



## Energizing Agriculture and Enabling Just Energy Transitions in South Asia: *A Regional Knowledge Forum*

Venue: Indian Institute of Technology Gandhinagar, Gujarat

Date: February 06 - 08, 2023

### Conference Partners



## Background

Agriculture remains critical for livelihoods and food security in South Asia. Over the last 50 years, agriculture in the region has become more energy-intensive due to the rapid proliferation of groundwater irrigation. The region is home to nearly 25-30 million agricultural pumps, the largest worldwide. These pumps, powered by either dirty diesel or electricity, have been critical for enhancing agricultural production and supporting livelihoods but cause substantial carbon emissions in the process. Replacing these fossil fuel-based pumps with solar irrigation pumps (SIPs) is an effective mitigation strategy. While agriculture is a source of emissions that causes climate change, the sector is also highly exposed and vulnerable to the impacts of climate change. As such, climate action in agriculture needs strategies that combine adaptation and mitigation actions. 'Just Energy Transition' is one such strategy, which involves moving away from fossil fuels to renewable energy while not compromising the adaptive capacity of the farmers.

The International Water Management Institute (IWMI) and its partners are organizing a Regional Knowledge Forum - ***Energizing Agriculture and Enabling Just Energy Transitions in South Asia*** - as a part of IWMI's Swiss Agency for Development and Cooperation (SDC)-funded project titled [Solar Irrigation for Agricultural Resilience in South Asia \(SoLAR\)](#)

## Format of the Forum

The forum is organized as a two-day conference – on February 06 and 07, 2023 - comprising plenary and parallel sessions in five thematic areas:

**Theme 1:** Solarizing Smallholder Irrigation: Policy landscape and empirical evidence of the impact of solar irrigation pumps (SIPs) on farmers' incomes and livelihoods

**Theme 2:** Conserving Groundwater Through Solar Irrigation: Empirical evidence and future projections

**Theme 3:** Connecting Off-Grid to the Grid: Pilots and lessons from grid-connected solar irrigation projects.

**Theme 4:** Renewable Energy in Agricultural Value Chains: Institutional models, policies, and case studies on livelihoods and impacts

**Theme 5:** Making Energy Transitions Inclusive and Equitable: Is renewable energy transition in South Asia GESI (gender, equity, and social inclusiveness) compatible?

Sessions will be held in a hybrid mode (virtual + on-site presentations), The conference will be followed by a field visit, on February 08, to a local solar irrigation site and the Gujarat Energy Research and Management Institute's (GERMI) training facility.

More details on the conference sessions are provided in this booklet and can be found in our website: <https://solar.iwmi.org/events-list/energizing-agriculture-and-enabling-just-energy-transitions-in-south-asia/>

## Conference Summary Schedule (Session details are provided on subsequent pages)

Date	Time	Session Details		
DAY 1 6 <sup>th</sup> February 2023	9:00-11:00	<b>Plenary 1 -Inaugural Plenary:</b> Setting the scene: Agriculture and Energy Transition in South Asia <b>Venue:</b> Learning Theatre: Academic Block 1/102, IIT Gandhinagar		
	11:00-11:30	Refreshment Break		
	11:30-13:00	<b>Technical Session 1:</b> Solarizing smallholder irrigation- Evidence from SoLAR  <i>(Theme 1)</i> Venue: Academic Block 7/101	<b>Technical Session 2:</b> Groundwater issues in the context of irrigation intensification and climate change  <i>(Theme 2)</i> Venue: Academic Block 7/102	<b>Technical session 3:</b> Solar energy for agricultural income and livelihood  <i>(Theme 1)</i> Venue: Academic Block 7/103
	13:00-14:00	Lunch		
	14:00-15:30	<b>Technical session 4:</b> Scaling up off-grid SIPs in smallholder agriculture  <i>(Theme 1)</i> Venue: Academic Block 7/101	<b>Technical session 5:</b> Making energy transitions inclusive and equitable (Convened by Global Centre for Environment and Energy, Ahmedabad University)  <i>(Theme 5)</i> Venue: Academic Block 7/102	<b>Technical session 6:</b> Innovations in solar technology for smallholders' livelihoods  <i>(Theme 1)</i> Venue: Academic Block 7/103
	15:30-16:00	Refreshment Break		
	16:00-17:30	<b>Plenary 2:</b> Wrapping up Day 1 <b>Venue:</b> Learning Theatre: Academic Block 1/102, IIT Gandhinagar		
	17:30-21:00	Conference Dinner IIT Gandhinagar Guest House		

