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Solar Energy for Agricultural Resilience (SoLAR) Phase II Inception Workshop in Kenya

Workshop Report

October 1, 2025

Venue International
Livestock Research Institute
(ILRI), Nairobi, Kenya

International Water Management Institute (IWMI)

Author: Josey Kamanda

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The authors:

Josey Kamanda, Researcher – Innovation Scaling and Agri-business Acceleration, International Water Management Institute (IWMI), Addis Ababa, Ethiopia

Acknowledgment:

This workshop report is part of the Solar Energy for Agricultural Resilience (SoLAR) Phase II project supported by the Swiss Agency for Development and Cooperation (SDC). The inception workshop brought together government officials, development partners, private sector representatives, financial institutions, research organizations, and civil society to validate Kenya-specific entry points for scaling solar-powered agricultural systems. We extend our gratitude to Inga Jacobs-Mata (Science Program Director – Water, Growth and Inclusion, International Water Management Institute [IWMI], Nairobi, Kenya) for her opening remarks and vision for Kenya's solar transformation, Mr. Pieter Waalewijn (Lead Water Resources Management Specialist, World Bank, Nairobi, Kenya) for emphasizing institutional coordination, and Eng. Vincent Kabuti (Irrigation Secretary, Ministry of Water, Sanitation, and Irrigation, Nairobi, Kenya) for framing SoLAR II within the National Irrigation Sector Investment Plan (NISIP) implementation agenda. We also thank all participants and facilitators who contributed insights, validated priorities, and committed to collaborative action across policy, finance, and capacity domains.

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Front cover photo: Stakeholders and participants gather for a group photo at the SoLAR Phase II Inception Workshop in Nairobi, Kenya on October 25, 2025. (*photo:* Ether Communications for IWMI)

Contents

Highlights of the Workshop

- High-Level Government Buy-in: The Ministry of Water, Sanitation and Irrigation, represented by Irrigation Secretary Eng. Vincent Kabuti positioned SoLAR II as central to NISIP's 1-million-acre expansion target, with government commitment to coordinate across ministries and counties for integrated solar-powered irrigation development aligned with Vision 2030.

- World Bank Program Alignment: Pieter Waalewijn announced the World Bank's forthcoming large-scale irrigation program will directly incorporate SoLAR II policy, finance, and capacity recommendations, creating unprecedented scale and impact opportunities for evidence-informed solar scaling.

- Three Thematic Priority Roadmaps: Breakout groups validated 15 priority actions across Policy and Decision Support (WEF-SS tools and regulatory harmonization), Finance and Investment (blended finance models), and Capacity Development (Training-of-Trainers programs), with clear partner commitments for implementation.

- Multisector Stakeholder Coalition: The 27-person inception workshop achieved 37% female participation and unified representation across government, World Bank, GOGLA, KEREA, SunCulture, SNV, GIZ, and private sector demonstrating unprecedented coalition strength for collaborative solar scaling.

- Phase I Evidence Validation: Workshop participants endorsed direct application of Phase I lessons, including the "Earn First, Pay Later" women-led financing model demonstrating 43% farmer income gains and grid-integration pilots, to Kenya and Ethiopia Living Lab demonstrations within Phase II.

Summary

Project Background

The Solar Energy for Agricultural Resilience (SoLAR) Phase II Project, funded by the Swiss Agency for Development and Cooperation (SDC) and implemented by the International Water Management Institute (IWMI), builds on lessons from Phase I (2019–2024) in South Asia and expands to East Africa (Kenya and Ethiopia). Phase II seeks to strengthen enabling environments for socially inclusive and climate-resilient solar energy systems in agricultural settings. The project extends beyond irrigation to cover productive uses of renewable energy (PURE) such as solar-powered cold storage, dryers, milling, and agro-processing.
In Kenya, SoLAR II aligns with Vision 2030, the Bottom-Up Economic Transformation Agenda (BETA), and the National Irrigation Sector Investment Plan (NISIP), which targets irrigation expansion by one million acres by 2030. Kenya is already a regional leader in solar technology, accounting for 65% of Sub-Saharan Africa's solar water pump sales, yet scaling remains constrained by policy fragmentation, financing gaps, and limited capacity.

