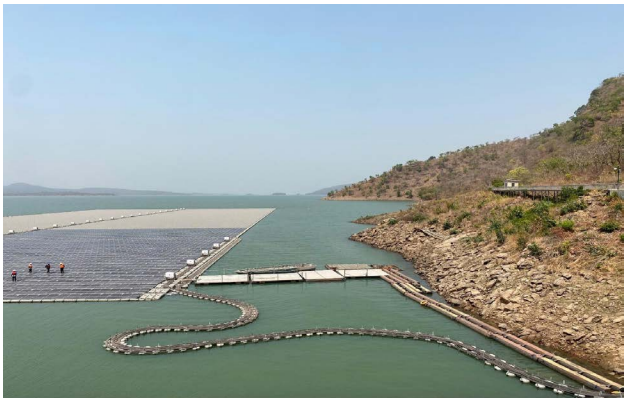
Community Participation Models in Solar Energy Projects in Ghana

AUTHORS: Michael Osei Asibey [1], Natasha Mawuli Ahadzitse[2], Julia Tomei [3] and David Ato Quansah [4]

Key Findings

- Ghana's energy transition is not just about generating cleaner energy but also about ensuring that the process benefits everyone, including land-owning communities and families.
- Traditional land tenure systems and informal governance structures often limit inclusive decision-making, allowing a few local elites to dominate negotiations.
- Communities can increase the benefits of solar energy projects by leveraging the value of their land (potentially as equity) when engaging with project developers.
- Empowering communities to use land as equity will make them active participants and entitle them to dividends.
- Such an approach, however, requires communities to balance longer-term economic benefits with immediate financial relief. It will also require skilled negotiators with the requisite knowledge.



The 5 MW floating solar PV system at Bui

- Developers have concerns about the feasibility of community-owned equity participation as it potentially complicates decision-making and dilutes investor control.
- Achieving sustainable and just solar energy development requires a shift from top-down, developer-led models to community-centred approaches that value local concerns and protect land rights.

Background

In many Low- and Middle-Income Countries , including Ghana, the transition to renewable energy is an emergent process, one which faces obstacles such as inadequate infra-structure, financial constraints, and socio-political challenges [1, 2]. This notwithstanding, renewable energy also presents significant opportunities, including job creation, enhanced energy security, and reduced dependency on fossil fuels [3,4]. In sub-Saharan Africa (SSA), large-scale renewable energy projects have been promoted by both governmental and international bodies to address energy access, security, and climate concerns [4]. However, the success and sustainability of these initiatives depend heavily on community acceptance and participation [5, 6].

Land governance plays a pivotal role in how communities engage with and benefit from large-scale solar energy projects [7]. In Ghana, as in other countries in SSA, land ownership structures are complex and influenced by traditional customs, legal frameworks, and socioeconomic conditions. The dominant governance model prioritises traditional leadership and can pose challenges to equitable community participation in solar energy development. Community participation is essential for enabling just transitions, which emphasise the fair distribution of benefits, inclusive decision-making, and recognition of local stakeholders [1]. However, limited research exists on the perspectives of landowners and communities regarding participation in solar energy projects, land ownership dynamics, and long-term sustainability in Ghana and SSA more broadly.

This Policy Brief presents evidence and recommendations to enhance community participation in solar energy projects in Ghana. It draws on research conducted on six solar energy projects in the country with different investment and land ownership structures.

Methodology

The study adopted a multi-case study method to answer the research objectives. Site visits were conducted in six large-scale solar projects, which are shown in **Table 1**.

Table 1: *Case study communities with solar PV projects*

Solar plant	Location	Plant capacity	Prior land use	Status
Bui Power Authority (BPA) Solar Farm	Yendi	51 MW	Subsistence farming	Operational
Volta River Authority (VRA) Solar PV Farm	Lawra	6.5 MW	Subsistence farming	Operational
VRA Solar PV Farm	Kaleo	28 MW	Subsistence farming	Operational
BPA Solar PV Farm	Bui	50 MW	Subsistence farming	Operational
Beijing Xiaocheny Company Solar Power Plant	Gomoa-Onyadze	22 MW	Subsistence farming	Operational
Meinergy Solar PV Farm	Gomoa-Onyadze	25 MW	Subsistence farming	Operational

Primary data were collected through key informant interviews, institutional consultations, and focus group discussions in five communities: Yendi, Lawra, Kaleo, Bui, and Gomoa Onyadze. We engaged with community members, landowners, and traditional heads across the five communities, as well as with state-owned and private developers, and representatives of relevant state institutions (see **Table 2**). A stakeholder consultation workshop was then held to discuss the issues raised during the research and the feasibility of community participation models.

