

Leveraging the AfCFTA: An Export Strategy for Ghanaian-Made Solar Modules

A strategic framework for establishing export-oriented solar module manufacturing in Ghana through joint venture partnerships targeting regional markets.

Educational analysis of turnkey frameworks and operational insights -
Source: J.v.G. Technology GmbH.





Strategic analysis for export-oriented solar manufacturing



Created as part of the PVKnowHow
Knowledge Network



Prepared by J.v.G. Technology GmbH
European specialists in turnkey solar
module production lines

AfCFTA and ECOWAS Export Opportunity

The African Continental Free Trade Area creates a single market of over 1.3 billion people with a combined GDP exceeding \$3.4 trillion, opening up a market of over 1.2 billion people across Africa and giving Ghana access to a vast consumer base by removing tariffs on most goods. In fact, Africa accounted for 45% of all Ghana's non-traditional exports, with the ECOWAS region making up over 94% of Ghana's exports to the AfCFTA market.



Market Access

Removal of trade barriers and tariffs enables free flow of renewable energy products across Africa, creating integrated markets that help reduce energy costs



Export Growth

Currency depreciation makes Ghana's exports cheaper in foreign markets, boosting competitiveness of domestically produced goods and allowing export-oriented industries to benefit



Regional Integration

Under the AfCFTA, there is opportunity to localise production of green goods, with manufacturing solar panels domestically creating thousands of jobs in assembly, quality assurance and distribution

Ghana as Regional Manufacturing Hub



Strategic Location

Ghana's geographical position as the 'Gateway to Africa' is enhanced by hosting the permanent seat of the African Continental Free Trade Area (AfCFTA)



Policy Support

The government aims to make Ghana a production hub for solar energy technologies leveraging access to the ECOWAS market



Economic Stability

Ghana's unique stability and security in a turbulent region stand out, with rich resource base and established infrastructure

Target Markets: Ghana + ECOWAS

Primary Markets

- Nigeria: West Africa's largest economy with growing energy demand
- Côte d'Ivoire: Strong manufacturing base and economic growth
- Senegal: Stable economy with renewable energy targets

Market Access Benefits

- AfCFTA removes trade barriers including tariffs and customs delays, enabling free flow of renewable energy across Africa
- Nigeria, Côte d'Ivoire and Ghana will experience largest contributions from manufacturing, valued at US\$33.6 billion, US\$14.6 billion and US\$9.8 billion respectively
- Regional export opportunities through ECOWAS trade agreements

Port of Tema: Export Logistics Hub

Capacity & Infrastructure

- Port cargo traffic was 7.5 million MTs in 2023, with 3.19% growth
- Annual container throughput exceeds 1 million TEUs, with expansion increasing capacity to 3 million TEUs
- Recent expansions handle vessels up to 22,000 TEU with 1.4 km quay and four deep berths

Regional Connectivity

- Serves landlocked West African countries like Burkina Faso, Mali, and Niger
- Handles 80% of Ghana's national exports and imports
- Key shipping routes link to major global markets with express services from China and Southeast Asia

Competitive Advantages

- Relatively less congested than ports of Abidjan or Dakar, reducing demurrage risk
- Widely recognized as best performing container terminal/port in West and Central Africa
- Designated as Free Trade Zone, allowing duty-free import and export of goods

Climate-Adapted Module Concept

High-Performance Design

Modules engineered for West African climate conditions with enhanced durability and efficiency ratings

Quality Standards

International IEC certification ensuring product compliance with global market requirements and regional specifications

Competitive Advantage

Locally-manufactured climate-adapted modules provide cost and performance benefits over imported alternatives

Market Differentiation

Specialized modules for tropical conditions create unique value proposition in ECOWAS markets



Joint Venture Structure Overview

1

Partnership Formation

- Foreign investor provides technology and capital
- Local partner contributes market access and regulatory expertise
- Shared governance focused on export market development

2

Manufacturing Setup

- An experienced European turnkey provider supplies production technology
- Local partner manages site selection and export logistics
- Joint investment in equipment and facility development for export capacity

Financial Contribution Model

Foreign Investor Contributions

- Manufacturing equipment: 40-50% of total investment
- Technology licensing and know-how transfer
- Working capital for export operations
- Technical training and certification programs

Local Partner Contributions

- Land acquisition and site development: 10-20% of investment
- Building construction and facility preparation
- Export licensing and Port of Tema logistics
- Workforce recruitment and government relations

Proven Turnkey Manufacturing Concept

Technology Platform

A proven turnkey manufacturing concept with standardized production processes optimized for export volumes

Equipment Package

Complete semi-automated/automated production line with testing, certification, and commissioning support

Training Program

Comprehensive technical training for local workforce on export-quality production and quality control

Certification Standards

International IEC quality certification ensuring compliance with ECOWAS and global market requirements

Key Project Data

25-50

Capacity

MW export-oriented factory

9-12

Ramp-up

Months to full operation

40-60

Workforce

Employees required

Target Markets

Ghana + ECOWAS (Nigeria, Côte d'Ivoire, Senegal)

Line Type

Semi-automated / automated turnkey line

Export Framework

AfCFTA trade protocols

Module Focus

High-performance, climate-adapted modules

Logistics Hub

Port of Tema export facilities

Certification

IEC standards for regional markets

Source: PVKnowHow / J.v.G. Technology GmbH

Financial Considerations for Export Factories

Export Revenue Streams

Multiple ECOWAS markets reduce single-country dependency and provide revenue diversification

Currency Benefits

Currency depreciation makes Ghana's exports cheaper in foreign markets, boosting competitiveness

Trade Facilitation

AfCFTA removes trade barriers and customs delays, reducing export transaction costs

Regional Integration

GEPA strategy to deepen regional trade and leverage ECOWAS Trade Liberalization Scheme and AfCFTA

Strategic Conclusion: Regional Leadership

Market Opportunity

AfCFTA significantly increases investment in renewable energy projects, with Ghana positioned as regional manufacturing hub

Export Advantage

Ghana's strategic position with Port of Tema provides unmatched logistics access to ECOWAS markets for solar module exports

Implementation Framework

A proven turnkey manufacturing concept provides reliable path to export-oriented solar module production targeting 25-50 MW capacity

Source & Authorship

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