Rationale for the Workshop

The inception workshop was organized to validate Kenya-specific entry points for SoLAR II implementation, facilitate dialogue among key stakeholders across government, private sector, financial institutions, and civil society, co-develop priority actions and pathways across policy, finance, and capacity domains, and establish collaborative mechanisms for sustained engagement and action.

Participant Overview

The workshop brought together 27 participants representing diverse sectors and institutions including government ministries (Ministry of Water, Sanitation and Irrigation; Ministry of Energy and Petroleum; Ministry of Agriculture; State Department for Irrigation), development partners (World Bank, SNV, GIZ, CLASP, GEAPP, AECF), international research organizations (IWMI, WRI), private sector representatives (SunCulture, Davis & Shirtliff, Agsol), financial institutions and intermediaries (KEREA, Water Sector Trust Fund), and civil society organizations. The workshop achieved gender balance with 37% female participation and included participants from technical, policy, financial, and implementation backgrounds, reflecting the multisectoral nature of solar scaling for agriculture.

Workshop Objectives

The inception workshop had the following key objectives:

- Introduce SoLAR II's goals, expected outcomes, and activities in Kenya.
- Validate Kenya-specific entry points for scaling solar in agriculture.
- Co-develop pathways across policy, finance, and capacity domains.
- Strengthen partnerships among government, private sector, financiers, NGOs, and research institutions.

Summary of Sessions

Welcome Remarks

Dr. Inga Jacobs-Mata, IWMI Director - Water, Growth & Inclusion welcomed participants and emphasized Kenya's unique opportunity to lead Africa's solar transformation, given its strong policy framework and vibrant private sector. She underscored IWMI's role in providing evidence, decision-support tools, and convening platforms to guide solar expansion under NISIP and Vision 2030. She highlighted the importance of integrating solar across the water–energy–food nexus, not just for irrigation but for cold storage, food drying, and agro-processing, thereby reducing emissions, improving food security, and empowering women and youth.

IWMI, she said, is committed to supporting policy reforms, investment facilitation, and knowledge exchange to ensure responsible and inclusive scaling.

Opening Session

Mr. Pieter Waalewijn, Global Lead – Water in Agriculture, World Bank emphasized the need for institutional coordination to operationalize NISIP and informed participants that the World Bank is designing a new program with the State Department for Irrigation (SDI). He encouraged close alignment between SoLAR II assessments and the forthcoming World Bank initiative to ensure that policy, finance, and capacity insights from this SDC-supported project directly inform design and implementation.

Opening Remarks by Irrigation Secretary - Eng. Vincent Kabuti

Eng. Kabuti framed SoLAR II within the NISIP implementation agenda, noting that only 21% of Kenya's 3.3-million-acre irrigation potential is currently developed. He presented mapping of water availability in Kenya, highlighting that Kenya has abundant water resources and sufficient sunlight that can be tapped for irrigation to boost food security and incomes. He called for solar technologies to become central to Kenya's irrigation transformation, highlighting the government's goal to expand farmer-led irrigation development (FLID) and adopt climate-smart, affordable energy solutions.

He reaffirmed government commitment to work with IWMI, SDC, and partners to co-develop a Kenya-specific roadmap for solar in agriculture, focusing on inclusivity, sustainability, and coordination across ministries and counties.

Technical Presentations

Initial findings and entry points for Kenya

The Kenya presentation was delivered by **Josey Kamanda**, Innovation Scaling Researcher at **International Water Management Institute (IWMI)**. The presentation noted that while Kenya has a strong solar ecosystem, scaling remains constrained by key barriers. These include data gaps and limited decision-support tools, fragmented policy and coordination challenges, limited access to affordable finance, technical and institutional capacity gaps, social inclusion barriers affecting women, youth and marginalised groups, and sustainability concerns such as e-waste and groundwater overuse.

To address these challenges, the presentation identified strategic entry points focused on developing evidence-based and integrated data systems, expanding blended finance and service delivery models such as pay-as-you-go and lease-to-own, and strengthening awareness, training, and demonstration hubs to support wider adoption and sustainable scaling.

