

Workshop Report



Capacity Building Workshop for Department of Agricultural Extension Personnel on Scaling Solar Irrigation in Jashore, Bangladesh

August 23-24, 2026

Additional Director's Office, Department of Agricultural Extension
Jashore, Bangladesh

International Water Management Institute (IWMI)

Jayanta Bhattacharya, Tanmoy Bhaduri, and Darshini Ravindranath



Capacity Building Workshop for Department of Agricultural Extension Personnel on Scaling Solar Irrigation in Jashore, Bangladesh

Jayanta Bhattacharya
Tanmoy Bhaduri
Darshini Ravindranath

International Water Management Institute (IWMI)

Authors

Jayanta Bhattacharya, Associate Scientist – Solar Energy and Climate Resilience, International Water Management Institute (IWMI), Dhaka, Bangladesh

Tanmoy Bhaduri, Communications Specialist, IWMI, New Delhi, India

Darshini Ravindranath, Research Group Leader – Climate Policies, Finance and Processes, IWMI, Colombo, Sri Lanka

Author contributions

Conceptualization: Jayanta Bhattacharya; Methodology: Jayanta Bhattacharya; Validation: Jayanta Bhattacharya, Darshini Ravindranath; Formal analysis: Jayanta Bhattacharya; Writing – Original draft: Jayanta Bhattacharya, Tanmoy Bhaduri; Writing – review & editing: Jayanta Bhattacharya, Darshini Ravindranath; Supervision: Darshini Ravindranath; Project administration: Darshini Ravindranath, Jayanta Bhattacharya; Funding acquisition: Darshini Ravindranath.

Suggested citation

Bhattacharya, Jayanta, Tanmoy Bhaduri, and Darshini Ravindranath. 2026. *Capacity Building Workshop for Department of Agricultural Extension Personnel on Scaling Solar Irrigation in Jashore, Bangladesh*. International Water Management Institute (IWMI).

Disclaimer

This publication has not been independently peer-reviewed. Responsibility for editing, proofreading, and layout, opinions expressed, and any possible errors lie with the authors and not the institutions involved.

© 2026 International Water Management Institute. Some rights reserved. This work is licensed under a Creative Commons Attribution 4.0 International License (CC BY 4.0).

Cover photo: A sub-assistant agricultural officer from the Jashore region of Bangladesh presents her group activity during a workshop in Jashore. (*photo*: Tanmoy Bhaduri/IWMI)

Please send inquiries and comments to IWMI-Publications@cgiar.org

Acknowledgements

The authors gratefully acknowledge the Department of Agricultural Extension (DAE), Ministry of Agriculture, Government of Bangladesh, for its close collaboration in organizing this capacity building event. Special thanks are due to Md. Alamgir Biswas, Additional Director, DAE Jashore, for inaugurating and closing the training, and to Ashok Kumar Biswas, Project Director (Solar), DAE, for his continuous guidance throughout the event.

The authors also thank the resource persons - Md. Suzaul Hoque, Md. Helalur Rahaman, and Mohammad Anowar Hossain Pahlowan, Agriculture Engineers of DAE for delivering technical sessions, and the Sub-Assistant Agricultural Officers (SAAOs) and participants from NGOs in Jashore for their active engagement over the two days.

Finally, the authors would like to acknowledge the generous support of the Swiss Agency for Development and Cooperation (SDC) in funding the Solar Energy for Agricultural Resilience (SoLAR) Phase II project and this workshop. We extend our sincere thanks to the International Rice Research Institute (IRRI) for providing logistical support in organizing the workshop, and the SoLAR project team for their coordination and leadership.

