

## Solar Irrigation for Agriculture Resilience in South Asia (SoLAR-SA) Project

### Nepal - Country Project Management Committee (C-PMC) | 4<sup>th</sup> Meeting

Date: 20<sup>th</sup> December, 2021 | Time: 11:00 AM – 12:30 PM NST

Venue: Nepal Country Office (In-person) and Zoom (Virtual)

#### A) C-PMC Members SoLAR-SA Project – Nepal Attendee

SN	Name	Role	Institution	Attendance	Remark
1	Manohara Khadka, Dr.	Chair	IWMI Country Representative	Yes	In-person
2	Laxman Prasad Ghimire, Dr	Member	Representative of AEPC	Yes	Virtual
3	Sagar Mani Gnawali	Member	Representative of NEA	No	Not well
4	Pramila Shrestha	Member	Representative of DWRI	No	On a field visit
5	Santosh Poudel	Member	Representative of DoA	No	On a field visit
6	Rajendra Prasad Pyakurel	Member	Representative of NARMIN	Yes	Represented by Gita Shrestha, Virtual
7	Kumar Raj Shahi	Member	Representative of NiFUAN	Yes	In-person
8	Ashok Byanju	Member	MuAN	No	
9	Hari Shrestha	Member	Representative of Private Sector (SunFarmer Nepal)	Yes	Represented by Prashant Bajracharya, In-person
10	Binaya Raj Shrestha	Member	Representative SDC-Nepal	Yes	Virtual
11	Aditi Mukherji, Dr.	Member	IWMI Nepal - Regional PL, SoLAR	Yes	Virtual
12	Shisher Shrestha	Member Secretary	IWMI – Consultant RE Expert, SoLAR-NP Country Lead	Yes	Virtual
13	Gitta Shrestha	Invitee	IWMI Nepal – National Researcher	Yes	Virtual
14	Labisha Uprety	Invitee	IWMI Nepal – Sr. Research Officer	Yes	In-person
15	Divya Kashyap	Invitee	SDC India	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; MuAN is Municipal Association of Nepal; NARMIN is National Association of Rural Municipality in Nepal; IWMI is International Water Management Institute*

## B) Agenda, Discussions, and Decisions

### *Welcome Remark and Regional Updates*

Dr. Manohara Khadka, Chair of C-PMC and Country Representative of IWMI-Nepal welcomed all C-PMC members to the 4<sup>th</sup> SoLAR C-PMC meeting. She outlined the main purpose of the SoLAR project is to support national government efforts. She also mentioned the purpose of the 4<sup>th</sup> SoLAR C-PMC meeting to highlight the reflections and learnings from IWMI's work in 2021 and present the plans for Y3 (2022).

Dr. Khadka's welcome remark was followed by a brief self-introduction session moderated by Mr. Shisher Shrestha, Member Secretary of C-PMC. Ms. Gita Shrestha represented NARMIN as Mr. Rajendra Prasad Pyakurel couldn't join the meeting. Similarly, Mr. Prashant Bajracharya represented SunFarmer as our new C-PMC member Mr. Hari Shrestha's busy schedule. Mr. Hari Shrestha replaced Mr. Avishek Malla from SunFarmer Nepal as a representative from the private sector. Mr. Santosh Poudel replaced Mr. Prakash Kumar Sanjel from DoA, but unfortunately, he couldn't attend the meeting as he was traveling for a field visit.

### *SoLAR-SA Nepal Y2 updates*

Mr. Shisher Shrestha highlighted the SoLAR –SA project activities planned for Nepal and updated on the Year 2 progress. The highlights of Progress in Y2 is as follow:

#### Activity 1.1.2

- Quantitative Phone surveys and HH surveys - was conducted to evaluate the impact of the SIP program in Nepal. The draft report of the Phone survey is complete and the preliminary analysis of the HH survey is also completed.
- A detailed Qualitative study was conducted to evaluate the impact of the SIP program from the GESI lens. Preliminary analysis of study under progress.
- Policy review on GESI in SIP in Nepal and Bangladesh is completed.

#### Activity 2.2.3

- The feasibility survey of the two short-listed sites is completed.
- The technical and financial feasibility of the pilot project was presented to the Local government
- Four party meetings and **LOI signed**

#### Activity 3.1.1

- 7-day residential training held in February/March capacitated 20 participants
- 1-day hands-on training implemented in Saptari and Rautahat on December 7 and 9 with 37 participants
- Training Manual for SIP Technician finalized in the English version.