Table 2: *Category of Respondents*

Category	Number of Interviewees
Community Members	41 – [Yendi (17); Kaleo (9); Lawra (6); Bui (4); Gomoa Onyadze (5)]
Landowners	15
Chiefs	3
State-owned developers	4
Private developers	3
Regulator/ state institutions	15

Findings

Landownership and acquisition structures for solar energy projects

Ghana's customary land tenure system places traditional authorities – chiefs and family heads – at the centre of land access and transactions, making them pivotal gatekeepers in land acquisition processes. While they serve as custodians overseeing land use, the growing reliance on formalised agreements such as long-term leases often clashes with customary practices, generating resistance and uncertainty within communities.

Land ownership structures further shape how benefits from solar projects are distributed, with layered governance requiring developers to navigate both traditional and formal systems. Typically, acquisitions begin with direct negotiations between developers and landowners, followed by agreement on price, lease terms, and payment in the presence of witnesses, before certification by chiefs, planning authorities, and the courts. In solar energy projects, the dominant approach is long-term leases of about 50 years, secured through lump-sum payments. However, despite the presence of legal and regulatory frameworks to guide this process, many community representatives and landowners reported limited awareness or understanding of these provisions.

Community expectations and experiences with solar energy projects

Job creation

A major expectation among the communities was the creation of decent and permanent jobs. Most landowners reported that land lease deals were agreed based on verbal assurances that they and their families would be prioritised for employment opportunities. Unfortunately, these promises were often unmet. Representatives of regulatory and state institutions explained that, as agreements are typically made directly between the developer and the landowners and community, there is no legal or regulatory framework compelling developers to fulfil these verbal promises. This leaves communities without formal protection or enforcement mechanisms.

Some private developers, however, pointed out that the jobs created by solar plants do not necessarily align with the skills of the local workforce, thus limiting local employment opportunities. Aside from the construction phase, where the developer could temporarily employ some residents, they argued that economic factors beyond their control often affect the availability of jobs locally. This highlights the importance of integrating workforce development strategies into solar energy projects, ensuring that community members are equipped with the necessary skills to capitalise on long-term employment opportunities.

Fair compensation

Many landowners expected continuous financial benefits from leasing their lands for solar projects, but instead received one-time lump-sum payments that often fell short of the perceived fair value. Developers, leveraging government-backed titles and greater financial and legal resources, were able to acquire land at lower prices, leaving communities feeling exploited. Disputes over "fair compensation" are common because agreements lack clear, enforceable terms, and landowners rarely employ valuation experts due to cost. Existing valuation methods also fail to capture the cultural, social, and economic significance of land, further undermining compensation. With limited access to information, weak bargaining power, and no binding mechanisms to ensure accountability, landowners remain disadvantaged in negotiations and excluded from long-term financial gains.

Challenges with community participation structures in solar energy projects

Lack of transparency in land negotiations

Land negotiations are often conducted between developers and traditional leaders without broader community participation. This leaves many residents – especially women and non-land-owning groups – excluded from key decisions and unaware of the agreements' implications. Regulatory agencies typically engage communities only after land has been acquired, limiting opportunities to address displacement, compensation, and long-term benefits.

Power imbalances and weak accountability

Developers dominate negotiations, exploiting communities' limited legal knowledge and bargaining power. Agreements are often based on verbal assurances, superficial consultations, or rushed processes that prevent meaningful dialogue. Inadequate documentation, poor follow-ups, and the absence of grievance mechanisms leave communities unable to hold developers accountable, creating mistrust and reinforcing structural inequalities.

Limited literacy and information access

Many of the community members and landowners lacked formal education and information, which limited their ability to comprehend and negotiate legal agreements, project details, and compensation arrangements. Legal complexities create barriers that exclude community members from meaningful engagement, leaving them either dependent on intermediaries who may not always act in their best interests or, in some instances, with no intermediary. This leads to agreements that do not fully reflect communities' needs or expectations. In several cases, landowners did not fully understand the agreements made between their traditional leaders and the developers. This issue was further exacerbated by the absence of written records, as negotiations were often based on verbal assurances.

Land as equity: alternative community participation models

Three alternative models – community project, community shareholding, and hybrid compensation – were suggested as pathways to more sustainable and just community participation in solar energy projects. These are summarised in **Figure 1**.