DAY 2 7 <sup>th</sup> February 2023	9:00-10:00	<b>Plenary 3:</b> Setting the scene: Agriculture and Energy Transition in South Asia <b>Venue:</b> Learning Theatre: Academic Block 1/102, IIT Gandhinagar		
	8:00-13:00	Field visit to Mahakali SKY Feeder, Mehsana District for SDC staff only (Closed session)		
	10:00-10:30	Refreshment Break		
	10:30-11:45	<b>Technical session 7:</b> Grid-connected solar irrigation in India  (Theme 3) Venue: Academic Block 7/101	<b>Technical session 8:</b> Leveraging solar irrigation potential in Africa (convened by GGGI)  (Theme 1) Venue: Academic Block 7/102	<b>Technical session 9:</b> Solar irrigation and implications for groundwater use  (Theme 2) Venue: Academic Block 7/103
	11:45-12:00	Refreshment Break		
	12:00-13:30	<b>Technical session 10:</b> Leveraging solar irrigation potential in Africa, Middle East, and Central Asia and what can the region learn from South Asia?  (Theme 1) Venue: Academic Block 7/101	<b>Technical session 11:</b> Are energy policies in South Asia gender transformative?  (Theme 5) Venue: Academic Block 7/102	<b>Technical session 12:</b> Connecting the off grid to the grid  (Theme 3) Venue: Academic Block 7/103
	13:30-14:30	Lunch		
	14:30-16:00	<b>Technical session 13:</b> Integrating renewable energy in agricultural value chains: Experience from developing countries (Convened by WRI and IRENA)  (Theme 4) Venue: Academic Block 7/101	<b>Technical session 14:</b> Monitoring the PM -KUSUM Scheme (Convened by GIZ, India)  (Theme 3) Venue: Academic Block 7/102	<b>India CPMC Meeting</b> (Closed Meeting for India CPMC members only)  Venue: Academic Block 7/103
	16:00-16:30	Refreshment break		
	16:30-17:30	<b>Plenary 4:</b> Wrapping up Day 2 <b>Venue:</b> Learning Theatre: Academic Block 1/102, IIT Gandhinagar		
	17:30-19:00	SoLAR Project Steering Committee Meeting (closed meeting only for SoLAR PSC Members) <b>Venue:</b> Room Academic Block 7/101		
DAY 3 8 <sup>th</sup> February 2023	8:00-15:30	Field visit to Nityanand SKY feeder, Ahmedabad, and GERMI Training Facility		

## Day 1: February 6, 2023

### Plenary Session 1

Time: 9:00 -11:00; Venue: Learning Theatre: Academic Block 1/102, IIT Gandhinagar

Time	Plenary Session 1
9:00-11:00	Inaugural Plenary: Setting the scene: Agriculture and Energy Transition in South Asia Moderated by: Marie-Charlotte Buisson (IWMI)
9:00-9:30	Registration
9:30-9:35	Inaugural Session - Welcome address: Alok Sikka (IWMI)
9:35- 9:40	Opening Remarks: Janine Kuriger (SDC)
9:40-9:45	Opening Remarks: Rajat Moona (IIT-GN)
9:45-9:50	Opening remarks: GUVNL/PGCVL (TBC)
9:50-10:00	Opening remarks: Frank Rijsberman (GGGI) - virtual
10:00- 10:20	Insights from the SoLAR Project: Aditi Mukherji (IWMI)
10:20-10:40	Energy Transition in Agriculture: Ulka Kelkar (WRI)
10:40-11:00	Questions and answers
11:00-11:30	Refreshment break

## Day 1: February 6, 2023

### Technical Session 1

Time: 11:30-13:00; Venue: Academic Block 7/101, IIT Gandhinagar

Time	Technical session 1: Solarizing smallholder irrigation- Evidence from SoLAR <i>Session description: South Asia has seen a major upsurge in the adoption of solar irrigation pumps in the last decade, and yet, very little is known about the impacts of those pumps on farmers and their livelihoods. This session will present the findings from the SoLAR project on the impacts of solar irrigation pumps on agricultural outcomes.</i>
11:30-13:00	Theme 1: Solarizing Smallholder Irrigation Chair: Divya Sharma (SDC) Custodian: Archisman Mitra (IWMI) Rapporteur: Anurag Banerjee (IWMI)
11:30-11:45	Co-benefits of solarizing irrigation for farmers: the case of Bangladesh Marie Charlotte Buisson (IWMI) and Ahasan Habib (NGO Forum)
11:45-12:00	Impact of SIPs on agricultural outcomes and farmers' diesel use: Evidence from Nepal Shisher Shreshtha (IWMI)
12:00-12:15	Understanding the SKY scheme in Gujarat: How do technical and financial models work on the ground? Deepak Varshney (IWMI)
12:15-12:30	Perception Vs Reality: In-situ Instrumentation Analysis for Solar & Non-Solar Farmers" Azeem Shah and Zain Akbar (IWMI) - virtual
12:30-13:00	Questions and Answers
13:00-14:00	Lunch