#### Activity 3.2.1 and 3.2.2

- A virtual National forum on appropriate institutional modalities of SIP in Nepal was held on Feb 04, 2021.
- A short video documentary is being developed to present the current situation of the SIP program in Nepal.

### *Preliminary- analysis of data from the qualitative study*

The preliminary analysis of data from the qualitative study was presented by Ms. Gitta Shrestha. She highlighted whom was the SIP technology targeted in the Eastern Terai region when you considered different projects targeted by different organizations.

She also showcased the GESI impact of these projects and compared the gaps amongst the AEPC, ICIMOD, and IWMI-IDE-ACIAR projects.

### *MG Pilot – Field survey results and scope of collaboration*

Shisher Shrestha updated the C-PMC members on the status of MG pilot project implementation and the four-party LOI signing along with the scope of collaboration.

Shisher presented the proposed design of the MG system. The site was selected at Chhipaharmai Rural municipality in accordance with the feasibility report and closed group discussion with AEPC, NEA, IWMI, and MG consultant.

### *Capacity building of Local SIP technicians*

Shisher Shrestha presented the highlights from the training activities carried out in 2021, and we were able to train 57 participants. There were two training activities in 2021. A 7-day residential training organized in coordination with Himalayan Pathibhara Polytechnic Institute in Itahari in February-March. 20 participants were training in Itahari.

A 1-day hands-on training was organized in two sites in coordination with local NGOs Sabal Nepal (Saptari) and EPC Nepal (Rautahat). 37 participants were trained in Saptari (13) and Rautahat (24).

### *Year-3 Draft work plan*

Shisher Shrestha presented the draft work plan for Y3, which mainly focused on the following:

1. Research findings dissemination and policy uptake.
2. The MG project Implementation and monitoring.
3. Training for Female farmers and entrepreneurs, local government officials, etc.
4. Increase the reach of the government subsidy program.

The detailed Y3 plans are provided in the presentation material in **Annex III**.

### *SoLAR Innovation Fund Grantee – Progress*

Mr. Shisher Shrestha provided brief updates on the activities conducted by the IF 2020 Grantee Gham power and IF 2021 Grantee Minergy Initiatives.

Gham Power Updates:

- Improved Standard Operating Procedure with MFI partners and organized demo workshops.
- Deploy and gather preliminary data from all 10 pilot sites with AEPC.

- Testing and integration of all 3 new agri-sensors in the digital platform.
- Engagement, awareness generation with 10,000 farmers and end-users.

Minergy Initiatives Updates:

- IF 2021 awardee from Nepal under the project titled “*Solar Water Mini-Grid with Smart Analog Meter for Optimization of Solar Irrigation Pumps and its Widespread Adoption among Small Landholding Farmers of Nepal*”
- Project Duration: 18 months”
- Virtual inception meeting carried out with the farmers’ group at Kuleni, Nawalparasi along with orientation and briefing
- Planning first field visit at Kuleni, Ward No. 17, Devchuli Municipality, Nawalparasi

*Discussion / Feedback / Closing Remarks*

Shisher Shrestha closed the presentation with the video highlight from the Video documentary that showcases the farmer’s story from the field.

The presentations were followed by a discussion session was moderated by Shisher Shrestha where all the C-PMC members and guests participated along with the SoLAR Nepal Team. Several queries and suggestions were raised by the C-PMC members. The detailed discussion script is given in **Annex I**.

The discussion session was concluded with final thoughts from the C-PMC members and guests. Originally, concluding remarks were planned by Dr. Laxman Prasad Ghimire, but he needed to leave early due to another meeting at the Ministry.

Dr. Manohara Khadka thanked all the C-PMC members and guests for their participation and concluded the sessions.