Contents

Highlights of the workshop	1
Summary	2
Workshop objectives.....	3
Sessions	4
Session 1: Foundations of Solar Irrigation Technology (Day 1, morning).....	4
Session 2: Operations, Maintenance and Scaling Challenges (Day 1, afternoon).....	4
Session 3: Irrigation System Design and Inclusive Energy Use (Day 2, morning).....	4
Session 4: Field Visit to Jashore Sadar and Narail Sadar Upazila (Day 2, afternoon)	4
Lessons learned.....	5
Action plans and follow-up	5
Gender and youth related achievements.....	5
Annexures.....	7
Annex A: Detailed Training Schedule	7
Annex B: List of Participants.....	9

Highlights of the workshop

- IWMI and DAE organized a two-day, hands-on capacity building event in Jashore that combined technical instruction on solar irrigation pumping systems (SIPS) with field visits to two operating installations in Churamonkati in Jashore Sadar Upazila and Tularampur in Narail Sadar Upazila, Bangladesh.
- Participants engaged directly with DAE's own technical cadre Agriculture Engineers and the Project Director (Solar) rather than external trainers, strengthening the extension system's internal capacity to sustain training beyond the project cycle.
- Group work and a discussion of challenges/opportunities surfaced with practical scaling obstacles (financing linkages, technician availability, and farmer awareness) that DAE and SoLAR can address in the future activities.
- A structured pre- and post-training evaluation was used to gauge knowledge gained, supporting evidence-based refinement of future modules.
- The training design targeted meaningful participation of women SAAOs (40% women representation targeted and we achieved 27%).

Summary

Bangladesh is among the most irrigation-dependent agrarian economies in South Asia, with over 7.9 million hectares of irrigated land served largely by diesel-powered groundwater pumps that account for close to 16% of national diesel consumption. Rising fuel prices, energy insecurity, and climate impacts on water availability have made the shift to renewable-energy-based irrigation a national priority. Solar Irrigation Pumping Systems (SIPS) have expanded rapidly over the past decade under the Infrastructure Development Company Limited (IDCOL) and the Sustainable and Renewable Energy Development Authority (SREDA), with over 1,500 solar pumps installed nationally, concentrated in the drought-prone northwest and southern coastal zones.

Despite this progress, adoption remains constrained by limited farmer awareness, weak financing linkages, and a capacity gap among the DAE's frontline workforce — more than 13,000 Sub-Assistant Agricultural Officers (SAAOs) who are the primary point of contact for smallholder farmers. This workshop was the first in-person session of a multi-tier capacity building workshop, implemented under the SoLAR (Solar Irrigation for Agricultural Resilience) Phase II project, designed to build DAE personnel's competency in solar irrigation extension, farmer mobilization, technology facilitation, and institutional linkage.

The Jashore workshop brought together SAAOs and Agriculture Engineers from solar irrigation implementation sites across the northern region, alongside representation from NGOs (ESDO Foundation and Jagarani Chakra Foundation). The training workshop overall reached 30 participants spanning 3 districts (Chuadanga, Jhenaidah, Jashore), with 27% women's participation.

Workshop objectives

- Enhance knowledge of solar irrigation technologies, components, and system operations among DAE extension officers.
- Build practical skills for field-level demonstration, farmer advisory, and site assessment for solar pump installation.
- Strengthen linkage-facilitation capacity to connect farmers with IDCOL, BADCO, commercial banks, and microfinance institution (MFI) financing windows.
- Develop communication and behaviour-change skills to promote technology adoption among smallholder and marginal farmers, including women and youth.
- Equip participants with monitoring and reporting tools for tracking solar irrigation adoption in their coverage areas.
- Introduce gender-responsive extension approaches to ensure the inclusion of women farmers in solar energy practices.

Sessions

Session 1: Foundations of Solar Irrigation Technology (Day 1, morning)

- Key points discussed: IWMI Bangladesh's ongoing activities and the prospects of solar irrigation; objectives of the SoLAR Phase II capacity building workshop; the irrigation landscape and solar opportunity in Bangladesh; types of solar panels and the benefits of solar irrigation; components of solar pumps and types of pumps and motors; and the criteria used to select solar pumps and plan system installation.
- Methods used: Online briefings, an inaugural address, presentations, and a pre-training evaluation using self-assessment forms.
- Resource persons included IWMI's Bangladesh Country Focal Point and SoLAR Project Country Lead, DAE's Additional Director (Jashore), the Project Director (Solar), and two district Agriculture Engineers with technical and irrigation experience.