## Day 1: February 6, 2023

### Technical Session 2

Time: 11:30-13:00; Venue: Academic Block 7/102, IIT Gandhinagar

Time	<b>Technical session 2: Groundwater issues in the context of irrigation intensification and climate change</b> <i>Session description: Groundwater has always been the mainstay of irrigation in South Asia and issues of groundwater over-extraction have emerged as an important management challenge, especially in the context of climate change. This session will discuss the major challenges of groundwater management and how solar irrigation can likely affect groundwater use in the near future.</i>
11:30-13:00	Theme 2: Conserving Groundwater Through Solar Irrigation Chair: Alok Sikka (IWMI) Custodian: Mohammad Faiz Alam (IWMI) Rapporteur: Smaranika Mahapatra (IWMI)
11:30-11:45	Groundwater security of India: Interplay of science and policy Abhijit Mukherjee (IIT Kharagpur)
11:45-12:00	Excessive pumping limits the benefits of strengthening summer monsoon for groundwater recovery in India Vimal Mishra (IIT Gandhinagar)
12:00-12:15	The Bengal Water Machine—Understanding recharge dynamics in Bangladesh Anwar Zahid (BWDB)
12:15-12:30	The trajectory of groundwater development in Bangladesh Anindita Sarkar (University of Delhi)
12:30-12:45	Understanding the impact of upscaling solar irrigation on the sustainability of groundwater in Bangladesh Mohammad Faiz Alam (IWMI) and Md.Abdul Haque (NGO Forum)
12:45 -13:00	Questions and Answers
13:00-14:00	Lunch

## Day 1: February 6, 2023

### Technical Session 3

Time: 11:30-13:00; Venue: Academic Block 7/103, IIT Gandhinagar

Time	<b>Technical session 3: Solar energy for agricultural income and livelihood</b> <i>Session description: South Asia has seen a major upsurge in the adoption of solar irrigation pumps in the last decade, and yet, very little is known about the impacts of those pumps on farmers and their livelihoods. This session will present the findings from partners and other IWMI-led projects on the impacts of solar irrigation on rural livelihoods.</i>
11:30-13:00	Theme 1: Solarizing Small Holder Irrigation Chair: Manju Sharma (DWRI, Nepal) Custodian: Labisha Uprety (IWMI) Rapporteur: Manikanta Radhakrishna (IWMI)
11:30-11:45	Solar energy for rural livelihood Shilp Verma (IWMI)
11:45-12:00	Role of solar irrigation for agricultural development in Bangladesh Sarwar Hossain (BADC)
12:00-12:15	Scenarios for the deployment of solar for groundwater irrigation in India Nitin Bassi (CEEW)
12:15-12:30	Solar irrigation; Cost reducing technology in agriculture case study in Nepal Sanjib Bimali (DoA)
12:30-12:45	Upazilla permits in Bangladesh: Effective regulation or a constraint for small

	holder farmers wanting to invest in solar irrigation? Saidur Rahman (BAU)
12:45 -13:00	Questions and Answers
13:00-14:00	Lunch

## Day 1: February 6, 2023

### Technical Session 4

**Time: 14:00-15:30; Venue: Academic Block 7/101, IIT Gandhinagar**

Time	<b>Technical session 4: Scaling up off-grid SIPs in smallholder agriculture</b> <i>Session description: Installation of solar pumps in off-grid areas which are currently rainfed or dependent on diesel irrigation gives farmers access to a clean energy alternative for irrigation, often with multiple adaptation co-benefits. These regions are more often cultivated by poorer smallholder farmers. Scaling up solar irrigation in off-grid areas requires financially and institutionally sustainable models that are also equitable. This session will discuss the challenges and potential solutions for scaling up off-grid solar irrigation.</i>
14:00-15:30	Theme 1: Solarizing Smallholder Irrigation Chair: Jonathan Demenge (SDC) Custodian: Shreya Chakraborty (IWMI) Rapporteur: Anurag Banerjee (IWMI)
14:00-14:15	State of solar irrigation in Bangladesh: learnings for solarization in off-grid areas of South Asia Archisman Mitra (IWMI), Zahid Osmani (NGO Forum)
14:15-14:30	Solar pumping: Looking beyond the obvious Prodyut Mukherjee (EnGenuity)
14:30-14:45	Do small farmers make optimal use of solar irrigation pumps: Evidence from Nepal Dan Oziel, Tel Aviv University
14:45-15:00	Questions and Answers
15:00-15:30	Panel discussions moderated by Mr. Archisman Mitra: How sustainable is the off-grid model of solar pumps? Alka Subedi (DWRI, Nepal), Omar Diouf (GGGI), Shilp Verma (IWMI), Ashok Biswas (DAE, Bangladesh), Adebayo Oke (IWMI Ghana)
15:30-16:00	Refreshment break

