

Solar Irrigation for Agriculture Resilience in South Asia (SoLAR-SA) Project Nepal - Country Project Management Committee (C-PMC) | 7th Meeting

Date: 8th August 2023 | Time: 11:00 – 12:30 hrs. | Venue: IWMI, Nepal Office / Virtual

C-PMC Members SoLAR-SA Project – Nepal Attendee

SN	Name	Role	Institution	Attendance	Remarks
1	Manohara Khadka, Dr.	Chair	IWMI Country Representative	Yes	In-Person
2	Laxman Prasad Ghimire, Dr.	Member	Representative of AEPC	Yes	In-Person
3	Sagar Mani Gnawali	Member	Representative of NEA	Yes	In-Person
4	Dinesh Rajouria, Dr.	Member	Representative of WECS	Yes	In-Person
5	Santosh Raj Paudel	Member	Representative of DoA	No	-
6	Pratigya Neupane	Member	Representative of NARMIN	Yes	In-Person
7	Kumar Raj Shahi	Member	Representative of NiFUAN	Yes	In-Person
8	Hari Shrestha	Member	Representative of Private Sector (SunFarmer Nepal)	Yes	In-Person
9	Antonia Elena Flück	Member	Representative SDC-Nepal	Yes	In-Person
10	Alok Sikka, Dr.	Member	IWMI - Regional PL, SoLAR	Yes	Virtual
11	Shisher Shrestha	Member Secretary	IWMI – Researcher, SoLAR-NP Country Lead	Yes	In-Person
12	Amrita Rauniyar	Invitee	IWMI Nepal – Consultant	Yes	In-Person
13	Marlene Buchy, Dr.	Invitee	IWMI Nepal, Sr. Researcher	Yes	Virtual
14	Divya Sharma	Invitee	SDC India	Yes	Virtual
15	Deepak Varshney, Dr.	Invitee	IWMI New-Delhi	Yes	Virtual
16	Sibani Chattopadhyay	Invitee	IWMI New-Delhi	Yes	Virtual
17	Aariz Raza	Invitee	IWMI New-Delhi	Yes	Virtual

Abbreviations: AEPC is Alternative Energy Promotion Center; NEA is Nepal Electricity Authority; DWRI is Department of Water Resources and Irrigation; DOA is Department of Agriculture; SDC is Swiss Agency for Development and Cooperation; NFIWAN is National Federation of Irrigation User's Association, Nepal; NARMIN is National Association of Rural Municipalities in Nepal; IWMI is International Water Management Institute

Agenda, Discussions, and Decisions

The session program and agenda of the C-PMC meeting are in [Annex I](#).

Welcome Remark and Purpose of the meeting

Dr. Manohara Khadka (Chair of C-PMC), on behalf of IWMI, started by welcoming all the C-PMC members and guests to the meeting. She underlined that the purpose of the meeting was to highlight the Year-4 progress, reflect on the progress made and receive feedback and guidance from the C-PMC members. Additionally, she requested guidance in the identification of potential areas that IWMI can focus on in the remaining timeline.

The welcome remark was followed by a brief self-introduction session moderated by Mr. Shisher Shrestha.

SoLAR-SA Nepal Y4 updates

Mr. Shisher Shrestha initiated the presentation by presenting the summary of the 6th C-PMC meeting, discussions on (i) SoLAR Project Evaluation, (ii) LG Sensitization and Orientation, and (iii) SoLAR Nepal Budget, and actions taken by IWMI on respective topics.

The project activities planned for Nepal for Year 4 and the progress achieved was highlighted. The summary of Progress in Y4 is as follows:

Activity 1.1.2 Impact evaluation and GESI case study of existing and new SIP programs in Nepal

- Two papers on GESI case studies and Policy reviews received approval from the publisher.
- Research Report on Country specific emission factor finalized, and paper being planned.
- Journal articles based on Quantitative Study being planned by Deepak Varshney.
- Summary matrix highlights the key findings from SoLAR IE work finalized and preliminary Research report drafted.
- IWMI participated in 7 events/conferences, and one conference proceedings was published.
- Orientation workshop for LG/PG completed in Surkhet (March 30, 2023) and Janakpur (March 26, 2023).
- Issue brief on diesel use drafted.

Activity 2.2.3 Demonstration pilots on grid-connected SIPs in Nepal

- Issue brief documenting opportunities and challenges of Grid-connected solar irrigation is drafted- and soon to be published on the solar website.
- Net-meeting agreement is delayed, and IWMI working with Mr. Sagar Gyawali to resolve it.

- Community engagement work ongoing. IWMI onboarded a consultant to work on community governance and capacity building.
- OpEd on Grid-connected SIP published in The Kathmandu Post on May 15, 2023.

