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SoLAR Phase II Gender Equality and Social Inclusion (GESI) Strategy

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Introduction & Rationale – GESI Strategy for SoLAR Phase II

The **SoLAR Phase II Project** builds on Phase I (2019–2024) learnings in South Asia, expanding to **East Africa** to foster south–south collaboration. The program seeks to strengthen enabling environments and unlock investments for **socially inclusive, climate-resilient solar agri-tech solutions** in **India, Bangladesh, Ethiopia, and Kenya**.

While Phase I achieved notable progress, persistent **Gender Equality and Social Inclusion (GESI)** barriers remain:

-  Limited land and asset ownership among women and marginal farmers
-  Technology inaccessibility
-  Exclusion from credit, subsidies, and market access
-  High unpaid labor burden and restricted mobility for women
-  Gender-blind design of solar and agri-tech tools
-  Underrepresentation in planning and governance

Phase II embeds **GESI as a core principle**, ensuring equitable participation of **women, youth, indigenous, and marginalized farmers**. The strategy adopts a **flexible, country-responsive approach** tailored to local socio-economic, environmental, and gender contexts, promoting **actionable, intersectional, and context-specific inclusion** across all project components.



Photo: Tanmoy Bhaduri/IWMI

Vision and Objectives

Vision

A future where women, youth, and marginalized communities are active agents and equitable beneficiaries of solar agri-tech solutions

Expected program Impact: 50,000 women & marginal farmers benefit from solar technologies with 35% increase in farm income.

Objectives

1. Ensure policies and finance mechanisms integrate and mainstream GESI considerations.
2. Enhance access to solar technologies for marginalized groups
3. Strengthen inclusive capacities and leadership

The stated objectives are operationalized through a set of targeted outputs designed to embed GESI considerations across policies, technologies, and institutional practices. The development of policy briefs, national dashboards, and financial instruments, alongside inclusive training and capacity-building initiatives, collectively ensure enhanced access, participation, and leadership of marginalized groups in solar technology adoption and sectoral transformation across the project geographies.

Outputs

- 4 inclusive agri-tech business cases/ Policy briefs (1 per country)
- National GESI dashboards developed and operational in selected countries.
- Financial instruments are co-developed to improve equitable access to 40% towards technology, finance, and markets in India and Bangladesh
- 600 smallholder farmers, including marginalized groups have access to formal financial services for SESA in Ethiopia
- 5,000+ women and youth trained. 30% GESI participation in trainings and pilots. Additional 6000 women reached through video and mobile-based training materials in India, Ethiopia, and Kenya.
- 4 GESI inclusive training modules developed, incorporated by at least four government and/or private sector implementing agency (one in each country)
- At least 75 women farmers get access to SESA through bundling pilots in Ethiopia and Kenya. At least 200 farmers in India and Bangladesh adopt water efficient practices

Strategic Pillars for GESI

Pillar	Strategic Approach	Sample Actions/Tools
Inclusive Policy & Governance	Embed GESI in solar and agriculture policies, standards, and allocation criteria	GESI-responsive policy brief; PM-KUSUM allocation revision; GESI-integrated WEF-SS maps
Equitable Finance Access	Develop accessible, inclusive financing models and de-risking instruments	PAYGO, PAY-OWN models, and blended finance; Bundled insurance-credit tools; Targeted subsidy design with GESI scorecards
Capacity & Agency Building	Empower women, youth, and marginal groups through training, tools, and leadership opportunities	ToT programs for women; Training modules; Partnerships with rural livelihoods, entrepreneurship, and extension platforms
Inclusive Technology Pilots	Prioritize pilots that meet the needs of women and marginalized groups	Living labs with 30% women participation; Bundled agri-tech for women's tasks (dryers, storage) Gender-sensitive evaluations;
Data, Learning & Accountability	Track GESI progress with data and participatory learning	Disaggregated MEL indicators; Case studies

Outcome-based GESI Strategy

Outcome 1: Evidence-based Policy Design

Objective: Integrate gender-sensitive evidences and researches to inform policy and design.

Challenges:

- Lack of gender-disaggregated data in suitability mapping
- Gender-blind solar models; exclusion of women in field trials
- Limited representation of women in policy-making decisions
- Tools often designed for literate, male farmers
- Gender data often missing in implementation tracking
- Gender-insensitive implementation limits outreach

Key actions: Use sex-disaggregated data; commission qualitative gender studies; include women in participatory research

GESI Integration:

- Data and Tools: Make maps, dashboards, and digital tools gender-sensitive and intersectional.
- Pilots and Research: Design pilots that document impacts on women, youth, and marginal groups.
- Capacity Building: Prioritize GESI training for government, partners, and local facilitators.
- Policy Influence: Ensure all briefs and recommendations reflect inclusive needs and success cases.