## Day 1: February 6, 2023

### Technical Session 5

**Time: 14:00-15:30; Venue: Academic Block 7/102, IIT Gandhinagar**

Time	<b>Technical session 5: Making energy transitions inclusive and equitable</b> <i>Session description: A just and equitable energy transition is a critical part of climate action, yet pathways for such transitions are not always clear. In South Asia, discussions on just transitions are still at an early stage and this session will deliberate on the pathways for the same.</i>
14:00-15:30	Theme 5: Making Energy Transitions Inclusive and Equitable Chair: Minal Pathak (Ahmedabad University) Custodian: Kopal Agrawal (Ahmedabad University) Rapporteur: Manikanta Radhakrishna (IWMI)
14:00-14:15	Elements of a just transition Jim Skea (Imperial College, London) - virtual
14:15-14:30	Reconciling justice with coal phase-out: a district level analysis from India Minal Pathak, Kopal Agrawal (Ahmedabad University)
14:30-14:45	Gender and inclusion in energy transitions

	Joyashree Roy (Asian Institute of Technology, Thailand) - virtual
14:45-15:00	Gender considerations in renewable energy policies: Evidence from South Asia Manohara Khadka (IWMI)
15:00-15:30	Panel discussions moderated by Aditi Mukherji, IWMI: Mainstreaming just energy transitions in the South Asian context Jim Skea (Imperial College, London) – virtual, Minal Pathak (Ahmedabad University), Joyashree Roy (AIT) – virtual, Shwetal Shah (Ahmedabad University), Manohara Khadka (IWMI)
15:30-16:00	Refreshment break

## Day 1: February 6, 2023

### Technical Session 6

**Time: 14:00-15:45; Venue: Academic Block 7/103, IIT Gandhinagar**

Time	<b>Technical session 6: Innovations in solar technology for smallholders' livelihoods</b> <i>Session description: The SDC-supported and IWMI-led SoLAR project has provided small grants to support various innovations in the space of solar irrigation applications. In this session, the Innovation Fund Grantees will provide an update on their innovations and their readiness for upscaling.</i>
14:00-15:30	Theme 1: Solarizing Smallholder Irrigation Chair: Divya Sharma (SDC) Custodian: Shisher Shrestha (IWMI) Rapporteur: Labisha Uprety (IWMI)
14:00-14:15	Solar irrigation for agricultural value chains: creating livelihoods for small and marginal women farmers Aakriti Srivastava (Urmul Seemant Samity)
14:15-14:30	Excess energy accumulation and redistributed network (EARN) Ayan K. Deb, Karsan Reddy (CINI)
14:30-14:45	Livelihood Improvement of Dug well Dependent Vulnerable Communities through Energy and Water Efficient Responsive Drip Irrigation Systems Mr. Ahsan Khatan (PARC) - virtual
14:45-15:00	Helping smallholder farmers access finance: Indranil Dasgupta (SwitchON)
15:00-15:15	Mobile URJA- Scalable Solar Power with Innovations beyond Silicon Technology Suraj Kumar (Kalin)
15:15-15:30	Off Grid Bazaar – Scaling the deployment of solar irrigation systems using a digital platform and personalized agri-advisory for the farmers Kiran Timalsina (Gham Power)
15:30-15:45	Solar Water Mini Grid with Smart Meter for Optimization of SIPs and its Widespread Adoption among Smallholder Farmers of Nepal Ritavrat Joshi (MinErgy)
15:45-16:00	Refreshment Break

## Day 1: February 6, 2023

### Plenary Session 2

**Time: 16:00 -17:30; Venue: Learning Theatre: Academic Block 1/102, IIT Gandhinagar**

Time	Plenary Session 2
16:00-17:30	Plenary: Wrapping up Day 1
16:00-16:15	The SKY Experience of Gujarat: R J Vala (GUVNL)
16:15-16:30	Title (TBC)- Dilip Singh (UNDP) - virtual
16:30-17:00	Summary and conclusions from technical sessions: Each session custodian gets

