



Institute For Economic Justice POLICY BRIEF



BEYOND THE JOB COUNT: BUILDING DECENT WORK INTO GHANA'S SOLAR TRANSITION

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Ghana's expanding solar PV sector is creating employment, but the quality and long-term sustainability of these jobs remain constrained by the structure of the industry. Domestic firms are concentrated largely in installation, systems integration, distribution and related downstream activities, while manufacturing and higher-value segments remain limited. As a result, employment is often shaped by intermittent project demand, with firms maintaining small core teams and relying on more flexible labour when projects arise. Evidence from surveyed firms and stakeholder interviews suggests that decent work in the solar sector is closely linked to the broader development of the domestic industry. While workers generally possess relatively strong educational and technical backgrounds, opportunities

for structured training, career progression and movement into higher-value functions remain uneven. The sector also faces gaps in occupational safety, professional certification and worker representation, while women remain underrepresented, particularly in technical and higher-value roles. These challenges cannot be addressed through labour regulation alone; they are also influenced by the predictability of solar demand, firms' productive capabilities and their position within the solar value chain.

The brief therefore argues that decent work should be pursued alongside industrial development. It recommends that public institutions create a more predictable pipeline of solar demand so firms can retain workers and invest in training. It also calls for stronger support to domestic suppliers through finance, technical upgrading, testing, certification and access to projects. Skills development should be linked to recognised and portable career pathways, while public support should be tied to labour standards on safety, contracts, social protection, non-discrimination and training. Smaller firms should also be supported to build the capacity needed to comply.

is creating work that is productive, protected by labour standards and capable of providing workers with meaningful opportunities for progression.

This distinction sits at the heart of the concept of decent work. Drawing on the International Labour Organization framework, decent work encompasses employment creation, rights at work, social protection and social dialogue¹². It therefore shifts attention from whether employment exists to the conditions under which people work and the extent to which employment contributes to sustainable livelihoods.

For Ghana, this question is particularly important because the structure of the emerging solar industry already shapes the kinds of jobs being created. Domestic participation remains concentrated largely in downstream activities such as importation, distribution, systems integration, installation and maintenance³. At the same time, participation in manufacturing and component production remains limited. This has enabled the sector to expand without requiring large domestic manufacturing capabilities, but it also means that much of the employment generated is closely linked to individual projects and fluctuations in demand.

Interviews with 16 solar PV firms reveal that firms commonly maintain relatively small core teams and engage additional workers when projects become available. The evidence points to three interrelated factors shaping employment outcomes in Ghana's solar sector: the downstream structure of the market, the limited scale and predictability of project demand, and gaps in labour-standards enforcement. This suggests that the decent-work challenge cannot be reduced to whether individual firms comply with labour regulations but also the economic and industrial conditions within which firms operate.

The central argument of this brief is therefore that decent work in Ghana's solar transition must be pursued as both an industrial development and a labour governance objective. Improving employment quality will require policies that strengthen market predictability, deepen domestic participation in higher-value activities, build recognised skills and career pathways, and establish appropriate protections for workers.

Introduction

Ghana's renewable energy transition is expected to create new employment opportunities as investment expands in solar photovoltaic (PV) systems and related technologies. But the developmental value of this employment cannot be judged by job numbers alone. The more important question is whether the transition

Additionally, Ghana's solar PV sector must ensure that jobs created become progressively more productive, secure and capable of supporting sustainable livelihoods.

This brief draws on findings from research on decent work and localisation in Ghana's solar PV sector^{4,5}. The remainder of the brief is structured as follows. Section 2 examines the current structure of solar employment in Ghana. Sections 3 and 4 explore the factors shaping job quality, including industry structure, labour standards and access to higher-quality employment opportunities. Section 5 considers the policy and institutional changes required to support decent work in the sector and sets out recommendations for policy and practice.

What does solar employment in Ghana currently look like?

Research on Ghana's solar industry shows that domestic firms remain concentrated in installation, engineering, procurement and related downstream activities rather than manufacturing⁶. A survey which received 16 licensed solar PV firms further reveals that about 50% employed between one and ten workers, while a further 44% employed between 11 and 49. Only 6% employed more than 50 workers. Most firms were engaged in activities such as systems integration, installation, distribution, logistics and technical services, with only a small number reporting emerging component assembly or manufacturing activities.

The employment structure reflects this small-firm and project-oriented market. Although 93.3% of the 16 surveyed firms reported relatively stable overall employment levels, 53.3% also indicated that staffing fluctuates with workflow. This suggests that many firms maintain a relatively stable core workforce but expand or reduce additional labour as projects arise. Further in-depth interviews with solar firms and industry stakeholders reinforce this pattern. It revealed that permanent staff are more likely to be retained for functions such as engineering, business development and project management, while

installation and other site-based workers are more commonly engaged on ad hoc basis according to the availability of projects.