Expected Results:

- Suitability maps prioritize inclusive solar deployment
- Clear evidence of livelihood benefits for women/marginal farmers
- Policy briefs recommend inclusive SIP principles and gender-responsiveness
- Increased usage of tools by women, SHGs, FPOs
- GESI-integrated dashboard used for SIP disbursal decisions (except BD)
- Officials embed GESI in SIP approvals and rollout



Photo: Jeffery M Walcott/IWMI

Outcome 1: Evidence-based Policy Design | Country specific strategy

Country	Challenges	Opportunities	Approaches	Expected Results
India	Limited GESI integration in solar suitability tools and policymaking; weak linkages with livelihood schemes.	Strong national schemes (PM-KUSUM); availability of disaggregated data platforms.	Develop gender-disaggregated WEF-SS maps; Include GESI indicators in digital databases; Engage policymakers on inclusive solar planning. Include women and marginal farmers in feedback processes to refine PM-KUSUM scheme.	Increased inclusion of women and marginal farmers in policy tools; improved access planning.
Bangladesh	Scattered SIP governance; weak local capacity to analyze and plan inclusively.	Government commitment to diesel-to-solar transition; active donor presence.	Develop gender-sensitive solar sizing tools; integrate GESI in SIP databases. Integrate GESI in sustainability mapping. Promote equitable representation in government planning and training (e.g., with IDCOL).	Enhanced targeting of SIPs for women/smallholders; evidence to support GESI policy reforms.
Ethiopia	Absence of GESI indicators in solar decision tools; limited data availability.	Existing AWM platforms and interest in scaling SIPs.	Build inclusive WEF index; map access inequalities; train government agencies on GESI-centric decision tools.	Tools institutionalized with gender indicators; more inclusive water-energy policies.
Kenya	Fragmented planning across counties; weak capacity on gender-sensitive tech assessments.	High solar potential; active policy innovation.	Ensure gender and social diversity in suitability assessments; support county-level GESI-integrated solar planning models Localize solar assessment tools to reflect challenges faced by women in ASALs.	Increased GESI consideration in solar suitability and investment planning.

Outcome-based GESI Strategy

Outcome 2: Accelerating Finance

Objective: Ensure inclusion in solar pilots and financing models.

Challenges:

Output 2.1

- Limited affordability and access for women and smallholders; weak representation in formal solar markets
- Women and marginalized groups face finance and institutional exclusion
- Current subsidy designs favor large landowners
- Pay-as-you-go or pay-later not tested for excluded groups feedback from marginalized groups
- Preferences of excluded groups rarely studied
- Gender dimensions often excluded from tech/business cases

Output 2.2

- Investment climate often overlooks women/youth entrepreneurs
- Women excluded from market linkages and business development
- Access to formal financial services low for smallholder women

Key actions: Target 30% women/ marginalized in pilots; promote co-ownership/collective SIPs; apply intersectional criteria

GESI Integration:

- Diagnostics & Business Models: Ensure all assessments and feasibility studies report on inclusion indicators (gender, caste, youth, landholding).
- Consultations: Include women and marginalized group representatives in workshops, FGDs, and testing.
- Financial Instruments: Promote lease, pay-as-you-go, or co-investment models tailored to excluded groups.
- Partnerships: Work through SHGs, FPOs, and women's cooperatives for design and delivery.
- Monitoring: Require partners to track and report on % of women, SC/ST, or youth beneficiaries in financing.