## Annex I: Discussion Session – detailed script

<p>Aditi Mukherji:</p> <ul style="list-style-type: none"> <li>- A lot of activities have happened in the impact evaluation part – one part already presented to AEPC and a paper based on this has been passed on the journal</li> <li>- Preliminary report on the phone survey also ready (using data from AEPC + talked to almost 900 farmers to understand what has happened to the scheme) - Not yet final – 600 farmer HH survey, this data is under analysis, causal attribution could be seen from this (impact of SIP on farmer productivity)</li> <li>- It took about 1.5 years for the surveys – surveys were a contingency plan but we were curious to know how pumps were being used</li> <li>- There is also a literature review on options for microgrid – presented last year</li> <li>- We won't do any more impact evaluation in 2022 – most of these things are completed now; only reports need to be finalized</li> </ul>
<p>Binaya Raj Shrestha:</p> <ul style="list-style-type: none"> <li>- Good to know the project is evaluating in terms of income of farmers and that analysis is underway – would be great to see results of that</li> <li>- Would like to know – which solar irrigation policies are the project working on? What is the target that the project has seen?</li> </ul>
<p>Shisher Shrestha:</p> <ul style="list-style-type: none"> <li>- One of the areas we are working on is the subsidy delivery mechanism of the AEPC. Our research is showing that small and marginal farmers are not being reached by the subsidy – we would like to increase this reach.</li> <li>- One area we have seen progress seen is that AEPC has reduced the land requirement from 2 bighas to 10 kathas, so smallholders will also be able to apply for the subsidy.</li> <li>- But many farmers don't have any land – so we need to work more on these things.</li> <li>- Hopefully our discussions with AEPC will have some impact in the future – hopefully, access is increased</li> </ul>
<p>Kumar Raj Shahi:</p> <ul style="list-style-type: none"> <li>- Is there any demand in the hill areas for solar? Maybe we don't have enough data about this. There are some places in Nepal where there are problems with drinking water, irrigation, etc. Can we reach these kinds of places as well?</li> </ul>
<p>Laxman Ghimire:</p> <ul style="list-style-type: none"> <li>- We have two different programs – one is irrigation; most are them are in Tarai because of low head and underground water.</li> <li>- But there are some in the upper hills and mountains as well. There is also a project in the German government – mostly in the drinking water scheme in mountain and hilly regions.</li> <li>- We have further plans for the same, but there is a limit on support (with the subsidy); these projects are expensive and beyond capacity...</li> </ul>
<p>Shisher Shrestha:</p> <ul style="list-style-type: none"> <li>- DWRI is also working on several solar lifting projects in mid-hills, they are implementing it.</li> <li>- The DG of DOA is also interested in the same and looking to pilot such projects.</li> <li>- Could Prashanth provide a brief overview of the solar systems in mid-hills?</li> </ul>
<p>Prashant Bajracharya:</p>

<ul style="list-style-type: none"> <li>- We (Sunfarmer) have done a lot of projects with ICIMOD and AEPC subsidies – this has created a good social impact; they had been using diesel pumps but now with solar – it has reduced their operation cost.</li> <li>- We have also done various water pumping projects – NEWA – this has created an impact to help get water.</li> <li>- Chandanpur Khanepaani Project, ICIMOD SIP projects – these too have benefitted farmers</li> <li>- Size of the project in mid-hills: under NEWA, an average of 3.9 KW, one in Sindhuli is of 26 KW (two phases on the same site)</li> <li>- Have sent you a list from Prajwal Dhakal that shows the list of projects, with the commissioning date, and the age of the project</li> </ul>
<p>Labisha Uprety</p> <ul style="list-style-type: none"> <li>- Will the subsidy program be continued and for how long?</li> </ul>
<p>Laxman Ghimire:</p> <ul style="list-style-type: none"> <li>- The subsidy is a continuous program – this year also we have 300 pumps installation program.</li> <li>- Recently we signed a project with the German government, they have a component for the promotion of SIPs.</li> <li>- There is also an expert group – we are looking into innovative business models now; we are trying to accommodate IWMI’s recommendations in this.</li> <li>- Subsidy policy is not going to be changed, it’s a cabinet document – it’s a long process to change.</li> <li>- But delivery procedure and based on findings from IWMI etc. we can accommodate these in the business models and delivery mechanism.</li> </ul>
<p>Aditi Mukherji:</p> <ul style="list-style-type: none"> <li>- 4 party MOU for grid connection was a very good development – where would the actual pilot be up and running?</li> <li>- On Binaya ji’s question: we would be able to give you numbers on the benefits from solar pumps soon –from phone surveys we have found that there is a 7% more likelihood of farmers introducing new crops when adopting solar crops (in winter and summer). This is not causal in nature – but we will try and get more causal data from the HH survey.</li> <li>- Another benefit is less use of diesel, from an environmental and economic perspective</li> <li>- There is a lot of micro-grid connection work already in Gujarat from which Nepal can draw lessons from- the SKY scheme of the Gujarat government – this pilot should therefore be soon up and running so we can move forward</li> </ul>
<p>Shisher Shrestha:</p> <ul style="list-style-type: none"> <li>- Regarding the micro-grid, we signed the LOI and we are working on the RFP format. W</li> <li>- We have asked Chhiparmai (local gov) to begin purchasing the equipment they committed.</li> <li>- We also had a meeting with NEA’s DMD who approved 5 lacs worth of equipment support for the LT line construction.</li> <li>- We plan to select a contractor by January and commission the system by April.</li> </ul>
<p>Manohara Khadka:</p> <ul style="list-style-type: none"> <li>- We had a meeting DG of DOA.. he was inquiring about solar lift projects in the hilly areas... Could we do a quick assessment on this? And also piloting? There is a lot of lands where it has</li> </ul>

