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**Kenya Integrated Water, Sanitation
and Hygiene Project (KIWASH)**

KIWASH Approach to Solar Pump Financing for Smallholders



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OUTLINE

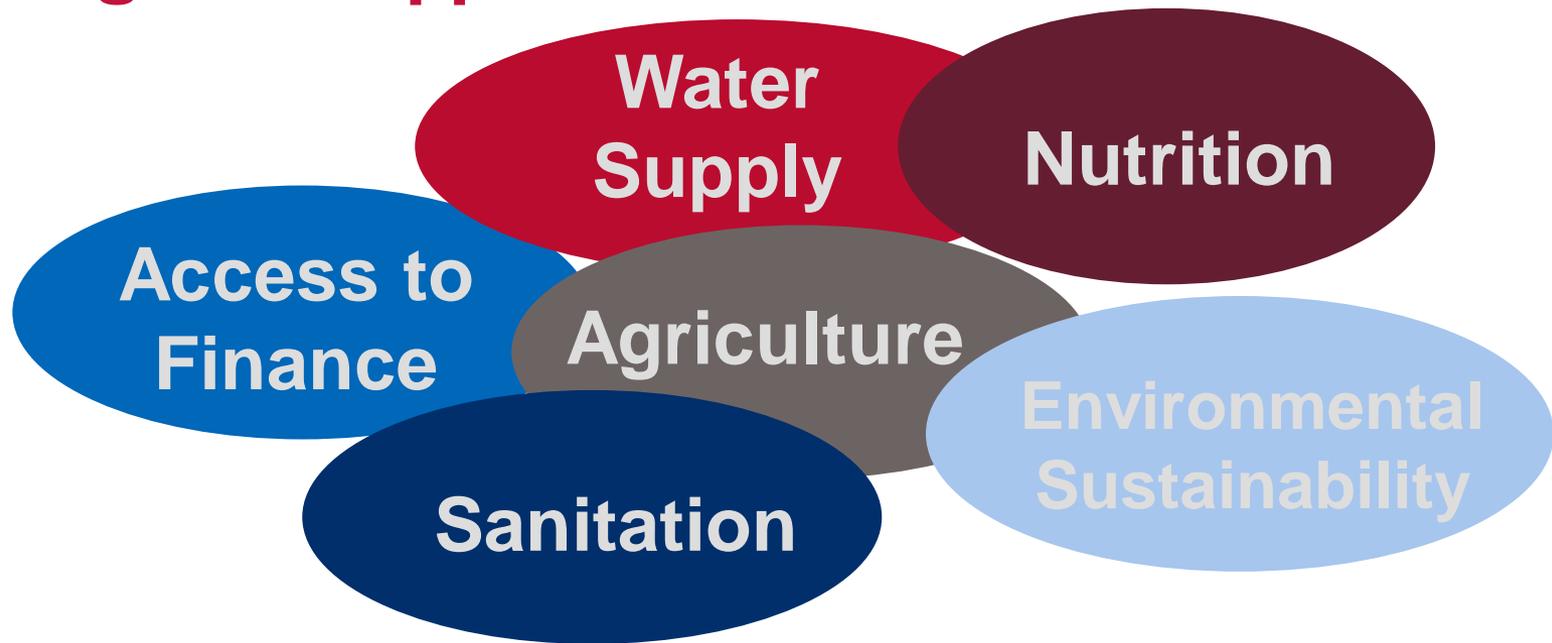
- Introduction
- Pump Testing and Characteristics
- Financing
- Recommendations



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Integrated Approach



Goal: Significantly impact the supply of water and sanitation services, and nutrition among poor urban and rural households in the 9 target counties