Expected Results:

Output 2.1

- Business models improved to reflect equity and affordability goals (30% inclusion)
- Financial access improved; income rise of 30% for women/marginal farmers
- Subsidy design modified to reflect inclusive access needs
- 65% reduction in fuel costs documented for inclusive schemes
- Inclusive finance models proposed and piloted
- Policy briefs include inclusive scale-up approaches

Output 2.2

- Recommendations include funding mechanisms for 30% smallholders
- 4 MoUs support gender-equitable irrigation financing
- At least 2,000 farmers reached, with 30% smallholders/women

Outcome 2: Accelerating Finance | Country specific strategy

Country	Challenges	Opportunities	Approaches	Expected Results
India	Subsidy-driven market limits women's ownership; weak financial literacy.	Presence of SHGs and FPOs; growing microfinance network.	Design microfinance and leasing models for SHGs and women FPOs; engage women in co-ownership pilots; Develop gender-targeted financial instruments under PM-KUSUM (e.g., low-interest loans/subsidies for women SHGs); Collaborate with banks/MFIs to reduce collateral needs for women and test gender-sensitive subsidy models.	Improved access for women; higher uptake of SIPs by smallholders.
Bangladesh	High upfront costs; gender-blind financial models.	Private-sector driven SIP market; Donor interest in inclusive finance.	Pilot flexible payment for women; Design energy-as-a-service pilots for female entrepreneurs; Engage IDCOL in GESI-informed policy making; Align with ADB & IDCOL to lower entry barriers for GESI groups	Increased women-led SIP businesses; finance options scaled.
Ethiopia	Low female access to finance; lack of GESI-aligned pilots.	PAYGO traction; tax incentives on solar technology	Promote cooperative-led financing by supporting to access funds; design inclusive bundles; Explore PAY-OWN schemes targeting women;.Bundle solar finance with support services targeting women.	Better outreach and affordability for women and marginalized groups.
Kenya	Exclusion of women in finance mechanisms; Few gendered products.	Innovative climate funds (FLLoCA, KIFFWA); active solar providers.	Ensure gender and social diversity in suitability assessments; Support county-level GESI-integrated solar planning models; Tailor finance schemes for women/youth and involve impact investors; Pilot climate-smart microfinance bundles targeting women-headed households; Partner with SunCulture to reduce costs for GESI groups	More women and youth access solar finance; better product-service fit.

Outcome-based GESI Strategy

Outcome 3: Capacity Building

Objective: Empower women and excluded groups through skills and knowledge

Challenges:

- Forums often lack diverse representation
- Marginalized voices underrepresented in international platforms
- Inclusive insights often missed in synthesis

India and Bangladesh

- Existing training doesn't reach women/landless groups
- Lack of integration of gender-focused modules into formal curricula
- Current training programs are top-down, not needs-driven
- Gaps in gender-disaggregated impact data
- Low participation of marginalized groups in SIP management
- No feedback loop between trainees and implementers
- Women often excluded due to social norms and mobility issues

Ethiopia and Kenya

- Extension systems male-dominated; women farmers underserved
- Low representation of women in field-level trainers
- Lack of documentation on scaling inclusive training

Key actions: Ensure 40% women participants; gender-inclusive training; support women as trainers and champions.

GESI Integration:

- Training Content: Design with gender-aware pedagogy; translate into local languages; use storytelling.
- Participation Quotas: Ensure 30–40% of training beneficiaries and forum participants are women, youth, or marginalized.
- Evidence and Impact: Track disaggregated changes in income, knowledge, and decision-making.
- Policy Feedback: Use training and forum insights to influence capacity-building and implementation strategy.

Expected Results:

- Higher uptake by women farmers; localized access to SESA-IND
- GESI mainstreamed in energy extension systems-IND
- Policy references stronger outcomes for women-IND
- Better GESI-sensitive curriculum design-BD
- Improved uptake by women's collectives, local groups-BD
- Increased policy buy-in for inclusive training programs-BD
- 4,000+ farmers (including 1,000 women) trained directly- IND.BD
- More equitable outreach and feedback systems in extension-ETH, KEN
- Increase in women-trained implementers and peer trainers-ETH,KEN
- Roadmap promotes gender-inclusive SIP scale-up-ETH, KEN