Gap analysis: challenges hindering the use of solar in agriculture

The gap analysis was presented by **Dr. Muluken Adamseged**, IWMI Researcher and Project Co-lead. The presentation highlighted key outcomes from India and Bangladesh under SoLAR Phase I, including the generation of robust empirical evidence to inform climate-resilient and gender-inclusive solar irrigation policies; validation of community-led business models such as *Earn First, Pay Later*, which enabled participation of women-led groups; successful policy advocacy and pilots for grid integration of solar irrigation; and strengthened national and regional capacities for solar policy design and scaling through South–South exchange.

Building on these lessons, Phase II will extend the approach to East Africa with a focus on evidence-based policy design through the development of water–energy–food–solar (WEF-SS) tools and decision-support systems; accelerating finance through blended finance mechanisms and the development of financial solutions under a proposed Solar4Africa Irrigation Fund; strengthening capacity and knowledge via training modules and integration of financial and technical extension agents through capacity building and South–South learning; and validating scalable solar solutions through Living Labs in real-world settings.

Break-out discussions

Participants were organized into three thematic groups: **Policy and Decision Support**, **Finance and Investment**, and **Capacity Development**—to identify priority actions, key partners, and programmes that could be leveraged during Phase II.

Policy and decision support

The group prioritized reviewing existing regulations and standards related to irrigation and solar applications, and developing integrated solar–water resource mapping tools linked with platforms such as the **World Resources Institute Energy Access Explorer**. Additional actions included mainstreaming solar energy within County Integrated Development Plans (CIDPs), accelerating County Energy Plans, and establishing a Resilience Support Framework to better connect water, energy, and food planning at the local level.

Finance and investment
Key actions focused on mapping the financial ecosystem and available instruments, piloting blended and de-risked finance models—including green credit lines, carbon finance, and solar-as-a-service schemes—and strengthening linkages between banks, MFIs, and farmer cooperatives. Aligning financial products with government programmes and donor facilities was identified as critical to support national agricultural transformation and irrigation priorities.

Capacity development
Priority actions included conducting stakeholder mapping and training needs assessments, developing curricula and training materials for technical and financial extension agents, and implementing Training-of-Trainers programmes for technicians, extension officers, and private providers. The group also emphasized the use of demonstrations, field days, and media campaigns to raise awareness and build confidence in solar solutions.

Lessons Learned

The discussions highlighted that Kenya's enabling environment for solar irrigation is promising but fragmented, with gaps in regulation, standards, data systems, and institutional coordination across water, energy, and agriculture sectors. Participants noted that despite Kenya's leadership in solar water pump adoption, limited decision-support tools and weak integration of solar into existing planning instruments, such as County Integrated Development Plans (CIDPs), continue to hinder coherent scaling.

The multi-sector engagement revealed capacity constraints across technical, financial, and institutional levels. Stakeholders emphasized the need for consistent training for technicians, extension officers, banks, and county officials. Demonstration sites and field days emerged as powerful tools to raise awareness and build trust in solar technologies.

The workshop participants also brought out the importance of collaboration. Kenya's solar ecosystem comprises dynamic actors - government, private sector, development partners, research institutions, and financiers - but coordination platforms remain limited. The dialogue reaffirmed that joint action, shared data, and harmonized standards are essential to translate solar potential into meaningful agricultural resilience.

Recommendations

- **Strengthen policy and coordination:** Kenya should harmonize regulations and standards for solar irrigation and integrate solar solutions into CIDPs, County Energy Plans, and NISIP. Strengthening coordinated planning through shared decision-support tools, such as integrated solar–water resource mapping, will help streamline implementation and reduce fragmentation.
- **Expand and de-risk financing:** The sector needs blended finance instruments - including green credit lines, carbon finance, and results-based financing - to lower risks and increase affordability for farmers and enterprises. Closer collaboration between banks, MFIs, SACCOs, cooperatives, and private companies will widen access to suitable financial products.
- **Build technical and institutional capacity:** Developing standardized training materials for technicians, extension agents, and financial service providers is essential to

address capacity gaps. Demonstration hubs, field days, and awareness campaigns can boost confidence in solar technologies and drive wider adoption.