Activity 3.1.1 Training of local technicians in Nepal

- Bilingual manual on Operations and maintenance of SIP handed over to AEPC. The document was published on the AEPC website.
- Consultant on-boarded for two capacity-building workshops. The training workshop is planned for November-December 2023.

Activity 3.1.2 National Forum in Nepal

- One event is planned in November where GESI-specific sessions will be planned.
- National forum being planned in early 2024.

Key Activity Highlights

- IWMI DG and IWMI Nepal CR visit the SoLAR Pilot site on April 2023. The IWMI DG highlighted taking a systems approach and accessing the techno-social impact of the project.
- Another project commissioned grid-connected solar irrigation in Bagmati Rural Municipality. Net-metering agreement signed with Net-metering agreement with National Association of Community Electricity Users Nepal (NACEUN).

Research Highlights

- As part of community engagement, the IWMI team visited the farmer user group twice (August 4-5, 2023, and May 23-25, 2023).
- Key Observations
 - Women farmers were very happy to participate in the meeting.
 - Seedbed preparation, soil quality test, crop water requirement and irrigation time schedule, and technical training on operation and maintenance were recommended.
 - Boring of Bindeshwari Sah Kanu has descended 2.5 feet from its initial position.
 - Farmers have requested to seal the energy meter for safety purposes.
- Energy and water use data of the eight farmers were shown.
- In lieu of erratic rainfall this season, IWMI's LFA documented the difference between non-SIP and SIP users cropping patterns and highlighted the challenges for non-SIP farmers.
- Solar generation for the pilot project was presented for the month of July 2023, and it is not uniform across the month. The IWMI team highlighted two key reasons for this: (i) Natural

variance due to climatic conditions and (ii) Low voltage and frequent power cuts limiting solar generation.

Key Policy Impact

- Role of Local government specified in the Policy document.
- Provision for pre-feasibility study for SIP projects up to NPR 500,000.
- Address MRP price of SIP by price suggested by the Association of Private Companies and tender document.
- Smallholder and landless farmers can apply for subsidies with local government recommendations.

Research Gaps

The following area of potential research gap in SoLAR Phase 1 was discussed as an area of focus for the remaining period of the project and the Plan for Phase 2 of the project.

- How is Community SIP impacting farmers compared to Individual SIP?
- What is the status of Ground Water for sustainable geographically targeted SIP?
- The SoLAR Phase 1 focused on Tarai districts. But the status of Solar Irrigation in mid-hills is largely unknown.
- How can we improve the quality of workmanship and technical standards of SIP?
- How can we Scale the SIP program in Nepal?

Discussion / Feedback

The following are the key points discussed in the Discussion/Feedback Session. The detailed script of the discussion is in [Annex II](#).

Policy level impact on Solarization of agriculture pumps

- Ms. Divya Sharma highlighted that it is very important for SDC to understand AEPC's and NEA's perspectives on the solarization of agriculture pumps for irrigation.
- Dr. Laxman Ghimire said inputs from SoLAR project research had provided some policy-level recommendations, which were incorporated into the policy document. For AEPC/DKTI project, we plan to replicate a grid-connected community-level SIP (inspired by the SKY model he observed in an exposure visit to Gujarat during the SoLAR Regional Forum).

- Mr. Sagar Gnawali said NEA is interested in the electrification of the agriculture sector and looking forward to clear recommendations from IWMI and SoLAR Project. Grid-connected SIP is a good initiative.

Ground Water in the Tarai Region

- Ms. Pratigya Neupane said that local governments from Eastern regions around Koshi plan to announce some regions as dry areas to NARMIN. Sensitization of Solar irrigation is important in such regions.
- Ms. Antonia Fluck said Monitoring of Groundwater aquifers and water quality is crucial for promoting groundwater-based irrigation like SIP.
- Dr. Deepak Rajouria said WECS has done Groundwater mapping and monitoring groundwater data, and he can help provide groundwater data.

Inclusiveness of Government Project

- Dr. Marlene Buchy said it is important to understand why government projects are not more inclusive and target marginal farmers.
- Mr. Sagar Gnawali said the farmers need water for irrigation, and we should not sell the technology to the farmers. Mr. Kumar Raj Shahi echoed this idea.

Business Model and Scaling Solar Irrigation

- Mr. Hari Shrestha emphasizes the importance of subsidy, but we also need to focus on expansion through a market-driven approach.
- Mr. Kumar Raj Shahi said that Marginalized farmers could benefit more from the SIP, and the government needs to plan for more subsidies to make the technology more affordable.

Area of focus for the remaining time of Phase 1 and Planning for Phase 2

- Mr. Sagar Gnawali recommended providing Issue briefs on recommendations to NEA for policy-level changes needed for grid-connected Solar Irrigation.
- Dr. Dinesh Rajouria suggested that DWRI and IWMI can collaborate on Solar Lift Irrigation case studies.