	3-5 min to share the main findings from their session.
17:00-17:30	Closing panel discussion: The main takeaways from Day 1 and thinking ahead on Phase 2: Moderated by Shilp Verma (IWMI) Tushaar Shah (IWMI), Divya Sharma (SDC) A K M. Fazlul Hoque (SREDA, Bangladesh), Nazmun Nahar Karim (BARC), Pratignya Neupane Mishra (NARMIN, Nepal), Mohsin Hafeez (IWMI)
17:30-21:00	Conference Dinner

## Day 2: February 7, 2023

### Plenary Session 3

**Time: 9:00 -10:30; Venue: Learning Theatre: Academic Block 1/102, IIT Gandhinagar**

Time	Plenary Session 3
9:00-10:30	<b>Plenary 3: Setting the scene: Agriculture and Energy Transition in South Asia</b> Moderated by: Aditi Mukherji (IWMI)
9:00-9:15	International Solar Alliance and the solar irrigation agenda Joshua Wycliffe (ISA)
9:15-9:30	IRENA and the renewable energy-agriculture nexus Ute Collier (IRENA)
9:30-9:45	Next generation questions in solar irrigation Ram Fishman (University of Tel Aviv)
9:45-10:00	What is next in our SoLAR journey? Tushaar Shah (IWMI)
10:00-10:30	Refreshment break

## Day 2: February 7, 2023

### Field Visit for the SDC Team (closed)

**Time: 8:30-13:00**

Time	Field visit
8:30-9:00	Participants report at the IITGN Guest House lobby for field visits
9:00-12:00	Visit to Mahakali SKY feeder, Mehsena district, for interaction with farmers and utility officials
12:00	Departure to Rajkot
Field Visit Ends	

## Day 2: February 7, 2023

### Technical Session 7

**Time: 10:30-11:45; Venue: Academic Block 7/101, IIT Gandhinagar**

Time	<b>Technical session 7: Grid-connected solar irrigation in India</b> <i>Session description: While solar irrigation programs started as off-grid programs, many states in India have moved away from the off-grid model and invested in grid-connected solar irrigation. This session will present evidence from Gujarat and Maharashtra. These two states have experimented with different modalities of grid-connected solar, which in turn, inspired the architecture of the ongoing KUSUM scheme.</i>
10:30-12:00	<b>Theme 3: Connecting Off-Grid to the Grid</b> Chair: Tushaar Shah Custodian: Archisman Mitra (IWMI) Rapporteur: Anurag Banerjee (IWMI)
10:30-10:45	SKY scheme and farmers pumping behaviour in Gujarat Deepak Varshney (IWMI)

10:45-11:00	SKY and its influence on informal water markets in Central Gujarat Sonal Bhatt (Sardar Patel University, Anand)
11:00-11:15	Grid-connected solar in Maharashtra Hippu Salk Kristle Natha (IRMA)
11:15-11:30	Agent-based models for solar irrigation in India Veena Srinivasan (ATREE)
11:30-11:45	Questions and Answers
11:45-12:00	Refreshment Break

## Day 2: February 7, 2023

### Technical Session 8

**Time: 10:30-11:45; Venue: Academic Block 7/102, IIT Gandhinagar**

Time	<b>Technical session 8: Leveraging solar irrigation potential in Africa (convened by GGGI)</b> <i>Session description: Several countries in Africa have started ambitious solar irrigation programs with support from organisations such as the ISA and GGGI. In this session, GGGI will present their implementation experience from the field.</i>
10:30-12:00	Theme 1: Solarizing Smallholder Irrigation Chair: Joshua Wycliffe (ISA) Custodian: Omar Diouf (GGGI) Rapporteur: Saida Usmonova (IWMI, Tashkent)
10:30-10:45	Leveraging solar-powered irrigation systems to build climate-resilient agriculture in Ethiopia Shiferaw Gobena/Omar Diouf (GGGI)
10:45-11:00	Improving institutional and business environments to foster the adoption of solar-powered irrigation systems among farmers in Ethiopia Shiferaw Gobena/Omar Diouf (GGGI)
11:00-11:15	Challenges and determinants of Solar-powered systems adoption in the irrigation schemes in the Senegal River Valley Mamadou/Omar (GGGI)
11:15-11:30	Challenges to implementation of solar irrigation in public irrigation schemes in South Africa Mary Jean Gabriel (Department of Agriculture, Land Reform and Rural Development, South Africa)
11:30-11:45	Questions and Answers

