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FOUNDATION

WINROCK  
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## Facilitating Private Investment in Community Water Pump Solarization in Wetet Abay, 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 2023, the Rural Water User Association of Wetet Abay (Amhara State), population 30,000, was struggling to regularly operate the community's diesel-powered water supply system because of the high cost and unreliable supply of diesel fuel. As a result, water could only be distributed to each neighborhood once a week; women and girls, who are primarily responsible for fetching water, were hauling up to 75 pounds of water from the Abay River twice a day. The community's diesel-powered water system, installed in 2012, included a 100 m<sup>3</sup> reservoir, 9 public water taps, and 1,100 household connections (see map).

In December 2023, community (kebele) and district (woreda) leaders agreed that Wetet Abay would participate as a pilot community in Winrock's Solarizing Community Water project. The solar pump BOOT model only addresses replacement of the pump and does not address the rest of the water infrastructure, so Winrock conducted a


hydrogeology study to confirm the good working condition of the borehole (drilled in 2020), 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 and the community chose an Addis-based company to install the pump. The community 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 2024, the community began pumping water daily and increased their water distribution frequency by more than 200%, a significant improvement.





*Signing the BOOT contract, December 19, 2023. L-R: General Manager, Meseret Mare Solar Importer; Wetet Abay Water Utility Board Chairman; Wetet Abay Water Board Community Representative (Elected); Wetet Abay Water Utility Technician.*


Solar Pump System Specifications


 **Water Source:** Borehole


 **Total Dynamic Head:** 126 m

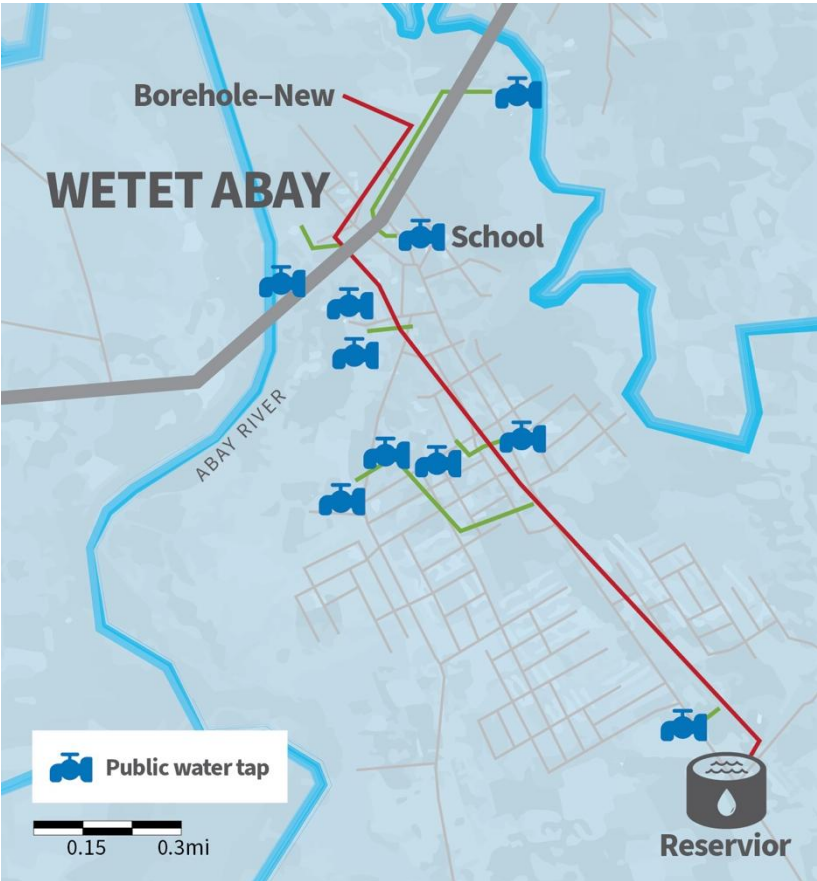
 **Daily Water Consumption:** 100 m<sup>3</sup>

 **Pump Size:** 11 kW

 **PV Array Size:** 14.85 kWp

 **Pump and Controller Brand:** Difful

 **Pump Type:** Submersible



Solar Pump Lease-To-Own Contract Terms

<b>Parties to lease:</b> Wetet Abay Water Utility, North Mecha Woreda Water and Energy Bureau, North Mecha Woreda Administration, and Meseret Mare Solar Importing and Trading Plc	<b>Duration of lease</b>	36 months
	<b>Cost of procurement and installation of solar pump system plus operation and maintenance/repair during the 3-year contract</b>	ETB 2,044,096 (US \$35,861)*
	<b>Down payment</b>	ETB 340,683 (US \$5,977)
	<b>Monthly installment payment to solar developer</b>	ETB 47,317 (US \$830)

\* Exchange rate in April 2024: 57 ETB/USD

After installation of the solar pump, the water tariff remained the same. 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.

Pump Operation, Expenses, and Revenues Before and After Solarization

	Before Solarization	After Solarization (January – March, 2025)
<b>Daily average volume pumped (m<sup>3</sup> / day)</b>	100 m <sup>3</sup> when fuel was available, distributing to each neighborhood every 7 days	129 m <sup>3</sup> , distributing to each neighborhood every three days
<b>Average monthly cost for diesel fuel</b>	ETB 70,000 (US \$1,228)	No fuel needed
<b>Total average monthly revenue collected by Water Utility</b>	ETB 79,956 (US \$1,402)	ETB 132,825 (US \$2,330)