been urbanized... he wanted to know if there was any way to explore... what are the socio-economic and technical challenges for this?

Shisher Shrestha:

- Yes, we can commission that kind of research (is the system operational? Is it delivering desired output? – these could be looked at).
- It would help organizations like the DOA... one thing the DG also said is that DOA is also willing to put up some money for the solar lifting projects

Binaya Raj Shrestha

- SDC is also implementing a Small Irrigation program with GoN in Province 1 - we are implementing it in 57 local governments.
- We are also looking at such solar irrigation schemes which have been operational for the last 5 years and have some coverage;
- We want to go to community-level, not just individual household level (command area more than or equal to 5 ha), such kind of things we are also looking for piloting in mid-hills, there is huge demand there.
- Doubt is on operation, sustainability, coverage – can we find some examples already implemented (IWMI could look at it)?

Shisher Shrestha:

- We have some data from the private sector like Sunfarmer. AEPC is also looking at their data to provide us with this information.
- One issue that came up is that solar lift projects are not very old.... Some of the projects are still operational but the pump guarantee is only 2-3 years.
- When planning long-term solar lift projects, we need to consider replacing these pumps after a while... the pump will be worn down. This should be built into the project cost... maybe we can discuss an additional study that could be presented to the DOA, DWRI, and SDC.
- Regarding the phone survey – I had taken them out due to potential time constraints. But the survey connected us to 900 farmers, and an equal number of non-SIP farmers. We have a draft report – to be finalized by end of the year.
- Findings will be shared during National Forum. We are hoping to do a closed group meeting to discuss the results with AEPC but we haven't been able to do this so far. We would also be able to share the qualitative work results as well.

Kumar Raj Shahi:

- High demand remains one of the key challenges – IWMI would need to push the government for this. There could be cost-cutting options as well when trying to build these systems.
- Rural local governments could be identified and worked with. Multiple-use systems should be prioritized.

Divya Kashyap:

- Congrats to IWMI Nepal for all the work; I can connect to Aditi later and see where we would need more support.
- I do feel that 2022 should be very exciting – when we implement activities – the grid connection, how it impacts farmers, and cropping behavior.

- Congratulations to Gitta for the excellent presentation – you made your point very well with just a few slides.

Aditi Mukherji:

- Looking forward to the full video...

Binaya Raj Shrestha:

- Thank you... excited to see the Y3 plan and activities and link with not only activities and impact and outcomes, as seen in the presentation

Manohara Khadka:

- Thank you Shisher ji, ...thanks to all CPMC members.
- We are very excited to see what happens in terms of real outcomes. Y3 really focuses based on learning and assessment. We want to reach out and connect to all stakeholders and try to influence policymakers to consider issues that are brought up (GESI, technical work).
- Next year would be really quite a full presentation of the phone survey work - we will present it in January in a national forum so that they use our findings.
- Thank you for joining us physically and virtually!



## Annex II: Session Program

<b>Time</b>	<b>Activity</b>	<b>Responsible Person</b>
11:00 AM – 11:05 AM	Welcome	Mr. Shisher Shrestha
11:05 AM – 11:10 AM	Welcome remarks & Purpose of the meeting	Dr. Manohara Khadka
11:10 AM – 11:20 AM	Introduction – C-PMC Members and Guests	Self
11:20 AM – 11:50 AM	Progress updates - Nepal Year 2 Achievements Year 3 Draft Work Plan	Mr. Shisher Shrestha
11:50 AM – 12:10 PM	Discuss / Feedback	All C-PMC Members and Guests
12:10 PM – 12:20 PM	Respond to queries and feedback	Mr. Shisher Shrestha Dr. Manohara Khadka Dr. Aditi Mukherji
12:20 PM – 12:30 PM	Closing Remarks	Dr. Laxman Prasad Ghimire

**Annex III: Presentation**