

## Solar Irrigation for Agricultural Resilience (SoLAR)

### Newsletter

#### Issue No 6: October-December 2021

Dear readers,

For those of us working in the field of climate change, the highlight of the last quarter of 2021 was the COP-26 in Glasgow, where the absolute imperative of limiting global warming within the Paris Agreement agreed limit of 1.5 to 2°C above pre-Industrial times was highlighted by all parties, including the civil society. Reducing carbon and other greenhouse gas emissions is at the heart of climate action, and IPCC reports have shown the need for urgent and deep decarbonisation of all sectors. There have been rapid strides in the solarisation of electricity generation worldwide, including in our region of South Asia. Rapid declines in solar panel costs and government policy support have been instrumental in decarbonising the electricity sector. In South Asia, high dependence on fossil fuel-based groundwater irrigation also means that decarbonisation of irrigation is a priority. Accordingly, governments have embarked on policies and programs for implementing solar irrigation pumps. In Solar Irrigation for Agricultural Resilience (SoLAR), we work closely with national and state/provincial governments to evaluate their programs and policies on solar irrigation. The last quarter of 2021 was particularly fruitful. For once, after a long time, COVID related restrictions were relaxed, and our teams could conduct fieldwork in various sites in India, Nepal and Pakistan. We were also able to sign important memorandums of understanding with our government partners, further sealing our commitment to work closely with them to help deliver the project objectives. However, just as the year came to a close, we were hit by another wave of COVID-19 infections. Here's hoping that 2022 turns out to be a productive year for us all where we consolidate our field findings and disseminate our results.



Here's a sneak peek into our work for this quarter. I hope you enjoy reading our newsletter. Please share your thoughts by writing to me at [a.mukherji@cgiar.org](mailto:a.mukherji@cgiar.org).

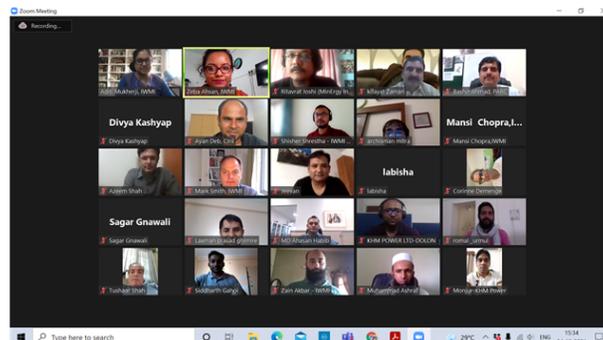
Aditi Mukherji, Regional Project Leader, SoLAR-SA, IWMI

### Launch of SoLAR Blog series

As IWMI researchers gather a gamut of field experiences and research insights, the SoLAR blog series has been the right platform to express lucidly about what's happening on the ground and the related policy questions. Read our blogs [here](#).

### 4<sup>th</sup> Project Steering Committee (PSC) meeting held

The fourth PSC meeting was held on the 4<sup>th</sup> of October 2021. Detailed discussions on the progress made in Bangladesh, India, Nepal and Pakistan were held, along with brief presentations from the eight innovation fund grantees. In addition, a closed-door meeting was held between the PSC members that discussed the overall progress made in year 2 of the SoLAR project. Dr Aditi Mukherji highlighted the delays in the project. Minutes of the meeting can be found [here](#).