- Ms. Antonia Fluck said we could review WECS Groundwater data and check water quality for arsenic contamination.

Closing Remarks

Dr. Laxman Ghimire concluded the C-PMC meeting by thanking the team for having such projects to inform policymakers. He also highlighted that AEPC is interested in replicating the same ideas through IWMI work on the SoLAR-SA project.

In the remaining period of SoLAR Phase 1, IWMI can focus on the Impact Evaluation of Community projects implemented by AEPC and Ground Water status.

Annex I: Session Program

Time	Activity	Responsible Person
10:30 AM – 11:00 AM	Welcome / Coffee-Tea	Ms. Amrita Rauniyar
11:00 AM – 11:05 AM	Welcome remarks & Purpose of the meeting	Dr. Manohara Khadka
11:05 AM – 11:15 AM	Introduction – C-PMC Members and Guests	Self
11:15 AM – 11:25 AM	Year 4 Progress and updates	Mr. Shisher Shrestha
11:25 AM – 11:35 PM	Research/Activity Highlights <ul style="list-style-type: none">• Summary Report – research gaps• SoLAR Pilot Monitoring	Mr. Shisher Shrestha /Amrita Rauniyar
11:35 AM – 12:20 PM	Discuss / Feedback	All C-PMC Members and Guests
12:20 PM – 12:30 PM	Closing Remarks	Dr. Laxman Prasad Ghimire
12:30 PM – 13:30 PM	Lunch	Mr. Om Acharya

Annex II: Discussion Session – detailed script

Meeting Notes by Amrita Rauniyar

Divya Sharma: I did not understand it right in my discussions with the farmers. So, are we now giving rise to a water market, or was it always there, and it's just a solar-driven water market? Could you just help me understand?

Shisher Shrestha: Previously, we had a diesel pump-driven water market. If farmers have surplus water, they can sell it to other farmers for free. We can check out the NEA side daily energy consumption. We will talk later about energy variations.

Deepak Varshney: Are we have any incentivization for water use by farmers?

Shisher Shrestha: We are arranging training based on the need assessment report. On-Grid system data: low voltage and irregular light scheduling are challenges.

Divya Sharma: It is very important for SDC to understand the solarization of agricultural pumps with effort from AEPC and NEA.

Laxman Prasad Ghimire: There were policy recommendations, capacity building, monitoring and subsidy mechanism, larger projects with DKTI, etc. Nepal's market is largely dependent on subsidy delivery mechanisms. There are a few areas to work more on in the design of projects. I saw a Grid-connected sky model in Gujarat. Why not we replicate such ideas in Nepal and see the implications?

Sagar Mani Gnawali: We are ahead in electrifying agriculture work in Nepal and are very much interested in such a prototype. If we have a clear picture, investment is possible from our side. And I think IWMI has done a nice job of connecting NEA with solar projects.

Shisher Shrestha: Farmers are more focused on getting more water and selling it for more income.

Divya Sharma: We can extend this project for practical experiments deliverables to NEA. Operationalization is necessary, and something we do that is of value that we can to the donor.

Antonia Fluck: What problems do local governments face? There are underline questions: what is groundwater level, water quality? We research fundamental problems and raise fundamental issues.

Pratigya Neupane: We have 37 local representatives to collect local data, promoting local economic development in Madhesh Pradesh. Eastern region to announce these areas as dry areas as there is less rainfall, to promote and support as well as facilitate such initiatives. IWMI is working to take such initiatives for solarization. There is infrastructure development, and they are very supportive of collecting data for monitoring and accountability. NARMIN can engage in such initiatives.

Antonia Fluck: It would be great if we connect to the local context.

Pratigya Neupane: We are working on sensitization.

Shisher Shrestha: Groundwater monitoring is necessary for the remedy of groundwater exploitation.

Shisher Shrestha: Community vs. Individual SIP, groundwater monitoring: if we don't receive enough rainfall this year, what will be the situation next year? What is the status of solar irrigation in mid-hills as AEPC is targeting Terai Districts? How to improve the quality of workmanship and technical standards of SIP? There are 1,60,000 diesel pumps in current use. How can we scale the SIP program in Nepal?

Dinesh Rajouria: Water quality: The groundwater division has already been monitoring in Terai districts. Solar Lift Irrigation: Solar irrigation in mid-hills has high potential, more than 2-thousand-hectare areas. Status of groundwater: it is the concern of groundwater drainage and recharge; you can take the data from the ministry. For example, in the Trishuli corridor, there is we have already designed which pump can be potential to generate electricity and particularly marginalized farmers can get benefitted. Dhading has six projects and more successful examples available there.