## Day 2: February 7, 2023

### Technical Session 9

**Time: 10:30-11:45; Venue: Academic Block 7/103, IIT Gandhinagar**

Time	<b>Technical session 9: Solar irrigation and implications for groundwater use</b> <i>Session description: As solar irrigation becomes widespread, there are emerging concerns that zero marginal costs of solar irrigation may incentivize farmers to extract more groundwater. In regions that are already over-exploited in terms of groundwater, further expansion of solar irrigation may be a threat. This session will provide evidence of the impact of solar pumps on groundwater use from Africa and South Asia.</i>
10:30-11:45	Theme 2: Conserving Groundwater Through Solar Irrigation: Chair: Alok Sikka (IWMI) Custodian: Shreya Chakraborty (IWMI) Rapporteur: Manikanta Radhakrishna (IWMI)
10:30-10:45	Smallholder farmer solar irrigation pumping opportunities and constraints in Southern Africa: A regional perspective Manuel Magombeyi (IWMI – South Africa)

10:45-11:00	Solar irrigation and pumping behavior of farmers in Gujarat Mohammad Faiz Alam ( IWMI)
11:00-11:15	Modeling groundwater scenarios Smaranika Mahapatra (IWMI)
11:15-11:45	Panel discussions moderated by Alok Sikka: How can groundwater models help understand farmers' behaviour? Anwar Zahid (BWDB), Vimal Mishra (IIT Gandhinagar), Abhijeet Mukherji (IIT Kharagpur), Alka Subedi (DWRI, Nepal), Sunderrajan Krishnan (INREM)
11:45-12:00	Refreshment break

## Day 2: February 7, 2023

### Technical Session 10

**Time: 12:00-13:30; Venue: Academic Block 7/101, IIT Gandhinagar**

Time	<b>Technical session 10: Leveraging solar irrigation potential in the Middle East, Africa, and Central Asia and what can the region learn from South Asia?</b> <i>Session description: Central Asia and parts of the Middle East are seeing the introduction of solar irrigation. What kinds of innovations and business models are being implemented and what can the region learn from the South Asian experience?</i>
12:00-13:30	Theme 1: Solarizing Smallholder Irrigation Chair: Alon Shepon (University of Tel Aviv) Custodian: Shreya Chakraborty (IWMI) Rapporteur: Manual Magombeyi (IWMI-South Africa)
12:00-12:15	Solar irrigation innovations in the Middle East Vinay Nangia (ICARDA)
12:15-12:30	Solar energy potentials in Uzbekistan and prospects in irrigated agriculture Zafar Gafurov (IWMI, Tashkent)
12:30-12:45	Promoting Solar Irrigation with shallow groundwater sources among Smallholder Farmers in West Africa Adebayo Oke, Abena Ofosu (IWMI, Ghana)
12:45-13:30	Panel discussions: Moderated by Shilp Verma (IWMI): Lessons from South Asia Vinay Nangia (ICARDA) Ram Fishman (Tel Aviv University), Omar Diouf (GGGI) Joshua Wycliffe (ISA)
13:00-14:30	Lunch

## Day 2: February 7, 2023

### Technical Session 11

**Time: 12:00-13:30; Venue: Academic Block 7/102, IIT Gandhinagar**

Time	<b>Technical session 11: Are energy policies in South Asia gender transformative?</b> <i>Session description: Just and equitable energy transitions require gender transformative approaches and yet, there is very little evidence that renewable energy policies incorporate gender transformative approaches. This session will compare renewable policies from a gender lens.</i>
12:00-13:30	Theme 5: Making energy transitions inclusive and equitable Chair: Manohara Khadka (IWMI) Custodian: Labisha Uprety (IWMI) Rapporteur: Anurag Banerjee (IWMI)
12:00-12:15	Technology for whom? Solar Irrigation Pumps, women, and smallholders in Eastern Tarai, Nepal. Gitta Shrestha (Independent GESI Expert)

12:15-12:30	Do Water, Energy, and Food Policies in Support of Solar Irrigation Enable Gender Transformative Changes in South Asia? Evidence from Policy Analysis in Bangladesh and Nepal Labisha Uprety, Manohara Khadka (IWMI)
12:30-12:45	Are water, energy, and food policies in India gender transformative? Shreya Chakraborty (IWMI)
12:45-13:00	GESI and Energy in Nepal: insights from a literature review Marlene Buchy (IWMI)
13:00-13:30	Questions and Answers
13:30-14:30	Lunch