A glimpse of the 4<sup>th</sup> PSC meeting  
Photo: Zeba Ahsan/IWMI

### IWMI-SoLAR Staff participates at CoP 26

The IWMI-SoLAR staff participated at the CoP 26 which held at Glasgow, Scotland in November 2021. These were the sessions:

- [Water, Extremes and Climate Change: Insights from IPCC WGI Report](#) (Dr Aditi Mukherji facilitated the session)

- **Resilient Policies: Leveraging water from National Climate Planning** (Speaker: Dr Aditi Mukherji)
- **Climate smart agricultural water management for building resilience and adaptation** (Speaker: Dr Alok Sikka)
- **Integrated Land Water Solutions for Climate Change mitigation: climate, water, land** (Speaker: Dr Aditi Mukherji)
- **Reducing climate risk: Exploring the role of water-related adaptation responses, their effectiveness and maladaptation** (Organised by: Dr Aditi Mukherji)
- **Fragile Flows: Tackling climate security and adaptation challenges through water systems** (Speaker: Dr Azeem Ali Shah)

## Country Highlights

### Updates from Bangladesh

#### Farmers' training in Bangladesh

A group of 31 farmers were trained on improved agricultural and irrigation practices, along with irrigation scheduling and use of underground pipe system, by agricultural officers from the [Department of Agriculture Extension \(DAE\)](#), [Infrastructure Development Company Limited \(IDCOL\)](#) and [WAVE Foundation](#) at Jhenaidah, Bangladesh on 28 October 2021. Further details can be found [here](#).



A glimpse from the farmers training at Jhenaidah, Bangladesh  
Photo: WAVE Foundation

#### Monitoring instruments installed; SIP Operators trained

Local field implementation partner, NGO Forum carried out field visits in NW region of Bangladesh in December 2021 to install flow meters for monitoring irrigation water application in six SIP schemes. Furthermore, SIP operators were trained. More details can be found [here](#).



Installed flow meters at a water outlet in solar irrigation command area  
Photo: Via NGO Forum

#### 3<sup>rd</sup> CPMC Bangladesh meeting held

Bangladesh's third Country Project Management Committee (C-PMC) meeting was held virtually on the 8<sup>th</sup> of December 2021. Further details can be found [here](#).

A glimpse from the 3<sup>rd</sup> Bangladesh CPMC meeting.  
Photo: Zeba Ahsan/IWM

## Updates from India

### **IWMI India enters into an agreement with GUVNL**

To support the SDC-SoLAR project in Gujarat, India, IWMI has signed an agreement with the [Gujarat Urja Vikas Nigam Limited](#) (GUVNL) for three years starting November 2021. GUVNL will extend cooperation to IWMI and [GERMI](#) (Gujarat Energy Research Management Institute) in imparting farmers' training across selected SKY (Suryashakti Kisan Yojana) feeders in the state. Further details can be found [here](#).



*Mr Rajendra Vala, SE, GUVNL and Dr Aditi Mukherji, Principal Researcher, IWMI-Delhi, with signed copies of the agreement  
Photo: Zeba Ahsan/IWMI*

### **Field Visits in Botad and Anand to Assess GW Monitoring**

IWMI's groundwater team visited the Parmeshwar and Gadhiya feeders in Botad and Ishnav and Panchalipura feeders in Anand, Gujarat to take stock of the installation of instruments for monitoring energy and water use. Further details can be found [here](#).



*Overhead irrigation water tank in farmer's field in Anand  
Photo: Md Faiz Alam/IWMI*

### **Extensive Field Visits in Gujarat to Understand the Impact of SKY Scheme**

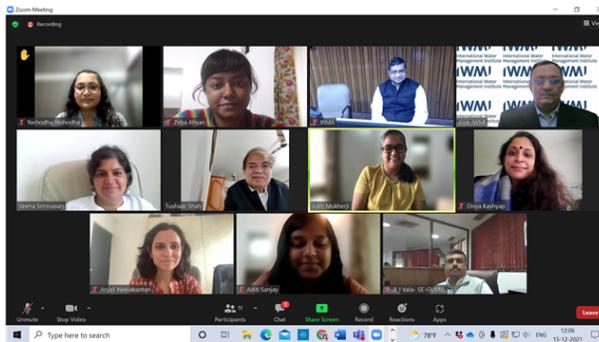
A team from IWMI-Delhi carried out an extensive field trip in Gujarat in December 2021 over a 10-day period across various feeders in Anand, Mehsana, Surendranagar and Bharuch districts. This was done to assess the farmer's perception of the SKY (Suryashakti Kisan Yojana) scheme. Feeders under the four utilities, viz., [UGVCL](#), [PGVCL](#), [MGVCL](#) and [DGVCL](#), were covered with detailed farmers interviews and visits to DISCOM offices. Further details can be found [here](#).



