

## Evidences

### Study #4605

#### Contributing Projects:

- P1751 - On & off-grid Solar in Africa and Asia

#### Part I: Public communications

**Type:** OICR: Outcome Impact Case Report

**Status:** Completed

**Year:** 2021

**Title:** Data-driven tools enable solar irrigation companies in sub-Saharan Africa to target their products and services to the right farmers in the right way, boosting technology uptake and promoting gender equality

#### Short outcome/impact statement:

Data-driven tools developed by WLE/IWMI are enabling private sector solar-powered irrigation companies in sub-Saharan Africa to determine and capitalize on the market potential for their irrigation equipment and services. By segmenting customer groups and assessing customers' creditworthiness in gender-sensitive ways, companies are better able to target a range of farmers, including women. This is helping to accelerate the adoption of solar-powered irrigation technologies in frontier markets while promoting women's equitable participation in irrigated agricultural value chains.

#### Outcome story for communications use:

<Not Defined>

#### Links to any communications materials relating to this outcome:

- <https://agrilinks.org/post/building-better-solar-irrigation-market-ghana>
- <https://flic.kr/p/2h7eeNa>
- <https://flic.kr/p/2h7egcT>
- [https://youtu.be/u0ui\\_EtnkXc](https://youtu.be/u0ui_EtnkXc)
- <https://tinyurl.com/yc455zmk>
- <https://tinyurl.com/y78pp966>
- <https://tinyurl.com/y7yudlwe>
- <https://iwmi.cgiar.org/what-we-do/farmer-led-irrigation>

#### Part II: CGIAR system level reporting

**Link to Common Results Reporting Indicator of Policies :** No

**Stage of maturity of change reported:** Stage 2

#### Links to the Strategic Results Framework:

Sub-IDs:

- Reduced smallholders production risk

Is this OICR linked to some SRF 2022/2030 target?: Too early to say

Description of activity / study: <Not Defined>

**Geographic scope:**

- Multi-national

Country(ies):

- Mali
- Ethiopia
- Ghana

Comments: Work is already underway to introduce similar data-driven tools in Mali. The extent of this work is described in section 7.

**Key Contributors:**

Contributing CRPs/Platforms:

- WLE - Water, Land and Ecosystems

Contributing Flagships:

- F2: Land and Water Solutions for Sustainable Intensification (LWS)

Contributing Regional programs: <Not Defined>

Contributing external partners:

- Futurepump
- Rensys Engineering
- MoFA - Ministry of Food and Agriculture (Ghana)
- BDU - Bahir Dar University
- GIZ - Deutsche Gesellschaft für Internationale Zusammenarbeit / German Society for

International Cooperation

- Pumptech Limited
- MoANR - Ministry of Agriculture and Natural Resources (Ethiopia)

**CGIAR innovation(s) or findings that have resulted in this outcome or impact:**

Market segmentation studies and client assessment scorecards were developed and applied in Ethiopia, Ghana and Mali by private sector solar-powered irrigation companies and other public sector actors including ministries of agriculture and Bahir Dar University. These help the companies determine and capitalize on the market potential for their irrigation equipment and services. By segmenting customer groups and assessing customers' creditworthiness in gender-sensitive ways, companies are better able to target a range of farmers, including women (3,4).

**Innovations:**

- 2750 - Data-driven tools for targeting irrigation products and services

(<https://tinyurl.com/2mvfj8d2>)

## **Elaboration of Outcome/Impact Statement:**

The benefits of solar energy for domestic and productive use have long been recognized in countries where there is limited or no access to the power grid (1,2). But getting the right solar technologies to the right customers is often complicated by underdeveloped supply chains, high costs and a poor understanding of local market needs (3).

To address these issues, IWMI and WLE partnered with Pumptech in Ghana and Rensys in Ethiopia, both private sector distributors of solar-powered irrigation pumps. To determine the market potential for these pumps, WLE/IWMI conducted a market segmentation study in Northern Ghana. The study identified four segments among smallholders: resource-rich farmers, mobile farmers, resource-poor individual farmers, and farmer groups.

Each segment is slightly different in terms of the amount of water needed, access to land, pump preferences and capacity to pay for the pump (4). Women farmers are especially likely to face difficulties accessing resources such as land, credit and information that would enable them to invest in irrigation (5).

As a first step to making solar pumps more accessible, WLE/IWMI and its partners tested innovation bundles that combine pumps with pay-as-you-go financing models. In this model, the pump company provides farmers with a loan to buy a pump, with the pump itself serving as security.

WLE/IWMI then refined the financing model to ensure business inclusivity. A review of the scorecard Rensys was using to assess a customer's creditworthiness showed that the criteria were biased toward farmers with greater resources. These insights guided the development of a credit scorecard that is more sensitive to attributes like clients' financial management skills and social capital through membership of associations (6). Rensys is now using this scorecard to target a range of farmers, including women, more accurately (7).