## Day 2: February 7, 2023

### Technical Session 12

**Time: 12:00-13:30; Venue: Academic Block 7/103, IIT Gandhinagar**

Time	<b>Technical session 12: Connecting the off-grid to the grid</b> <i>Session description: Nepal and Bangladesh started their solar irrigation journey with off-grid pumps, but are now piloting grid-connected solar pumps to increase the financial viability and sustainability of these off-grid pumps. In this session, we present the emerging evidence on challenges for grid connection in terms of both technology and policies.</i>
12:00-13:30	Theme 3: Connecting Off-Grid to the Grid Chair: Emanul Pavel (IDCOL) Custodian: Mohammad Faiz Alam (IWMI) Rapporteur: Smaranika Mahapatra (IWMI)
12:00-12:15	SIP grid integration in Bangladesh: Setting the incentives right Md. Abdullah Al Matin (IDCOL)
12:15-12:30	Opportunities and challenges in implementing the Grid-connected Pilot project in Nepal Shisher Shrestha (IWMI), Sagar Gyawali (NEA)
12:30-12:45	Drivers of solar energy generation in a distributive policy framework Deepak Varshney (IWMI)
12:45-13:00	Questions and Answers
13:00-13:30	Panel discussions moderated by Archisman Mitra (IWMI): What are the challenges for grid connection and what lessons can Gujarat's SKY scheme offer RJ Vala (PGVCL), Laxman Ghimire (AEPC), Sakil Ibn Sayeed (BREB), Abdullah Matin (IDCOL), Sagar Gyawali (NEA)
13:30-14:30	Lunch

## Day 2: February 7, 2023

### Technical Session 13

**Time: 14:30-16:00; Venue: Academic Block 7/101, IIT Gandhinagar**

Time	<b>Technical session 13: Integrating renewable energy in agricultural value chains: Experience from developing country (Convened by WRI and IRENA)</b> <i>Session description: Decentralised Renewable Energy solutions in agriculture value chains is on the rise in developing countries to reduce fossil fuel use, provide energy access, raise productivity and incomes, and reduce food loss and waste. DRE solutions can also enhance resilience to climate impacts in the agriculture sector and associated livelihoods. This session will discuss diverse experiences of integrating DRE solutions in agricultural value chains and the need for supportive policy frameworks, financing, capacity and technology solutions.</i>
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14:30-16:00	Theme Chair: (TBC) Custodian: Namrata Ginoya (WRI) Rapporteur: Mohammad Faiz Alam (IWMI)
14:30-14:40	Powering Smallholder Agriculture in East Africa for an Inclusive and Equitable Development Beryl Ajwang (WRI Africa)
14:40-14:50	Application of solar technologies in aquaculture in Cambodia and Tanzania – technology transfer and training Luca Regazzoni, Severin Spring (ZHAW Zurich University of Applied Sciences) - virtual
14:50-15:00	Energy auditing and capacity building on energy management for five rice mills in the Senegal River Valley Ms. Assana Magagi-Alio/Mamadou (GGGI)
15:00-15:10	Solar business models for scaling up climate smart-agriculture practices in the Senegal River valley Mamadou Konate/Omar Diouf (GGGI)
15:10-15:50	Panel discussions moderated by Namrata Ginoya (WRI) Panelists: Divyam Nagpal (IRENA), Amit Saraogi (Oorja Solutions), Rehana Riyawala (SEWA), Surabhi Rajagopal (SELCO Foundation), Ashok Kumar (Transform Rural India), Gaurav Gupta (Private Financing Advisory Network) - virtual
15:50-16:00	Questions and Answers
16:00-16:30	Refreshment Break

## Day 2: February 7, 2023

### Technical Session 14

**Time: 14:30-16:00; Venue: Academic Block 7/102, IIT Gandhinagar**

Time	<b>Technical session 14: Monitoring the PM -KUSUM Scheme</b> <b>Convened by GIZ, India</b> <i>Session description: India is implementing the PM KUSUM scheme to replace agriculture diesel pumps with solar water pumps and solarise grid connected agriculture pumps. A new innovative component called USPC is introduced in the scheme to maximise the utilization of solar pumps. This session will cover the key aspects of KUSUM portal and the potential USPC adoption roadmap in India.</i>
14:30-16:00	Theme 3: Connecting the off-grid to the grid Chair: Akash Davda (GERMI) Custodian: Prasun Das (GIZ) Rapporteur: Archisman Mitra (IWMI)
14:30-14:45	Digitisation of PM KUSUM scheme Sachin Munot (Hari Krupa Automation Pvt. Ltd.)
14:45-15:00	Improving the utilization of SIPs via Universal Solar Pump Controller (USPC) Prasun Das (GIZ)
15:00-15:15	Sharing insights from the implementation of the PM-KUSUM scheme Shobhit Srivastava (MNRE)
15:15-15:30	Questions and answers
15:30-16:00	Panel Discussion moderated by Prasun Das (GIZ) on lessons learnt in implementing grid connected solar irrigation Panelists: Sachin Manot (Hari Krupa Automation Pvt. Ltd.), Shobhit Srivastava (MNRE), Md. Abdullah Al Matin (IDCOL), AEPC (TBC)
16:00-16:30	Refreshment Break