Marlene Buchy: In terms of research gaps, there is a lack of inclusion. What we need to understand that why we are not into more inclusive practices, also extension services. These are marginal farmers, it is a question to enhance the project in terms of policy, inclusion, etc.

Shisher Shrestha: AEPC cannot address every local problem on its own. Therefore, local governments can capacitate on that basis to help AEPC identify marginal farmers.

Pratigya Neupane: We have such standards.

Sagar Mani Gnawali: We are not responsible for providing technology. We are responsible for providing water. We can capture some land and provide water to all farmers but not rehearse providing technology to farmers.

Partigya Neupane: We are targeting poor farmers.

Shisher Shrestha: We have around ten months. What area can we focus on?

Sagar Gnawali: How NEA can access metering, make a small booklet, we can work on an agreement to replicate ideas in different places. We do have money, but the idea must be replicated. So, recommendations can be provided to NEA and multi-partner agencies.

Antonia Fluck: We have only eight months. How we can monitor groundwater in a short period must be focused. I think providing water instead of technology is an important factor you addressed, Sagar ji.

Hari Shrestha: We can look into water quality and groundwater monitoring. Besides, we can focus more on expansion through a market-driven approach.

Dinesh Rajoria: Explore the area and activities.

Kumar Raj Shahi: One of the ideas shared by Sagar ji is nice about sharing water instead of focusing on sharing technology. Subsidy with an 80% subsidy target is not quite affordable.

Divya Sharma: Assessment carried out for water quality and groundwater monitoring; I would love it if you could share this data with us too. Previously, we had data on arsenic contamination in water. It can add value to project and organization research input. It is very appreciated.

Alok Sikka: Thank you to all, and it is exciting as well as encouraging to have stakeholders from different organizations. Solar water price is much cheaper than diesel pumps. This can help policymakers through knowledge sharing. Going forward, you can share information that assessment of groundwater monitoring and water quality will be conducted. We can look more for business models. In the mid-hills, it is going to be surface or spring water for which local context must be set.

Annex III: Presentation

Annex IV: Photographs from the Meeting



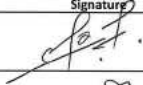



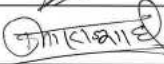


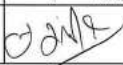


C-PMC Meetings

SN	Name	Designation / Institution
1	Laxman Prasad Ghimire, Dr.	Assistant Director / AEPC
2	Sagar Mani Gnawali	Assistant Manager / NEA
3	Dinesh Rajouria, Dr.	Joint Secretary / WECS
4	Santosh Raj Paudel	Under Secretary / DoA
5	Pratigya Neupane	Program Coordinator / NARMIN
6	Kumar Raj Shahi	Representative / NFIWUAN
7	Hari Shrestha	COO / SunFarmer
8	Flück Antonia Elena	Program Manager / SDC Nepal
9	Alok Sikka, Dr.	Interim PL / SoLAR and IMWI India CR
10	Manohara Khadka, Dr.	CR/ IWMI Nepal and C-PMC Chair
11	Shisher Shrestha	Researcher IWMI Nepal and C-PMC Secretary

C-PMC Meetings	Date
1 st CPMC Meeting	14.01.2020
2 nd CPMC Meeting	05.08.2020
3 rd CPMC Meeting	28.05.2021
4 th CPMC Meeting	20.12.2021



Annex V: Attendance Sheet

Solar Irrigation for Agriculture Resilience in South Asia (SoLAR-SA) Project				
Nepal - Country Project Management Committee (C-PMC) 7 th Meeting August 8, 2023				
SN	Name	Designation	Institution	Signature
1	Laxman Prasad Ghimire	Assistant Director	AEPC	
2	Sagar Mani Gnawali	Assistant Manager	NEA	
3	Dinesh Rajouria	Joint Secretary	WECS	
4	Santosh Raj Paudel	Under Secretary	DoA	-
5	Pratigya Neupane	Program Manager	NARMIN	
6	Kumar Raj Shahi	Representative	NFIWUAN	
7	Hari Shrestha	COO	SunFarmer	
8	Antonia Elena Flück	Program Manager	SDC-Nepal	
9	Manohara Khadka	Country representative	IWMI-Nepal	
10	Shisher Shrestha	Country Manager, SoLAR	IWMI-Nepal	
11	Marlene Buchy	Senior Researcher- Social Science	IWMI-Nepal	online
12	Amrita Rauniyar	Consultant	IWMI-Nepal	
13	Alok Sikka	Regional PL, SoLAR	IWMI-India	Online
14	Deepak Varshney	Country Manager (India), SoLAR	IWMI-India	online
15	Divya Sharma		SDC	online