- **Promote inclusion and sustainability:** Scaling gender-responsive financing and service models—such as those validated in Phase I—will ensure that women, youth, and marginalized groups benefit equitably. Emphasis on sustainable groundwater use, equipment quality, maintenance systems, and e-waste management will help safeguard long-term environmental resilience.

Partnerships

The successful delivery of SoLAR Phase II in Kenya relies on strong, multisectoral partnerships that bring together government agencies, development partners, financial institutions, private sector innovators, and research organizations. The complementary programs and platforms listed in Table 1 illustrate the diverse initiatives that can be leveraged to accelerate policy alignment, unlock financing, and strengthen technical and institutional capacities. By engaging these actors strategically across policy and decision support, finance and investment, and capacity development, the project can build a coordinated ecosystem that supports inclusive, sustainable, and scalable solar solutions for agricultural resilience.

Table 1. Complementary Programs and Potential Partners

Group	Complementary Programs / Platforms	Key or Potential Partners
Policy and Decision Support	County Integrated Development Plan (CIDP); Power for Food (SNV); Kenya Off-Grid Solar Access Program (KOSAP); PUFF - CLASP / Global Energy Alliance for People and Planet (GEAPP); Kawi Sapi (Acumen); ASCENT – Common Market for Eastern and Southern Africa (COMESA) & World Bank	Ministry of Energy and Petroleum; Ministry of Water, Sanitation and Irrigation; Water Resources Authority (WRA); Water Sector Trust Fund; Energy and Petroleum Regulatory Authority (EPRA); Kenya Bureau of Standards (KEBS); National Environment Management Authority (NEMA); Council of Governors (CoG); universities; TVETs
Finance and Investment	PUFF (CLASP/GEAPP); Power for Food (SNV); Mission 300 (World Bank/GEAPP); Blended Finance for Smallholder Farmers (KfW); FLID (World Bank); Results-Based Financing (AECF)	National Treasury; Ministries of Irrigation, Energy and Agriculture; KfW; World Bank; GEAPP; CLASP; private investors; microfinance institutions; SACCOs; industry associations (Kenya Renewable Energy Association – KEREA; Global Off-Grid Lighting Association – GOGLA); cooperatives
Capacity Development	Power for Food (SNV); PURE (Intergovernmental Committee on Productive Use of Renewable Energy); Energy Access Explorer (World Resources Institute – WRI); National Irrigation Sector Investment Plan (NISIP); GIZ/ENAEV programs	Strathmore University; Technical and Vocational Education and Training (TVET) institutions; National Irrigation Authority (NIA); Water Resources Authority (WRA); Council of Governors (CoG); SNV; GIZ; private sector (SunCulture, Davis & Shirtliff, Agsol, Acre Africa); financial institutions (Cooperative Bank, Equity, KCB, AECF)

Annexure A. Workshop Agenda.

Time	Topics	Facilitator/ Presenter
08.30	Arrival and registration	IWMI - Rahel
09.00	Welcome Remarks • **Inga Jacobs-Mata** - IWMI Director: Water, growth and Inclusion Opening Remarks • **Pieter Waalewijn** - Water in Agriculture Lead, World Bank • **Eng. Vincent Kabuti** - Irrigation Secretary, MoWSI	IWMI - Josey
09.30	Participant Introductions	IWMI-Josey
09:40	Presentation of Initial Findings (Barriers/ Entry Points)	IWMI - Josey
09.45	Introduction to SoLAR II	IWMI - Muluken
10:00	Open discussion	IWMI - Muluken
10.20	Introduction of group sessions	IWMI - Josey
10:30	Tea Break	
11.00	Group Discussion: Groups (Decision Support, Financing, Capacity) will: 1. Prioritize 3-5 actionable activities and how they would be implemented, highlight quick wins 2. Map potential partners. 3. Identify complementary programs or platforms to leverage.	Decision Support - Walter/ Muluken Financing - Chianda/ Idil Capacity - Brian/ Josey
12.30	Lunch break	
13.30	Plenary feedback from Group Discussions and Reflections	IWMI - Josey
14.30	Closing	MoE - Diana

Annexure B. List of Participants.

