



December 2016: Lilian Akinyi with her 0.75-acre maize crop.

SOLAR WATER PUMP (SWP) RETURN ON INVESTMENT

CASE STUDY: HOMA BAY COUNTY, KENYA

Winrock International's USAID-funded **Kenya Smallholder Solar Irrigation (KSSI)** project is working to accelerate commercial sales of SWPs to small farmers. Through collaboration with USAID's Kenya Agricultural Value Chains Enterprises (KAVES) project, KSSI staff met Ms. Lilian Akinyi, who rents a farm in Homa Bay County near Lualla Kambuya village. She was using a diesel pump to transfer water from a canal which is fed by the Sondu Miriu River. She paid KES 5,500 per season to hire a diesel pump one day a week. She irrigated 0.75 acre of tomatoes with the diesel pump and 0.25 acre of kale with a watering can.

In September 2016 Ms. Akinyi purchased a KES 75,000 Futurepump SWP, which included a 12 meter pipe, through Futurepump's Pay-As-You-Go program. She paid KES 20,000 down, and will make a monthly loan payment of KES 2,500 for 22 months. She stopped using the diesel pump as soon as she purchased the SWP.

Benefits of SWP

Ms. Akinyi no longer has diesel pump rental, fuel and transport costs. She has increased her irrigated area from 1 to 1.25 acres, and is irrigating more frequently than before. Using conservative estimates, her gross profit is projected to increase by 350% after she pays off the loan.

Return on Investment Analysis

FARM OF LILIAN AKINYI

	Year 1 Actual		Year 2 Actual	Year 3 Projected
	Season 1 (Pre-SWP)	Season 2 (Post-SWP)	Season 2	Season 2 (Post Loan)
Farmer Profit and Loss Statement				
Acreage Planted	Tomatoes: 0.75; Kale 0.25	Tomatoes: 0.25; Kale 0.25; Maize 0.25	Tomatoes: 0.5; Kale 0.5; Maize: 0.5	Tomatoes: 0.5; Kale 0.5; Maize: 0.5
Total Yield (kg)	2,517	3,683	6,300	6,900
Yield change, %		46%	71%	10%
Total Revenues	99,200	144,890	250,600	282,800
Revenue growth %		46%	73%	13%

Operating Costs	29,530	38,063	50,246	52,700
Pump Fuel and its Transport	2,500	1,000	-	-
Pump Hire and Maintenance	3,000	3,700	1,500	1,800
Total Operating Costs	35,030	42,763	51,746	54,500
Gross Profit	64,170	102,127	198,854	228,300
Gross Profit Margin, %	65%	70%	79%	81%
Loan + interest payment (6 months)	-	15,000	15,000	-
Earnings Before Taxes (EBIT)	64,170	87,127	183,854	228,300

Debt Coverage and Investment Returns			
SWP Total Upfront Investment	78,600	5 Yr Return on Investment (ROI)	18.14
financed by own savings	23,600	5 Yr Internal Rate of Return (IRR)	197%
financed by Vendor Loan (10%, 2 yrs)	55,000	Incremental Gross Profit/Initial Investment	2.56x

Loan Principal and Interest due in 2yrs	65,000	Cash Flow/Total Debt Coverage	10.63x
vs Cash flows generated in 2 years	691,011		