*IWMI researchers with a group of farmers under Mahakali feeder, UGVCL at Mehsana district, Gujarat.  
Photo: Zeba Ahsan/IWMI*

#### **4th CPMC India meeting held**

The fourth Country Project Management Committee (C-PMC) meeting for India was held virtually on the 15th of December 2021. Further details can be found [here](#).



*A glimpse from the 4th CPMC India meeting  
Photo: Zeba Ahsan/IWMI*

#### **Updates from Nepal**

##### **Field visits to explore GESI impacts of SIPs**

A team from IWMI-Nepal carried out a 6-day field trip in the Saptari district of Eastern Nepal in November 2021 that focused on investigating the SIP impact on unequal gender relations and small landholders through qualitative survey techniques. Further details can be found [here](#).



*IWMI researchers with a female farmer  
Photo: Gitta Shrestha/IWMI*

##### **Solar Technicians trained in Saptari and Rautahat, Nepal**

An extensive one-day training programme was organised at Saptari and Rautahat districts, accompanied by site visits in December 2021. Sabal Nepal from Saptari and EPC Nepal from Rautahat has played a crucial role in implementing SIP related projects in the country. Further details can be found [here](#).



Participants being trained at a SIP site in Rautahat  
Photo: IWMI Nepal

#### 4th CPMC Nepal meeting held

The fourth Country Project Management Committee (C-PMC) meeting for Nepal was held virtually on the 20th of December 2021. Further details can be found [here](#).

#### Four party agreement on solar mini grid pilot signed

An agreement has been signed between [Chhigahamai Rural Municipality, Nepal Electricity Authority \(NEA\), Alternative Energy Promotion Center \(AEP-C\)](#) and IWMI to facilitate a pilot project on micro-grid (MG) connection of SIPs in Parsa district of Province 2, Nepal. Further details can be found [here](#).

#### Updates from Pakistan

##### Training on Google Earth Engine Applications at KFUEIT

On 24 November 2021, IWMI in partnership with Khwaja Fareed University of Engineering and Information Technology (KFUEIT) organised a training programme on Google Earth Engine Applications in the context of water management. Further details can be found [here](#).



Excellent crop growth at the partner university site under the precision surface irrigation trials coupled with SIP  
Photo: Abbas Ali/IWMI

#### Pakistan Water Week

Pakistan Water Week was held from 6-8 December 2021 that had rich discussions around the potential of solar-based irrigation in Pakistan. President of Pakistan, Dr Arif Alvi highlighted the country's increasing vulnerability to climate change that required urgent action to manage water resources. The event received wide media coverage. Find out more about the event [here](#).

Within the same event, [national forum](#) on 'The Real Potential of Solar-Based Irrigation in Pakistan' was held.



Pakistan's President Dr Arif Alvi addressing the Pakistan Water Week 2021  
Photo: IWMI/Pakistan

### Field visits to Jhang and Chakwal districts

IWMI researchers visited various tehsils in the Jhang and Chakwal districts of Punjab Province in December 2021 to conduct a socio-economic survey of SIP and non-SIP farmers to gauge the differences in cropping and irrigation patterns. Further details can be found [here](#).



*A farmer's interview in Jhang, Punjab Province, Pakistan  
Photo: Md Zain Bin Akbar/IWMI Pakistan*

### 3rd CPMC Pakistan meeting held

The third Country Project Management Committee (C-PMC) meeting for Pakistan was held virtually on the 21st of December 2021. Further details can be found [here](#).