The evidence does not suggest that employment across the entire solar sector is unstable. Rather, it points to a two-tier employment structure. First, a smaller core of relatively stable workers performing continuous technical, managerial and commercial functions. Second, a more flexible workforce whose employment is closely tied to project cycles.

The erratic nature of solar deployment therefore has direct implications for employment security and the ability of firms to provide continuous work. This is broadly consistent with international evidence showing that installation- and project-development-heavy renewable energy markets tend to be more sensitive to fluctuations in project activity than manufacturing and long-term operations and maintenance⁷.

The evidence also shows that the surveyed firms' workforces are predominantly tertiary educated, with an important layer of vocational and technically trained workers supporting installation, maintenance and other practical functions. All 16 surveyed firms reported employing workers with bachelor's degrees, while about 40% employed workers with vocational training backgrounds. **The more important decent-work question is therefore whether workers can deepen their skills, move into higher-value functions and build careers as the industry grows.**

Training is already widespread, but remains unevenly institutionalised. Surveyed firms commonly provide technical training as needed, yet few have formal training programmes. Much of this learning therefore remains geared towards immediate project needs rather than sustained career progression. This partly reflects concerns that workers may leave after receiving training, reducing firms' incentives to invest in structured workforce development. International evidence shows that green employment delivers stronger career and productivity outcomes where skills development is deliberately linked to recognised qualifications, certification and pathways into higher-value functions.⁸

How the industry structure constrains job quality

The employment patterns observed in Ghana's solar sector are rooted in the wider structure of the industry. Job quality is shaped not only by labour practices within firms, but also by the commercial environment in which they operate, Ghana's position within the global solar value chain, and the extent to which other industries are connected to solar deployment. Three structural factors are particularly important:

1 Flexible labour as a response to commercial risk. With project revenues arriving intermittently from individuals, and to some extent, commercial customers, maintaining a large permanent workforce creates costs that firms may be unable to carry between contracts. Contract and project-based employment therefore allows firms to adjust labour costs to available work. In this sense, labour flexibility is not simply an employment practice, it is also a means through which firms manage commercial risk. This does not remove the need for adequate labour protections. Rather, it points to the relationship between demand stability and employment security^{9,10}.

2 Limited space in higher-value segments. Domestic firms operate within a highly competitive global market in which Ghana's participation in higher-value activities such as solar cell manufacturing remains limited. The industry is dominated by large global manufacturers, particularly Chinese firms, whose advantages in scale, technology, integrated supply chains and access to state-backed and concessional finance allow them to supply equipment at prices that smaller domestic firms struggle to match¹¹.

For Ghana, therefore, value addition cannot simply mean attempting to reproduce and compete with an already highly concentrated global module-manufacturing industry. The more realistic opportunity lies in identifying segments where existing productive

capabilities, skills and industrial infrastructure provide plausible entry points.

3 Leveraging Existing Domestic Industries for Solar Localisation. There are also opportunities in parts of the solar value chain that have received considerably less attention. Nearly half of the 16 surveyed firms source less than 25% of their key inputs domestically. Ghana has capabilities that could potentially supply key inputs such as mounting structures, electrical cables, packaging, technical services and other balance-of-system components. These components have been found to create significant domestic value creation in solar PV industries of other countries¹². The existence of domestic productive capacity, however, does not automatically make these firms competitive suppliers to the solar industry. Meeting the technical, quality and certification requirements of solar projects may itself present a barrier for some domestic producers. The policy response should therefore go beyond mandating local sourcing to building the capacity of capable firms to meet the standards required for effective participation.

These structural factors present a broader understanding of decent work. Opportunities are not limited to producing the solar panel itself. Ghana can capture more value and expand job opportunities by connecting solar deployment to industries and productive capabilities they already possess.

Structural constraints do not remove the need for labour standards

The structural conditions described above help explain why firms organise work in particular ways, but they should not be interpreted as a justification for poor employment conditions. Even within a project-based industry, workers should be able to expect safe working conditions, appropriate professional standards and basic labour protections. The evidence points to three areas that require particular attention.

1 Limited standardised occupational safety and workplace protection. Solar installation involves work at height, electrical systems, batteries and other potentially hazardous activities¹³. Stakeholder interviews for this brief revealed uneven application of safety requirements, including instances where workers were expected to provide their own protective equipment. These accounts do not establish that such practices are widespread across the sector, but they do indicate weaknesses in how safety standards may be applied in some parts of the market.