Outcome 3: Capacity Building | Country specific strategy

Country	Challenges	Opportunities	Approaches	Expected Results
India	Limited gender-aware curricula; poor integration into extension services.	Govt interest in SIP promotion; existing training infra.	Develop modules with govt and technical agencies; target women trainers; Ensure 40% women/ SC/ST participation in trainings; Engage women trainers; co-develop curricula with rural livelihoods missions; Work with ICAR to train extension agents on GESI-responsive solar promotion; Strengthen SHGs/FPOs as women-led solar entrepreneurs.	Women's participation in training crosses 40%; institutional uptake of modules.
Bangladesh	Women not targeted in technical SIP trainings.	Women pump operators in pilot sites; engaged DAE/BRRI.	Village-level ToT with gender lens; work with local NGOs; Train female pump operators; Build awareness in local dialects; Conduct village-level capacity needs assessments; Conduct training programs for women through DAE/LGED platforms; Promote peer learning and leadership among women users.	Enhanced local knowledge; more women managing SIPs.
Ethiopia	Women's exclusion from irrigation extension; low confidence.	Active cooperatives; ongoing IWMI/ATI work.	Radio and vernacular outreach; Develop ToT programs with 30% women trainers; Train farmer groups on inclusive SIP maintenance and use; Engage women's cooperatives; Design and deliver ToT programs for women extension workers; Support community trainers to promote solar solutions among marginalized groups	Increased agency and skills among marginalized farmers.
Kenya	Capacity gaps in GESI training content; limited women role models.	Vibrant youth networks and county interest.	Establish training hubs with female role models; include GESI in county agricultural extension strategy; engage youth groups; Train champion women farmers as community resource persons.- Establish GESI-sensitive demonstration centres for peer-to-peer learning	Skilled local cadre for SIP adoption with high GESI sensitivity.

Outcome-based GESI Strategy

Outcome 4: Scaling and Policy Engagement

Objective: Institutionalize GESI in solar policy and scaling pathways.

Challenges:

- Limited recognition of gender-based constraints in SIP policy and after-sales service
- Women lack access to micro-irrigation technologies bundled with SIPs
- Scaling models often fail to adapt to local women's needs
- Marginalized groups are excluded from policy dialogues
- Affordability remains a core barrier for marginalized groups
- Women not factored into value-chain benefits (e.g., carbon revenues)
- Extension agents and payment tools not accessible to women/smallholders
- Data tools often overlook gender insights

Key Actions: Advocate gender-responsive SIP policy; engage gender ministries; highlight women role models.

GESI Integration:

- Policy Integration: At least 4 policy/strategy documents embed gender-equity language or targets.
- Pilots Reach Women & Smallholders: At least 30% women and 40% small/marginal farmers among pilot adopters.
- Inclusive Scaling Tools: 2 digital or planning tools integrate GESI components and track disaggregated adoption.
- Capacity Building through Partnerships: MoUs signed with inclusion clauses; women's FPOs/SHGs involved.

Expected Results:

- At least 2 policies in each country incorporate inclusive provisions (e.g., women's cooperatives, support to landless women)
- Government buy-in secured for gender-equitable scaling plans; inclusive stakeholder coalitions formed
- At least 2,000 farmers benefit, including women, with 20% water-use efficiency gain-IND,BD
- Policy brief produced with specific gender provisions and scale-up metrics-IND
- Policy notes emphasize viable GESI pathways; recommendations adopted by IDCOL or government-BD
- Policy brief includes gender-equitable incentives; at least one partner commits to gender-aware bundling models-BD
- 300 women among 1,000+ farmers adopt SIPs via pilots; tools used by marginalized groups- ETH,KEN
- At least one tool adopted with GESI functionality; embedded in scale-up plans- ETH,KEN

Outcome 4: Scaling and Policy Engagement | Country specific strategy

Country	Challenges	Opportunities	Approaches	Expected Results
India	SIP schemes not linked with livelihoods; unclear targeting of women.	Livelihood missions and PM-KUSUM offer convergence scope.	Incorporate GESI in PM-KUSUM scaling; influence state livelihood missions to integrate solar for women FPOs; Use Living Labs to pilot solar-agri bundles (dryers, cold chains) with women-led SHGs.- Document success stories of women-led innovation.	GESI-informed scale-up; policy shifts favoring women-led models. At least 1,000 farmers benefit, including women, with 20% water-use efficiency gain
Bangladesh	No national SIP framework; weak integration with agri-policies.	Prime Minister's SIP vision; success stories emerging.	Advocate for a unified SIP policy with GESI benchmarks; Scale community-managed SIPs involving women and marginalized groups; Test solar bundles (e.g., drying, water heating) with rural women cooperatives.	National SIP policy reflects GESI priorities. At least 1,000 farmers benefit, including women, with 20% water-use efficiency gain
Ethiopia	Standards in draft phase; GESI lacking in PPP strategy.	MoA platforms; donor convergence opportunities.	Use PPP and AWM platforms to influence GESI-sensitive solar policies; integrate gender standards in draft regulations; Pilot solar-agri bundles with GESI co-design.; Use participatory approaches to integrate women's preferences in bundles.	GESI-aligned policy tools institutionalized. 300 women among 1,000+ farmers adopt SIPs via pilots
Kenya	Lack of GESI KPIs in county solar plans.	Vision 2030 and FLLoCA as entry points.	Promote women-inclusive solar business models in FLLoCA; align scaling with Kenya Vision 2030 GESI targets.	Wider adoption of gender-responsive SIP business models. 300 women among 1,000+ farmers adopt SIPs via pilots

Guiding Principles

Do No Harm: Proactively identify and mitigate any potential negative impacts of solar agri-tech interventions on women and marginalized groups (e.g., increased workload, exclusion from benefits, exacerbation of existing inequalities).