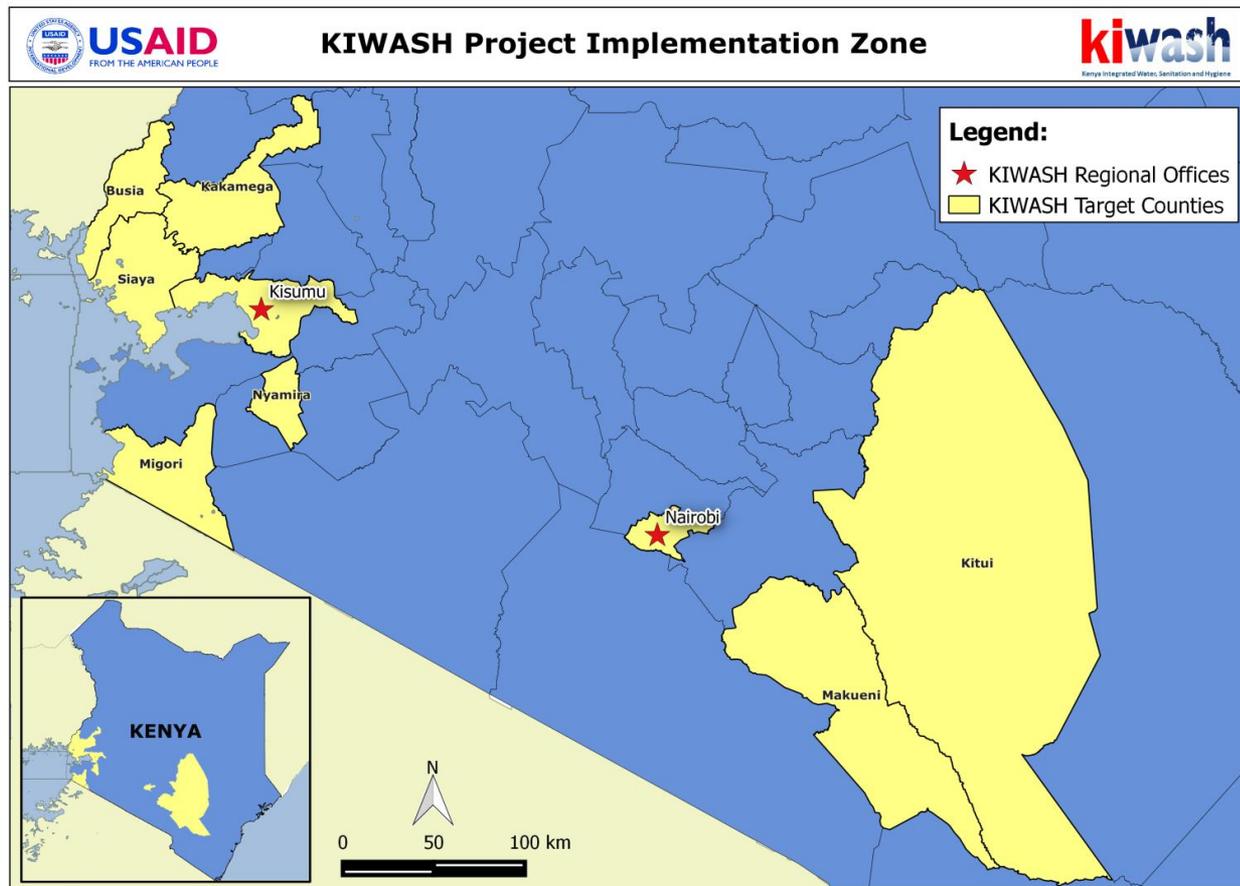
Duration: October 2015 – September 2020



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Geographic areas



Eastern Kenya

- Kitui
- Makueni
- Nairobi

Western Kenya

- Busia
- Kakamega
- Kisumu
- Migori
- Nyamira
- Siaya

Integration with Feed the Future

Focus on improved **technologies** to boost commercial production and increase household production/consumption of nutrient dense, diverse foods

50,000 FTF-supported households with improved irrigation and kitchen garden technologies

Key factors to addressing smallholder irrigation:

- **Water Source** – shallow and deep wells, farm ponds/water pans, dams/lakes, boreholes
- **Water Lifting** – solar and electric pumps, motorized pumps, hydram, treadle pumps
- **Water Conveyancing and Distribution** – open/closed systems
- **Water Application method** – furrow, basin, drip, sprinkler

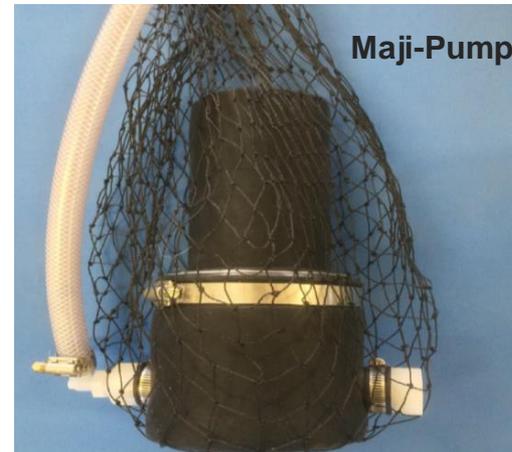
Solar pump characteristics

Solar pump advantages:

- Easy to install
- Uses renewable energy
- Operates autonomously
- Generally “good” water source sustainability

KIWASH carried out tests on two solar pump brands:

- Maji Pump (Chloride Exide) – Kitui and Kisumu
- Sunflower Pump (Future Pump) – Kisumu



Depth (m)	Flow Rate (L/min)
1	17
3	16.5
6	14
9	9
12	10
17	4
20	



Depth (m)	L/Hr	SF1-150, (L/min)
1	2,500	41.7
2	2,250	37.5
3	2,200	36.7
4	2,000	33.3
5	1,750	29.2
6	1,600	26.7
7	1,400	23.3
8	1,250	20.8
9	1,000	16.7
10	800	13.3

Solar pump financing

Major Challenges affecting smallholder farmers:

- **Access to finance/credit** – banks and MFIs perceive smallholders to be high risk
- **Climate change** – crop failure mainly attributed to unreliable/inadequate rainfall
- **Low profit margins** – dryland farmers have limited capacity to enter into more lucrative value chains (dependent on staples, low prices)
- **Technology gap** – irrigation infrastructure development requires high capital investment
- **Solar pumps alone do not amount to efficient irrigated agriculture** – both water lifting and drip irrigation are required



