Facilitating Private Investment in Community Water Pump Solarization: Case Study of Wabe, Ethiopia

Winrock's Solarizing Community Water Supply Project is demonstrating a business model which allows communities in Ethiopia to solarize their existing diesel pumps through Build-Own-Operate-Transfer (BOOT) contracts with local private solar vendors.

In 2020 a piped water system was built in Wabe, a rural community of 17,000 people in Ethiopia's Oromia Region. The water system includes a borehole, diesel-powered water pump, 125 m^3 reservoir, and 37 public water points. After eight months, the Wabe water committee stopped running the system due to the combination of diesel shortages and the high cost of diesel. As a result, women and girls, who are primarily responsible for fetching water, were walking up to two hours per day transporting water by donkey from the Wabe river, or from a grid-connected water pump in a town several kilometers away, which had very long wait times.

In March 2024, the Wabe water committee agreed to participate as a pilot community in Winrock's Solarizing Community Water Supply Project. Winrock conducted a hydrogeology study of the Wabe water system to confirm the good working condition of the borehole, reservoir, and pipes, and determine the maximum possible volume of water pumped per day. After estimating the required solar pump system size, Winrock issued a call for bids from local solar developers and selected two developers. The developers presented their offers to the Wabe water committee along with a group of community representatives, and one developer was selected by the community to install the solar pump. The water committee paid 10% of the solar pump cost up front and signed a contract to pay back the remaining cost over three years.

After the solar pump was installed in April 2025, the water utility began pumping water daily.

April 10, 2025: C.K., a 9th grade student, collects water for her family from a public tap in the newly functioning Wabe water system.

This project was made possible through the generous support of the Conrad N. Hilton Foundation.

SOLAR PUMP SYSTEM SPECIFICATIONS

- **Water Source:** Borehole
- **Total Dynamic Head:** 180 m
- **Daily Water Consumption:** 100 m^3
- **Pump Size:** 13 kW
- **PV Array Size:** 20.4 kWp
- **Pump Brand:** Ustunel
  Controller Brand: Hober
- **Pump Type:** Submersible

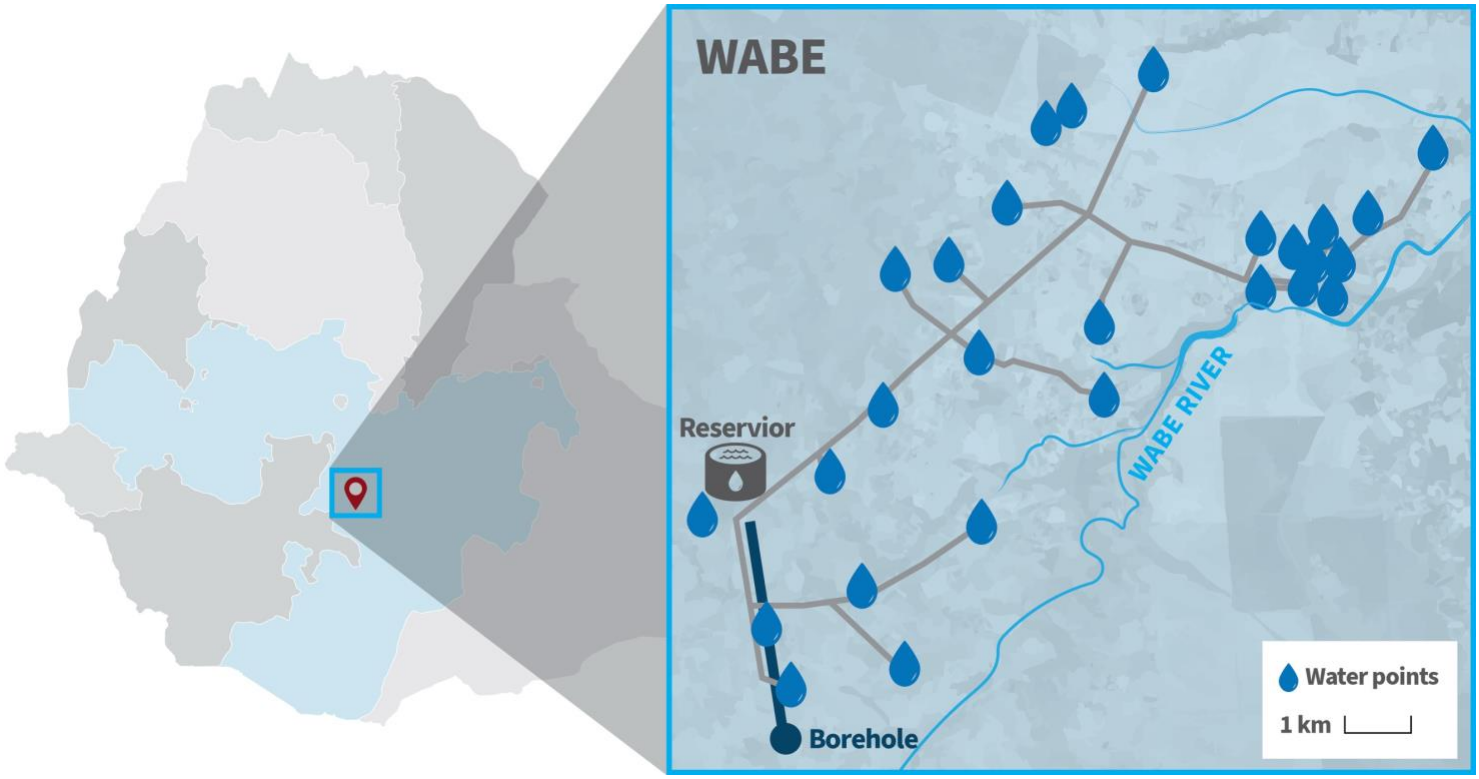
SOLAR PUMP LEASE-TO-OWN CONTRACT TERMS

Parties to lease: Water management utility, Woreda Water and Energy Office, Woreda Administration and Tadele Tenaw P.L.C.	
Duration of lease	36 months
Cost of procurement and installation of solar pump system plus operation and maintenance/repair during the 3-year contract	ETB 4,658,827 (US $43,951)*
Down payment	ETB 465,883 (US $4,395)
Monthly installment payment to solar developer	ETB 167,584 (US $1,580.98)

***Exchange rate in August 2024: 106 ETB/USD**

After installation of the solar pump, the water tariff was set at 100 Birr/m^3. The water tariff is sufficient to cover the monthly instalment payments to the solar developer while still reserving funds for repairs and maintenance to the rest of the water infrastructure.

WABE WATER SYSTEM MAP



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