Meaningful Participation: Ensure active, informed, and sustained participation of women and marginalized groups in decision-making processes, from project design and implementation to monitoring and evaluation.

Equitable Access and Control: Design interventions to facilitate equitable access to and control over solar agri-tech, finance, knowledge, and associated benefits (e.g., income, food security, time savings).

Intersectionality: Recognize that individuals hold multiple identities (e.g., a woman farmer from a marginalized caste) and experience inclusion/exclusion differently. Tailor approaches to address these intersecting vulnerabilities.

Empowerment over Participation: Beyond access, foster genuine empowerment by building agency, leadership, and voice among women and marginalized groups in the solar agri-tech sector.

Contextual Flexibility: Customize approaches for South Asian vs East African contexts.



Photo: Jeffery Tanmoy Bhaduri/IWMI

Robust GESI-Focused Monitoring, Evaluation, and Learning (MEL)

Action: Develop a comprehensive set of GESI-specific indicators for the project's logframe (Annex 8), beyond general "beneficiary" numbers.

Expansion: These indicators may include, but not be limited to:

- Number and percentage of women, smallholders, and marginalized farmers (disaggregated by relevant social categories) accessing solar agri-tech.
- Changes in income and livelihood diversification for these groups.
- Reduction in women's drudgery (e.g., time saved from water collection, manual pumping).
- Increased participation and leadership of women and marginalized groups in decision-making bodies (e.g., Water User Associations, farmer groups).
- Changes in cropping patterns and nutritional diversity within targeted households.
- Perceived empowerment and agency reported by women and marginalized beneficiaries.

Data Collection: Ensure all data collection methodologies (surveys, focus group discussions, interviews) are GESI-sensitive, disaggregated, and conducted in a participatory manner that amplifies marginalized voices.

Integrate GESI in MEL: Ensure GESI analysis is a core component of all impact assessments, internal reviews, and external evaluations.

Continuous Learning and Adaptation: Regularly review GESI progress during quarterly country-project management committee (CPMC) meetings and bi-annual Project Steering Committee (PSC) meetings. Share these learnings in project reports and forums.

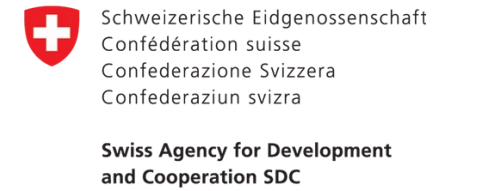


Photo: Tanmoy Bhaduri/IWMI

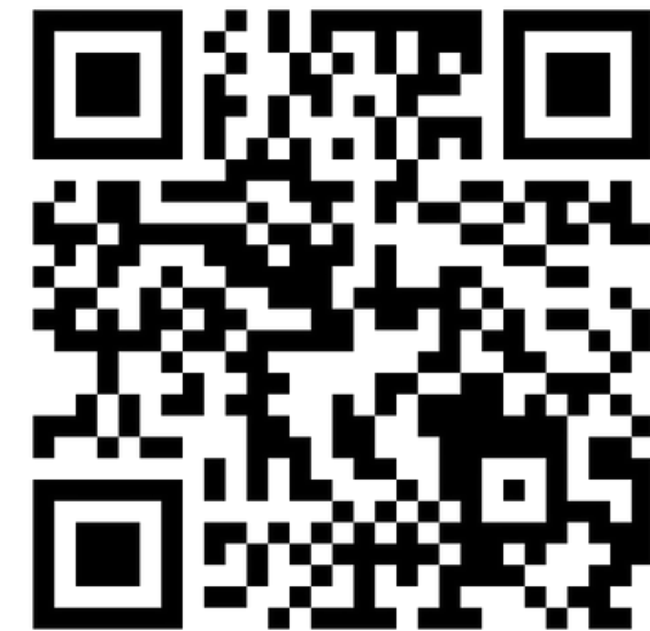
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