The data-driven tools have enabled both companies to expand into new regions. In Ghana, Pumptech used market segmentation to increase pump sales by more than 80% in 2021, compared to 2020 (8). In Ethiopia, WLE/IWMI awarded a grant to four students at Bahir Dar University to develop an app-based credit scorecard for Rensys. The app, in which other private companies have expressed interest (9), will facilitate more effective and efficient collection and analysis of data (6).

WLE/IWMI is now introducing similar tools in Mali, where an initial assessment of the potential for small-scale solar irrigation has already been conducted (10).

## References cited:

- [1] Xie, H.; Ringler, C.; Mondal, M.A.H. 2021. Solar or diesel: A comparison of costs for groundwater-fed irrigation in sub-Saharan Africa under two energy solutions. *Earth's Future* 9(4). (<https://doi.org/10.1029/2020EF001611>)
- [2] Balana, B.; Bizimana, J-C.; Richardson, J.W.; Lefore, N.; Adimassu, Z.; Herbst, B.K. 2020. Economic and food security effects of small-scale irrigation technologies in northern Ghana. *Water Resources and Economics* 29: 100141. (<https://doi.org/10.1016/j.wre.2019.03.001>)
- [3] Email to Thai Thi Minh dated November 25, 2021, indicating additional private sector interest in credit scorecard app. Seifu Tilahun, Associate Professor, Faculty of Civil and Water Resources Engineering, Bahir Dar University. (<https://tinyurl.com/y477kaqk>)
- [4] Ofosu, A.; Minh, T.T. 2021. Small-scale irrigation dialogue space: Understanding the scalability of solar-powered irrigation in Ghana – market segmentation and mapping pump suitability. Ibadan, Nigeria: International Institute of Tropical Agriculture. (<https://hdl.handle.net/10568/114252>)
- [5] Email to Thai Thi Minh dated November 23, 2021, confirming pump sales increase between 2020 and 2021. Osman Sahanoon, CEO, Pumptech. (<https://tinyurl.com/y2eukkzm>)
- [6] Email to Thai Thi Minh dated November 22, 2021, indicating intention to target more women farmers and collect gender-disaggregated data on pump sales. Hanibal Gebremedhn, Project Manager, Rensys Engineering. (<https://tinyurl.com/y32gmfv>)
- [7] Feed the Future Innovation Lab for Small Scale Irrigation. 2021. Year 8 annual progress report. Submitted to USAID for review. (<https://tinyurl.com/y9234anr>)
- [8] IWMI. 2021. Assessing the potential for sustainable expansion of small-scale solar irrigation in Ségou and Sikasso, Mali. Colombo, Sri Lanka: International Water Management Institute (IWMI). (<https://hdl.handle.net/10568/115062>)
- [9] Melaku, D.; Minh, T.T.; Schmitter, P. 2020. Farmer-led irrigation multi-stakeholder dialogues: Financing solutions for scaling sustainable and inclusive farmer-led irrigation in Ethiopia. Feed the Future Innovation Lab for Small Scale Irrigation. (<https://tinyurl.com/yeunfvur>)
- [10] Melaku, D.; Minh, T.T. 2021. Farmer-led irrigation multi-stakeholder dialogues: Value chain approaches to small-scale irrigation development. Feed the Future Innovation Lab for Small Scale Irrigation. (<https://tinyurl.com/yj9fab37>)

**Quantification:** <Not Defined>

### **Gender, Youth, Capacity Development and Climate Change:**

**Gender relevance:** 1 - Significant

Main achievements with specific **Gender** relevance: The gender-sensitive credit scorecard was developed with the specific intention of making solar irrigation technology more accessible to women farmers. In Ethiopia, the scorecard is supported by market segmentation data as well as additional gender segmentation data. Rensys, the company using these tools in Ethiopia, plans to collect gender-disaggregated data on pump sales in the future (6,7).

**Youth relevance:** 1 - Significant

Main achievements with specific **Youth** relevance: The market segmentation tool was developed to identify a range of farmer groups, including mobile farmers – the majority of whom are youth. In Ghana, young mobile farmers are generally able to afford the Lorentz PS 100/200 pumps sold by Pumptech. These pumps can be paid off within a few years and are easy to move from one location to another (4).

**CapDev relevance:** 0 - Not Targeted

**Climate Change relevance:** 0 - Not Targeted

**Other cross-cutting dimensions:** <Not Defined>

**Other cross-cutting dimensions description:** <Not Defined>

**Outcome Impact Case Report link:** [Study #4605](#)

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