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KIWASH approach to irrigation financing

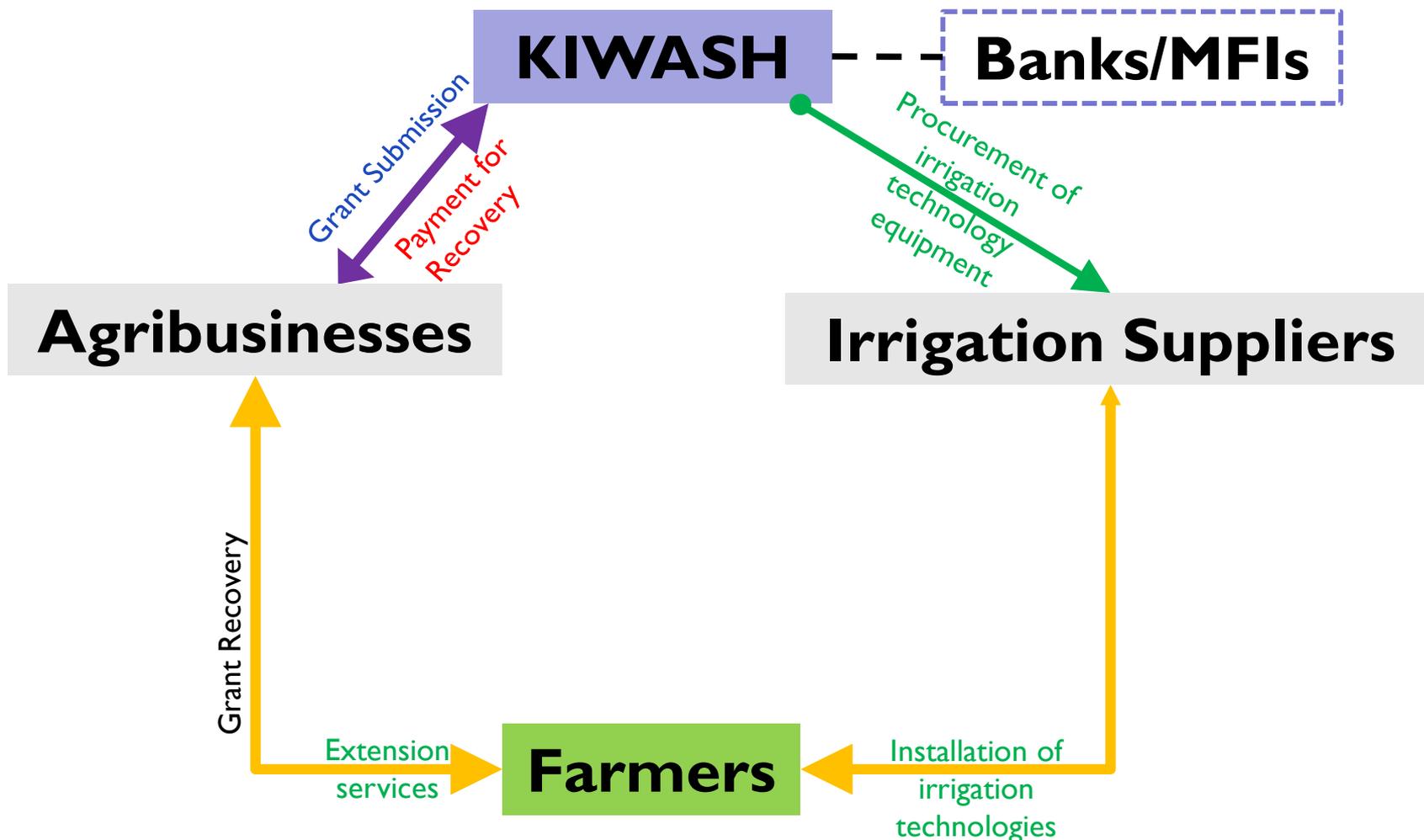
Recoverable Grants program:

- **Partner with agribusinesses** that contract smallholders and provide extension services for high value crop production
- **Identify suppliers** to that offer relevant technologies in KIWASH counties
- **Facilitate in-kind, “soft” loans** to smallholders for irrigation technologies
- **Recover funds via the agribusiness partners** through deductions on farmers’ sales
- **Demonstrate successes** of these arrangements to the financial market
- Support banks/MFIs to develop **appropriate loan products** for smallholders



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Conclusion and Recommendations

- Increased income/benefits from solar pumps require efficient water distribution (pipes) and applications (drip, overhead systems)
- Low cost of maintenance and operations for solar pumps entails a substantial savings to farmers over the long term
- Repayment by farmers depends on their relationship to partner agribusinesses and the services received
- Successful grant recovery demonstrates to banks and MFIs the business opportunity established by these arrangements – i.e. KIWASH pays the cost of market entry



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THANK YOU