Session 2: Operations, Maintenance and Scaling Challenges (Day 1, afternoon)

- Key points discussed: Solar irrigation structure and pump maintenance, including common technical problems and their solutions; and the challenges, opportunities, and scaling obstacles facing solar irrigation adoption in DAE's coverage areas.
- Methods used: Lecture and PowerPoint presentation, followed by a facilitated group discussion.
- Group work and recap: Participants worked in six groups to analyze scaling obstacles and presented their findings in five-minute group presentations, followed by a group reflection to close Day 1.

Session 3: Irrigation System Design and Inclusive Energy Use (Day 2, morning)

- Key points discussed: Irrigation system types buried pipe, groundwater, and surface-water irrigation; and alternative uses of solar energy, water-saving technologies (AWD) and approaches to inclusive solar irrigation system design.
- Methods used: Lecture and PowerPoint presentation delivered by DAE's Project Director (Solar) and the SoLAR Project Country Lead.

Session 4: Field Visit to Jashore Sadar and Narail Sadar Upazila (Day 2, afternoon)

- Key points discussed: Direct observation of an operating solar irrigation installation, with interaction between participants, farmers, the landowner, and the system operator.
- Methods used: Site visit and structured interaction, followed by a facilitated question-and-answer session to capture observations, learnings, and reflections.
- Analysis and closing: A post-training evaluation was administered to measure knowledge gained, and the training closed with remarks from DAE's Additional Director, Jashore.

Lessons learned

- Pairing classroom instruction with a field visit to a working installation strengthened participants' practical understanding of pump selection, maintenance, and troubleshooting more than lecture sessions alone.
- Group-based analysis of scaling obstacles was an effective way to surface locally specific barriers such as financing access and after-sales technician availability that a standard lecture format would not have captured.
- Using DAE's own Agriculture Engineers and the Project Director (Solar) as trainers, rather than relying solely on external experts, helped build ownership and left DAE better placed to repeat similar sessions independently in future.

Action plans and follow-up

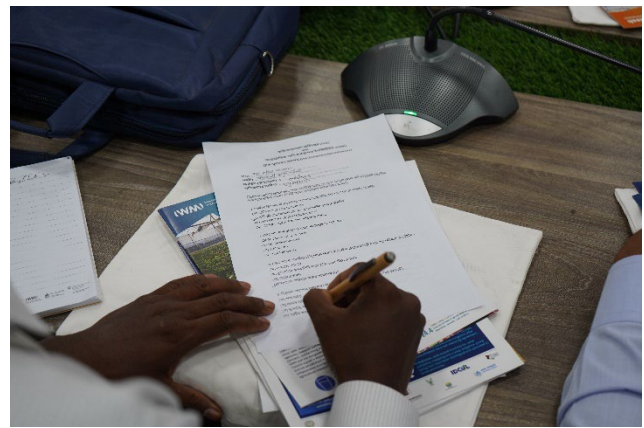
Findings from the group discussion on scaling obstacles will be compiled and shared with DAE in an issue brief form from the SoLAR Project team to inform the design of future implementation plans.