Figure 1: *Alternative models for community participation in solar energy projects – Source: Authors*

Community Project Model

Local community members investing in a project and receiving shares of the business in proportion to their investment portfolio

- **Collective Ownership:** Land remains under community ownership, leased rather than sold to developers
- **Long-term Benefits:** Ensures ongoing economic and social benefits
- **Trust Governance:** Elected community representatives, legal experts, and development practitioners oversee land transactions
- **Transparent Negotiations:** Structured governance ensures open negotiations and prevents elite capture

Community Shareholding Model

Ensures that residents have direct financial stakes in solar projects, moving beyond passive land providers to active stakeholders. It democratises energy production and creates a sense of ownership among residents.

- **Equity Shares:** Communities receive equity shares based on land contributed
- **Ongoing Revenue:** Instead of one-time payments, communities receive dividends as projects generate electricity
- **Decision-Making Power:** Community representatives integrated into project governance structures
- **Local Investment:** Profits can be reinvested in community development initiatives

Hybrid Model

Addresses both immediate financial relief and long-term economic security for communities affected by solar energy projects

- **Upfront Payment:** Landowners receive an initial lump-sum compensation for land use, addressing immediate financial needs
- **Revenue Sharing:** A percentage of the project's annual revenue is allocated to the affected community
- **Infrastructure Investment:** Portion of profits invested in public infrastructure and community development projects
- **Ongoing Stakeholder Status:** Communities remain engaged stakeholders throughout the project lifecycle

Potential barriers to implementation

Developers showed strong resistance to community participation models in solar energy projects, citing higher costs, the burden of ongoing engagement, and the need to justify profits to local stakeholders. They favoured long-term leases, which provide greater control and align with private investors' preference for lump-sum payments, over shorter leases that empower communities but require sustained collaboration. Concerns were also raised that trusts or equity-based community models could introduce financial uncertainty, disputes, and deter investment, especially given the substantial upfront capital needed for solar infrastructure.

These challenges are compounded by inadequate legal and regulatory frameworks that fail to mandate land-as-equity arrangements. This leaves communities with limited bargaining power and relegates them to passive recipients of discretionary benefits, often in the form of unevenly delivered infrastructure projects rather than long-term financial empowerment. This entrenches a structural imbalance where developers retain financial control while landowners remain marginalised. Moreover, the mediation role of traditional leaders raises risks of 'elite capture', with benefits potentially concentrated among a select few rather than distributed equitably. Unequal financial capacities among community members could further entrench disparities in ownership and influence. The lack of formal land documentation adds another layer of complexity, limiting the feasibility of equitable and transparent participation models.

Recommendations

The recommendations are primarily directed at policymakers, regulators, and renewable energy developers, while also being relevant to investors and development organisations seeking to promote socially sustainable renewable energy transitions. They respond to the persistent problem of imbalances between community land rights and private investment interests in solar energy projects, with the hoped-for outcome of ensuring equitable, transparent, and long-term benefits for both communities and investors in the energy transition.

Create legal frameworks that make short-term leases more attractive to investors. This includes providing legal guarantees that protect developers from abrupt lease terminations; standardising lease agreements to reduce negotiation complexities; and offering financial incentives, such as tax breaks or subsidies, which will encourage leasing. These structured interventions and collaborative engagements could help bridge the gap between community land rights and private investment interests in future solar energy projects.

Enhance legal protections to ensure comprehensive community engagement. Requiring state agencies to conduct comprehensive community consultations before land transactions occur is important for just energy transitions. Community engagement platforms can be leveraged to facilitate collaboration between developers, government agencies, traditional leaders, and community members.

Encourage fair compensation models that prioritise long-term community benefits over one-time payments. Lump-sum payments often resulted in short-lived financial gains, leaving landowners without sustained income or economic security. Instead, adopting revenue-sharing agreements or long-term lease arrangements ensures that communities receive continuous financial returns over the lifespan of a project.

Explore the potential for community land trusts. By placing land under collective ownership and governance, land trusts could promote the fair allocation of compensation and long-term benefits, preventing elite capture and exploitation. Strengthening legal and institutional frameworks to support these models will enhance transparency, protect land rights, and create pathways for long-term community participation and empowerment in solar and other renewable energy projects.

Pilot the hybrid compensation model. Pilots would serve as testing grounds for assessing the practical implementation of revenue-sharing, long-term lease agreements, and community shareholding mechanisms. Conducting monitoring and impact assessments throughout the pilot phase will be essential in evaluating community acceptance, economic benefits, and overall sustainability. The findings from these assessments will provide valuable insights for refining participation models, addressing potential challenges, and scaling successful approaches.