S No.	Title	Name	Title	Institute/Enterprise
1	Eng	Vincent Kabuti	Irrigation Secretary - State Department for Irrigation	Ministry of Water, Sanitation and Irrigation
2	Eng	Jairus Serede	Ag. Deputy General Manager (Planning and Strategy)	National Irrigation Authority
3	Mr	Sammy Boit	Engineer	National Irrigation Authority
4	Mr	Edwin M Siboe	Engineer	National Irrigation Authority
5	Ms	Diana Masika	Senior Renewable Energy Officer	Ministry of Energy & Petroleum
6	Ms	Gaudencia Kamene	Renewable Energy Officer	Ministry of Energy & Petroleum
7	Mr	Robert Korir	Principal Product Officer	Water Sector Trust Fund
8	Mrs	Elizabeth Nyambura	Senior Programs Associate	KEREA
9	Ms	Cindy Shigoli	Head of ESG	Sunculture
10	Mr	Chianda Njogu	Manager, Energy and Opportunity	GEAPP
11	Ms	Lilian Simiyu	Coordinator, Clean Energy Access	CLASP
12	Mr	Marion Ambani	MEL Specialist	SNV
13	Mr	Johnstone Mainya	Water Global Practice	World Bank
14	Ms	Priscilla Kinyari	Programme Coordinator - Agriculture	KfW
15	Mr	Walter Kipruto	EA Regional Rep	GOGLA
16	Eng	Brian Kandie	Engineer	Ministry of Water, Sanitation and Irrigation
17	Eng	Felix Kipchumba	Engineer	Ministry of Water, Sanitation and Irrigation

18	Eng	Enock Tumo	Engineer I	Ministry of Water, Sanitation and Irrigation
19	Eng	Agnes Agong	Engineer	Ministry of Water, Sanitation and Irrigation
20	Mr	Samuel Gichane	Engineer	Ministry of Water, Sanitation and Irrigation
21	Mr	Frankline Kiptoo	Researcher	Strathmore Energy Research Centre (SERC)
22	Dr	Josey Kamanda	Researcher - Innovation Scaling	IWMI-CGIAR
23	Dr	Muluken E. Adamseged	Researcher - Innovation Scaling and DCR (Ethiopia)	IWMI-CGIAR
24	Dr	Idil Ires	Researcher – Enabling Environment	IWMI-CGIAR
25	Dr	Chloé Poulin	Researcher – AI for Agricultural Water Management	IWMI-CGIAR
26	Dr	Inga Jacobs-Mata	Director – Water, Growth and Inclusion	IWMI-CGIAR
27	Ms	Elizabeth Wamba	Communication	IWMI-CGIAR
28	Mr	Rahel Mesganaw	Administration	IWMI-CGIAR
29	Mr	Wangari Ndirangu	Media	KNA
30	Mr	Aloyce Omwanyi	Media	KBC TV
31	Mr	Duncan Mboya	Media	Xinhua
32	Ms	Carolyne Tomno	Media	Kass
33	Ms	Lenah Bosibori	Media	Africa Science
34	Mr	Sammy Waweru	Media	Nation
35	Mr	Wilfred Nyangaresi	Media	Nation
36	Mr	Milliam Murigi	Media	Science Africa

37	Ms	Anita Omwenga	Media	KNA
38	Mr	Bernard Orwongo	Media	Standard
39	Ms	Juliet Omelo	Media	Standard Digital
40	Mr	Noel Nabiswa	Media	KTN
41	Mr	Fredrick Mdungu	Media	KTN

The International Water Management Institute (IWMI) is an international, research-for-development organization that works with governments, civil society and the private sector to solve water problems in developing countries and scale up solutions. Through partnership, IWMI combines research on the sustainable use of water and land resources, knowledge services and products with capacity strengthening, dialogue and policy analysis to support implementation of water management solutions for agriculture, ecosystems, climate change and inclusive economic growth.

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International Water Management Institute (IWMI) Headquarters
127 Sunil Mawatha, Pelawatta
Battaramulla, Sri Lanka

Mailing address:
P. O. Box 2075
Colombo, Sri Lanka
Tel: +94 11 2880000
Fax: +94 11 2786854
Email: iwmi@cgiar.org
www.iwmi.org