Gender and youth related achievements

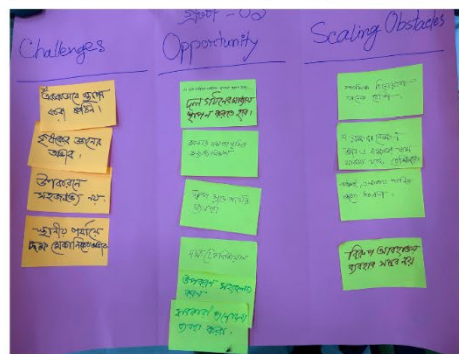
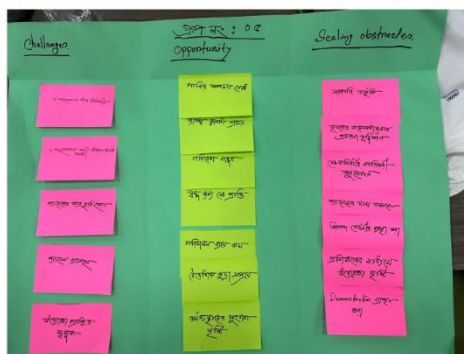
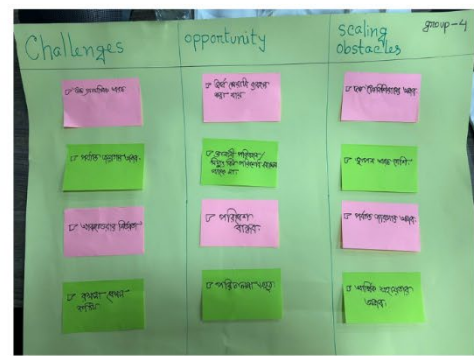
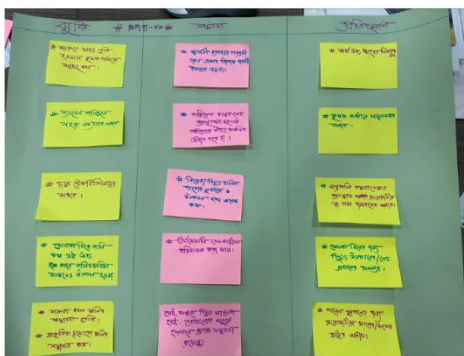
The training was designed with an explicit target of approximately 40% women's participation, recognizing that women and youth are often underrepresented in technical agricultural extension training despite their central role in on-farm decision-making.

Recruitment of trainees for the Jashore batch prioritized SAAOs from solar irrigation implementation sites who could bring practical field experience back to their coverage areas, with attention to gender balance in the final participant list.

Participation by gender: 8 female and 22 male participants.



A structured pre- and post-training evaluation was used to gauge knowledge gained, supporting evidence-based refinement of future modules. (Photo: Tanmoy Bhaduri/IWMI)



Participants identify challenges, scaling barriers and opportunities for promoting solar energy to strengthen agricultural resilience during a group activity in Jashore, Bangladesh. (Photo: Tanmoy Bhaduri/IWMI)

Annexures

Annex A: Detailed Training Schedule

Day 1 – August 23, 2026

Time	Session Topic	Method	Resource Person
9:00–9:30	Registration of participants	Filling forms	IWMI
9:30–9:35	IWMI Bangladesh activities and prospects of solar irrigation	Online presentation	Shreya Chakraborty, Country Focal Point, IWMI Bangladesh
9:35–9:45	About SoLAR Phase II and objectives of the capacity building workshop	Online presentation	Jayanta Bhattacharya, Associate Scientist – Solar Energy and Climate Resilience, and Country Lead for SoLAR Project, Bangladesh
9:45–10:15	Inauguration; Irrigation landscape and solar opportunity in Bangladesh	Address	Alamgir Biswas, Additional Director, DAE, Jashore
10:15–10:30	Pre-evaluation of the training workshop	Self-assessment forms	Jayanta Bhattacharya
10:30–11:15	Solar irrigation, types of solar panels and benefits of solar irrigation	Presentation (PPT)	Mohammad Anowar Hossain Pahlowan, Agriculture Engineer, DAE, Chuadanga
11:15–11:30	Tea break		
11:30–12:30	Components of solar pumps, types of pumps and motors	PPT	Md. Helalur Rahaman, Agriculture Engineer, DAE, Narail
12:30–13:15	Selection criteria for solar pumps and system installation	PPT	Ashok Kumar Biswas, Project Director (Solar), DAE
13:15–14:00	Prayer and lunch		
14:00–15:00	Solar irrigation structure, pump maintenance, common problems and solutions	PPT	Mohammad Amowar Hossain Pahlowan, Agriculture Engineer, DAE, Chuadanga
15:00–16:00	Challenges, opportunities and scaling obstacles for solar irrigation	Group discussion	Jayanta Bhattacharya
16:00–16:15	Tea break		
16:15–16:45	Group presentations (6 groups, 5 minutes each)	Presentation	Jayanta Bhattacharya
16:45–17:00	Day 1 wrap-up and reflection	Group reflection	Ashok Kumar Biswas