2 Limited Professionalisation and technical standards. Parts of the installation market also operate outside formal licensing and certification arrangements. Industry stakeholders noted that some electricians and technicians undertake solar installations without the required professional certification, making regulatory oversight and enforcement more difficult. Concerns were also raised about the quality of some installations and the limited practical exposure of some technically trained workers. Strengthening certification, practical training and technical supervision therefore matters not only for system performance, but also for worker safety and the professionalisation of solar employment¹⁴.

3 Weak worker representation. Labour institutions remain relatively weakly embedded in the emerging solar sector. Firm-level evidence shows mixed views on trade unions: about 47% of the 16 surveyed firms considered them necessary, while 40% believed firms could operate effectively without them. More broadly, union membership appears limited, particularly among smaller and project-oriented firms. This matters because decent work is not only about the terms offered by employers. Social dialogue and worker participation are core dimensions of the ILO decent-work framework¹⁵. The historical development of the just-transition concept similarly reflects concerns raised by organised labour about employment security, wages, worker participation and the distributional

consequences of structural economic change^{16,17}.

The implication is that Ghana faces two related but distinct challenges. The first is creating an industry capable of sustaining productive employment. The second is ensuring that the employment it creates meets acceptable standards. Industrial upgrading, stronger domestic firms and more predictable demand can improve the economics of employment, but they cannot substitute for effective safety rules, professional standards and labour protection. Both have to advance together.

Who gets access to the better jobs?

The quality of Ghana's solar transition will also depend on who is able to participate in the more skilled, better remunerated and more secure parts of the sector. The evidence suggests that women remain under-represented within solar firms. About 88% of the surveyed firms reported that women constituted less than half of their workforce, while formal company-level approaches to gender inclusion remain limited.

This pattern is consistent with wider global research showing that women's participation in renewable energy often remains concentrated in sales, distribution, community-facing functions and end-use applications, while participation in engineering, installation, maintenance and other technically intensive activities is more limited¹⁸.

The issue, however, is not simply the number of women employed. Where women participate within the value chain matters. Technical, engineering, supervisory and managerial roles are more likely to provide opportunities for skills accumulation, progression and stronger earnings than peripheral or administrative roles. A just transition should therefore seek to expand women's access to technical training, apprenticeships and career pathways within these higher-value functions, rather than treating participation alone as the measure of inclusion¹⁹.

The same principle applies more broadly to workforce development. Interview evidence suggests that workers with more specialised skills are more likely to secure repeated contracts and supervisory responsibilities, while workers concentrated in basic installation activities face more irregular employment and weaker progression prospects. Skills policy therefore has a distributional dimension: it determines who is able to move upwards as the solar industry develops.

Towards change in policy and practice

Ghana does not necessarily need an entirely new policy framework to advance decent work in the solar sector. The policy scan undertaken for this study identified multiple existing frameworks addressing renewable energy deployment, job creation, SMME development, localisation, skills development and gender inclusion²⁰. The challenge is that these objectives are often pursued through separate policy processes, with limited coordination between them. The priority should therefore be to improve implementation and coordination across existing policies, while introducing targeted mechanisms or programmes where necessary to address gaps that existing frameworks do not adequately cover.

Renewable energy deployment should be deliberately linked to enterprise development, skills formation, labour standards, gender inclusion and domestic value creation. This requires both stronger coordination among the institutions responsible for these areas and practical implementation mechanisms that translate these objectives into a common delivery agenda.

- 1 Create a more predictable pipeline of solar demand.** Public institutions such as the Ministry of Energy and Green Transition should coordinate and communicate clearer multi-year solar deployment plans to reduce project intermittency. Greater predictability would give firms more confidence to retain workers, invest in training and build more stable technical teams. Demand policy should therefore be treated as employment policy.

- 2 Build domestic suppliers within solar value chains.** Institutions such as the Ministry of Trade, Energy Commission and the Ghana Enterprises Agency should identify products and services that Ghanaian firms can realistically supply. Support should combine finance, technical upgrading, testing and certification with structured opportunities to participate in public and large-scale solar projects, with the aim of building competitive local suppliers.

- 3 Turn skills acquisition into recognised career pathways.** The Commission for Technical and Vocational Education (CTVET), technical universities and industry should develop portable and recognised competencies across installation, maintenance, system design, storage and other technical functions. Formal skills recognition should be structured so that skills gained on one project can support progression across employers and occupations. Shared apprenticeship and industry training arrangements can also reduce the retention risk faced by individual firms.

- 4 Condition Public Support on Labour Standards.** Labour, energy and procurement institutions should link public support to proportionate requirements on safety, contracts, social protection, non-discrimination and training. Smaller firms should be supported to build the capacity needed to comply rather than being excluded outright.

Endnotes

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