitary water at cost-effective prices. The standard solutions provide between 1,000 and 30,000 litres of hygienic drinking water per hour.



System Information

Electrical capacity	8 kWp
Installed drinking water tanks	2 x 2.000 Litres
Water desalination	Reverse osmosis
Sterilisation	UV sterilisation to remove all bacteria and viruses 400 j/m ² –36 W
Membrane	Four FilmTec DOW membranes
Monitoring	Digital remote monitoring
Yield	10,000 litres of drinking water per day

PURION GmbH is a globally oriented European company headquartered in Germany. With its new developments and advancements of innovative UV systems, it contributes to improving the quality of the most important basis of life, while combining ecology and economy in the process. The new systems meet requirements for various applications for high-performance, easy-to-use as well as cost-effective water, air and surface treatment systems.

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