*A glimpse from the 3rd C-PMC Pakistan meeting  
Photo: Md Zain Bin Akbar/IWMI Pakistan*

### **What keeps the IWMI- SoLAR staff busy?**

*Here's what Archisman Mitra (Researcher- Water Resources Economics ) at IWMI-Delhi has to say*

#### **What is your role in the project?**

I am the Country-lead in Bangladesh for the SDC-Solar project, and I am responsible for keeping track of the overall progress of the project related activities and deliverables. In addition, I help the team members coordinate across different project activities and with IDCOL, our primary project partner in Bangladesh. I am also contributing to the impact evaluation study in Bangladesh that analyses the impact of solar irrigation on agricultural practices and outcomes, groundwater usage and diesel use.



#### **What are the important policy questions that your country team is trying to answer?**

Irrigation in Bangladesh is primarily dependent on imported diesel, which is expensive for farmers, costly for the Government and harmful for the environment. Solar pumps are a clean energy alternative to diesel, but before scaling up, it is essential to understand their likely impact on farmers' income and agricultural practices and long term groundwater sustainability. Also, there is a need to study alternative financial and institutional models for SIP promotion (including grid-connected SIPs that we are piloting through this project), finding the most suitable one for scaling up in a financially viable and socially inclusive manner. These are some of the policy questions this project will try to answer.

#### **What keeps you motivated?**

The fact that our work can contribute to creating better solar irrigation policies for Bangladesh that will benefit farmers and help mitigate carbon emissions is a great motivation for me to work. The pleasure of working with wonderful colleagues in IWMI and superb partners in Bangladesh is a bonus for this work.

### **What keeps SoLAR partners engaged?**

*Here's what Dr Muhammad Ashraf (Assistant Professor, Department of Agriculture), Khawaja Fareed University of Engineering and Information Technology (KFUEIT), Rahim Yar Khan, Pakistan, a valuable partner of the SoLAR project, has to say*

**How can this project contribute to the mission of your organisation?**

The collaboration through IWMI's SoLAR project has contributed to the mission of KFUEIT through capacity building, facilitation to students for conducting experiments and research by providing equipment, implementing the field trials and exposure visits to the fields. I believe the continuity of these activities can help KFUEIT achieve its mission.



**Which component of the project are you most excited about?**

All the activities mentioned above were essential for us. However, I found the training on the latest software (WinSRFR, Google Earth Engine) and technologies (i.e., telemetry system, laser grading equipment) very interesting. The results of water-saving using precision surface irrigation was very intriguing. Moreover, we are excited to simulate water and salts movement in the soil using software like Hydrus and remedies of salinity at field level that will be started soon as discussed with Dr Azeem Ali Shah of IWMI Pakistan.

**Research Papers of interest published in this period:**

[Feasibility Study of a Floating Solar Photovoltaic System in Odisha, India](#)

[Karnataka's 'Surya Raitha' Experiment: Lessons for PM-KUSUM](#)

[Environmental governance in rural India: diffusion of solar powered technologies](#)

[Agricultural Water Management Challenges in the Hunza River Basin: Is a solar water pump an alternative option?](#)

**Other news from the solar space:**

[Effect of Winter on Solar Project Operation](#)

[Agartala to House North East's First Solar-Powered Airport](#)

[India Constitutes 81% of South Asian Sales of Off-grid Solar Products in 1H 2021: GOGLA](#)

**In partnership with**



We thank Dr Aditi Mukherji, Dr Manohara Khadka, Shisher Shrestha, Mohammad Faiz Alam, Aditi Sanjay, Azeem Ali Shah, Gitta Shrestha, Archisman Mitra and Md Zain bin Akbar for contributing to this newsletter.

For further information, please get in touch with Ms Zeba Ahsan, Communications Consultant, SoLAR Project, IWMI at [z.ahsan@cgiar.org](mailto:z.ahsan@cgiar.org)

[Visit the SoLAR website](#)

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