## Day 2: February 7, 2023

### India- Country Project Management Committee Meeting (Closed meeting only for India CPMC members)

Time: 14:30-16:00; Venue: Academic Block 7/103, IIT Gandhinagar

Time	India CPMC Meeting
14:30-14:40	Welcome remarks: Alok Sikka (IWMI), Divya Sharma (SDC)
14:40:15:00	Progress in 2022 and Plans for 2023 Deepak Varshney (IWMI)
15:00-15:45	Comments and feedback by India C-PMC members
15:45-16:00	Concluding remarks and way forward Divya Sharma (SDC)
16:00-16:30	Refreshment Break

## Day 2: February 7, 2023

### Plenary Session 4

Time: 16:30 -17:30; Venue: Academic Block 7/101, IIT Gandhinagar

Time	Plenary Session 4
16:00-17:30	Plenary: Wrapping up Day 2
16:30-17:00	Summary and conclusions from technical sessions: Each session custodian gets 3-5 min to share the main findings from their session.
17:00-17:30	Closing panel discussion: The main takeaways from Day 1 and thinking ahead on Phase 2: Moderated by Aditi Mukherji (IWMI) Panelists: P. C. Sharma (ISA), Mr. Ghulam Mustafa (SREDA), Md. Enamul Karim Pavel (IDCOL), Tushaar Shah (IWMI), Divya Kashyap (SDC)
Conference Ends	

## Day 2: February 7, 2023

### Project Steering Committee Meeting (Closed meeting only for the SoLAR-PSC members)

Time: 17:30-19:00; Venue: Academic Block 7/101, IIT Gandhinagar

Time	Project Steering Committee Meeting
17:30-17:40	Welcome remarks – Corrine Demenge (SDC), Mark Smith (IWMI)
17:40-18:00	Progress in 2022 and Plans for 2023 – Aditi Mukherji (IWMI)
18:00-18:45	Remarks by PSC members on progress and plans and deliberations on Phase 2
18:45-19:00	Closing remarks

## Day 3: February 8, 2023

### Field Visits

Time: 8:30-15:30

Time	Field visit
8:30-9:00	Participants report at the IIT-GN Guest House lobby for field visits
9:00-10:00	Travel to the field site
10:00-12:00	Visit to Nityanand SKY feeder, Ahmedabad district, for interaction with farmers and utility officials
12:00-14:00	Lunch at Gwal Bhoj Restaurant
14:00-15:30	Visit to GERMI facility and return to IIT GN
Field Visit Ends	

## Abbreviations

AEPC	Alternative Energy Promotion Centre
ATTREE	Ashoka Trust for Research in Ecology and the Environment
BADC	Bangladesh Agricultural Development Corporation
BARC	Bangladesh Agricultural Research Council
BWDB	Bangladesh Water Development Board
CEEW	Council on Energy, Environment and Water
CINI	Collectives for Integrated Livelihood Initiatives
DAE	Directorate of Agricultural Extension
DWRI	Department Of Water Resources And Irrigation
EARN	Excess Energy Accumulation and Redistributed Network
GGGI	Global Green Growth Institute
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GUVNL	Gujarat Urja Vikas Nigam Limited
ICARDA	International Center for Agricultural Research in the Dry Areas
IDCOL	Infrastructure Development Company Limited
IIT-GN	Indian Institute of Technology Gandhinagar
IRENA	International Renewable Energy Agency
IRMA	Institute of Rural Management
ISA	International Solar Alliance
IWMI	International Water Management Institute
KARMA	Kalinga Renewable Energy Manufacturers Private Limited
MNRE	Ministry of New and Renewable Energy
NARMIN	National Association of Rural Municipalities in Nepal
PARC	Pakistan Agricultural Research Council
PGCVL	Paschim Gujarat Vij Company Limited
SDC	Swiss Agency for Development and Cooperation
SREDA	Sustainable And Renewable Energy Development Authority
UNDP	United Nations Development Programme
WRI	World Resources Institute



**IWMI**  
International Water  
Management Institute



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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 14 countries and a global network of scientists operating in more than 30 countries.

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