Day 2 – August 24, 2026

Time	Session Topic	Method	Resource Person
9:00–10:00	Irrigation systems: buried pipe, groundwater and surface-water irrigation	PPT	Md. Suzaul Hoque, Agriculture Engineer, DAE, Jashore
10:00–11:00	Alternative use of energy, water-saving technology and inclusive solar irrigation systems	PPT	Jayanta Bhattacharya
11:15–14:00	Field visit to Jashore Sadar and Narail Sadar Upazila	Interaction with farmers, landowners and pump operators	Participants
14:00–15:00	Prayer and lunch		
15:00–16:30	Field visit observations, learnings and reflections; post-evaluation	Q&A, discussion, evaluation forms	Jayanta Bhattacharya
16:30–17:00	Wrap-up and closing of the training session	Closing remarks	Alamgir Biswas

Annex B: List of Participants

Sl. No	Name	Designation	Organisation	Location
1	Alamgir Biswas	Addl. Director	DAE	Jashore
2	Ashok Kumar Biswas	Focal Person	DAE	Dhaka
3	A. M. Helalur Rahman	Agril. Engr.	DAE	Narail
4	Md Anwar Hossain Pahlowan	Agricultural Engineer	DAE	Chuadanga
5	Jayanta Bhattacharya	Associate Scientist	IWMI	Dhaka
6	Md. Suzaul Hoque	Dy./Agril. Engineer	DAE	Jashore
7	Tanmoy Bhaduri	Comms Specialist, IWMI	IWMI	New Delhi
11	Md. Khalid Saifullah	SAAO, DAE	DAE	Damerhuda
12	Atiful Islam	SAAO, DAE	DAE	Alamdanga
13	Md. Masharof Hossain	SAAO, DAE	DAE	Alamdanga
14	Shauli Akter	SAAO, DAE	DAE	Kotachandpur
15	Md. Rahim Badsha	SAAO, DAE	DAE	Kotchandpur
16	Md. Delowar Hossain	SAAO, DAE	DAE	Jibannagar
17	Md. Shamim Kabir	SAAO, DAE	DAE	Jibannagar
18	Mst. Rupa Akther	SAAO, DAE	DAE	Chuadanga
19	Tahmina Porshin	SAAO, DAE	DAE	Chuadanga
20	Shaikh Reaz Hossain	SAAO, DAE	DAE	Abhaynagar
21	Shima Biswas	SAAO, DAE	DAE	Abhaynagar
22	Md. Mohibul Islam	SAAO, DAE	DAE	Abhaynagar
23	Md. Julfikar Islam	Project Manager	ESDO	Chuadanga
24	Md. Rabi? Hossain	SAAO	DAE	Jibannagar
25	Md. Nazim Uddin	PO-Marketing	JCF	Jashore
26	Md. Mahadi Hassan	SAAO	DAE	Kaliganj
27	Tania Sharmin	SAAO	DAE	Kaliganj
28	Md. Monirul Islam Nayan	SAAO	DAE	Shailkupa
29	Md. Raihan Hossain	SAAO	DAE	Damurhuda
30	Md. Mostafiz Uddin	SAAO	DAE	Jhenaidah Sadar
31	Fatima Jahan	SAAO	DAE	Shailkupa
32	Shahnaz Ara Khatun	SAAO	DAE	Jhenaidah Sadar
33	Md. Hasanuzzaman	SAAO	DAE	Manirampur
34	S. M. Maruful Haque	SAAO	DAE	Manirampur
35	Md. Kabir Ahmed	SAAO	DAE	Keshabpur
36	Rubina Akther	SAAO	DAE	Manirampur
37	Rubaia Khatun	SAAO	DAE	Keshabpur
38	Joyanta Kumar Ghosh	SAAO	DAE	Kaliganj
39	Bikash Kumar Mondal	SAAO	DAE	Keshabpur
40	Mesbah Ahmed	SAAO	DAE	Jhenaidah Sadar



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. Headquartered in Colombo, Sri Lanka, IWMI is a CGIAR Research Center with offices in 17 countries and a global network of scientists operating in more than 55 countries.

**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