Document and integrate developer commitments into land agreements and project contracts. Many developers make verbal commitments to support community development initiatives, but with few legally binding frameworks, these promises are often unfulfilled. Embedding community-centred obligations in formal agreements can help address this gap by requiring developers to invest in community-driven infrastructure, education, healthcare, and livelihood programmes as part of their project responsibilities.

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AUTHOR INFORMATION

[1] **Michael Osei Asibey** Department of Planning, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana

[2] **Natasha Ahadzitse** Department of History and Political Studies, KNUST, Kumasi, Ghana

[3] **Julia Tomei** UCL Institute for Sustainable Resources, Resources, University College London, UK

[4] **David Ato Quansah** The Brew-Hammond Energy Centre, KNUST, Kumasi, Ghana

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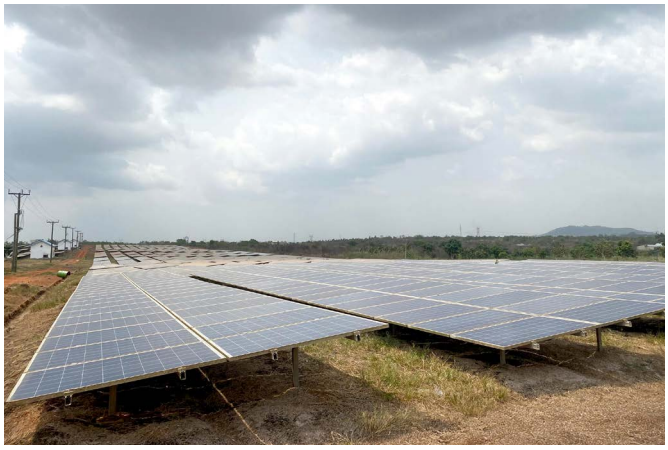
APPENDIX

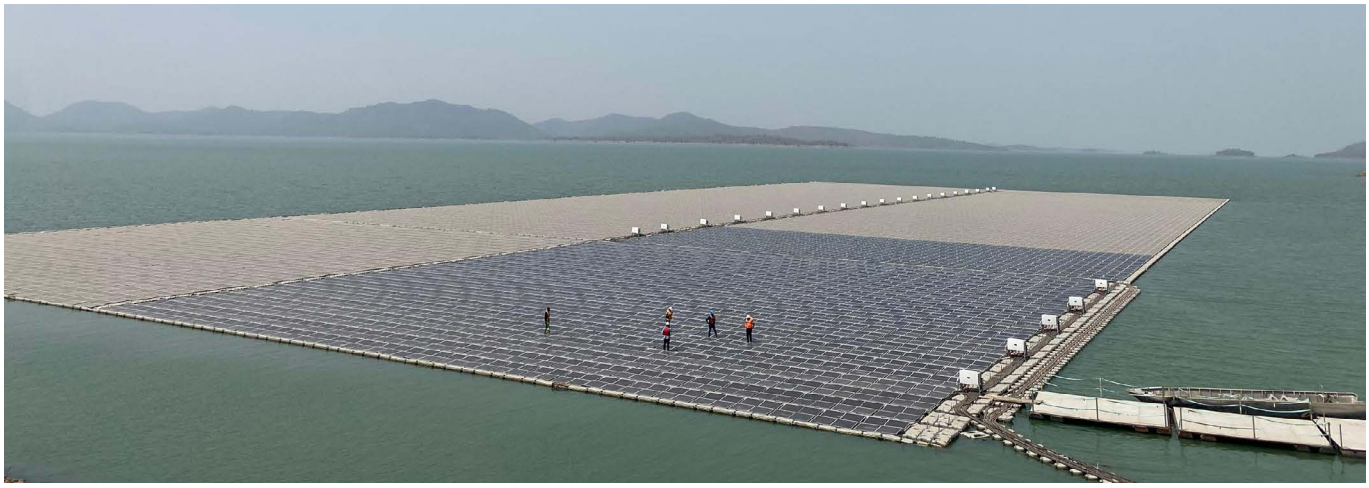
Women-only focus group discussants (whose lands and spouses lands where taken for the Yendi Solar farm) at Yendi.

The operating solar farm at Lawra



Operating Solar Farm in Yendi with the Bifacial Solar Panel

Stakeholders discussing study outcomes and policy recommendations in Accra



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