

# Essential Infrastructure for Solar Panel Manufacturing in Kenya: Your 2025 Site Selection Guide

Navigating Kenya's Industrial Ecosystem for Modern Solar Assembly

**Content Partner: J. v. G. technology GmbH**

*Turnkey solar module production lines — since 1997*

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# Technical Overview: Kenya Solar Manufacturing Infrastructure and Site Selection



Created as part of the PVKnowHow Knowledge Network



Prepared by J.v.G. Technology GmbH



European specialists in turnkey solar module production lines

# Key Project Data

100–2...

## Scale

Automated solar module  
production line capacity  
range

Projec...

## Investment

Capital requirement varies  
by scale and automation  
level

Autom...


## Line Type

Fully automated crystalline  
silicon (c-Si) module  
assembly

Phased

## Ramp-Up

Staged production ramp-up  
— project-dependent  
timeline

 Region: Kenya / East Africa · Line type: Automated solar module production · Source: PVKnowHow / J.v.G. Technology GmbH

# Kenya Solar Market Opportunity

## Market Size & Growth

- Solar energy market valued at ~USD 65.2M in 2022
- Projected to reach USD 171.6M by 2030 — CAGR 13.5%
- Solar potential: ~15,000 MW estimated nationally
- Daily insolation: 4–6 kWh/m<sup>2</sup> — strong natural resource base

## Demand Drivers

- PAYGo models: 1.2M solar kits sold in H2 2023 alone
- Commercial & industrial (C&I) adoption accelerating
- Government target: 600 MWp solar by 2030
- Kenya Off-Grid Solar Access Project (KOSAP): 1.3M people targeted

# The Import Gap: USD 296M Opportunity

## Scale of Import Dependency

- Kenya imported ~USD 296M of solar PV modules between 2020–2024
- Source: SEforALL / PVKnowHow analysis
- Modules predominantly sourced from China, India, and Europe

## Quality Gap in the Market

- Imported supply varies significantly in quality and certification
- Local production can deliver consistent, certified output
- Certified modules command price premiums in C&I and utility segments

## Strategic Positioning

- Local manufacturing converts import spend into domestic value-add
- Regional export potential: Uganda, Tanzania, Rwanda, Ethiopia
- Kenya positioned as a gateway to the East African Community (EAC) market

# Power Grid Reality

## Grid Energy Mix (2022/2023)

- Geothermal: ~43–46% — dominant, low-cost baseload
- Hydro: ~24–25%
- Wind: ~17%
- Solar: ~3% — significant growth potential
- 87.5% of total generation from renewables (KNBS 2023)

## Reliability Considerations

- ~40% of population reported consistent supply (2019 survey)
- ~50% without grid access — strong off-grid demand driver
- Grid modernization underway: new substations, smart grid rollout
- 113 solar mini-grids in development to expand stability
- Manufacturers advised to plan captive/backup power

# Industrial Electricity Cost: \$0.13–0.20/kWh

## Standard Industrial Tariff

- Industrial electricity: \$0.13–\$0.20 USD/kWh range
- PVKnowHow 2024 Kenya Solar Report: ~\$0.18/kWh average industrial
- Businesses tariff (Sep 2025): ~USD 0.174/kWh (GlobalPetrolPrices)

## SEZ Energy Advantage

- Naivasha SEZ: ~KES 5/kWh from Olkaria geothermal — significantly below standard
- Other SEZ zones: ~KES 10/kWh
- Special power tariffs explicitly part of SEZ incentive framework

## Cost Context for Manufacturers

- Energy cost drives C&I solar adoption — creating stable local demand
- On-site solar self-consumption viable at current tariff levels
- Geothermal base = stable, low-carbon grid mix

# Logistics Advantages: SGR & Port of Mombasa

- 1 — Port of Mombasa — Regional Entry Point**

East Africa's largest port; primary entry for imported raw materials (cells, EVA, glass)

Procedural planning and customs brokerage partnerships essential for supply chain continuity
- 2 — Standard Gauge Railway (SGR) — Mombasa to Nairobi/Naivasha**

472 km operational; cargo transit: ~8 hours (vs. 3 days on old metre-gauge)

SGR now handles ~40% of port freight to hinterland; double-stack container trains operational
- 3 — Cost Reduction vs. Road**

~KES 50,000/container by SGR vs. ~KES 90,000 by road — significant logistics saving

Just-in-time delivery reduces warehousing and insurance costs for manufacturers
- 4 — Regional Connectivity (Future)**

SGR planned extension toward Uganda, Rwanda — expanding export reach for EAC markets

Northern Corridor handles >85% of EAC trade

# SEZs & Industrial Zones: Site Options

## Naivasha SEZ

- Public SEZ on SGR line — Inland Container Depot on-site
- Access to Olkaria geothermal: ~KES 5/kWh power tariff
- Internal roads, substation, and logistics zone in development
- Houses steel, glass, EV assembly, energy infrastructure

## Tatu City SEZ (Kiambu)

- Private SEZ, 5,000 acres — mixed-use with dedicated industrial zone
- Near Nairobi; developed by international-backed developer Rendeavour
- Operational businesses already on-site; fast permitting
- Strong infrastructure and workforce access

## Athi River EPZ

- Export Processing Zone — established manufacturing hub near Nairobi
- Export-oriented: duty-free imports of raw materials and equipment
- Long operational track record; existing industrial ecosystem
- Suitable for export-first market entry strategy

# Incentive Framework: Tax, Duty & Infrastructure

## Fiscal Incentives

- SEZ corporate tax rate: 10% (first 10 yrs) / 15% (next 10 yrs) vs. standard 30%
- Exemptions from customs duty, VAT, excise duty, and stamp duty in SEZs
- VAT exemption on renewable energy equipment — national policy
- Solar cells (HS 8541.42.00): 0% import duty under EAC Common External Tariff

## Operational & Infrastructure Support

- Special subsidised power tariffs in designated SEZs
- Streamlined work permits for skilled expatriate staff
- Simplified business registration and export approvals in EPZs
- SEZ goods access AGOA (U.S. market) and preferential EAC trade terms
- Draft National Energy Policy 2025–2034 explicitly supports local renewable manufacturing hubs

# Workforce Availability & Cost

**~\$100**

**Est. Min. Wage/Month**

Urban minimum wage ~KES  
16,114/month (~USD 100) as  
of 2026

**~\$159**

**Average Monthly  
Wage**

Average across all formal  
sector roles — significantly  
below European or Asian  
comparators

**15.9%**

**Manufacturing Jobs  
Share**

Manufacturing = largest  
private-sector job category  
(KNBS 2024)

**18.9%**

**EPZ Job Growth**

Employment in Export  
Processing Zones grew  
18.9% in 2024

**i** No prior PV manufacturing experience required — an experienced European turnkey provider includes on-site team training as part of line commissioning.

# Raw Material Dependency & Sourcing Strategy

## Must-Import Components (Phase 1)

- Solar cells, EVA/POE encapsulant, backsheet — high-tech, concentrated in Asia
- Tempered low-iron glass — specialized production not yet local
- 0% EAC import duty on solar cells (HS 8541.42.00) — major cost advantage

## Partially Localizable (Phase 2)

- Aluminum frames: Kenya has established extrusion capacity (e.g. ALAF/Safal Group)
- Requires quality validation to meet solar-grade anodizing standards ( $\geq 15$  microns)
- Junction box assembly: feasible with technology transfer over time

## Logistics & Risk Mitigation

- Port of Mombasa is the primary import gateway for components
- Experienced customs brokerage partnerships reduce clearance risk
- FX risk management critical — USD/KES exchange rate variability impacts landed costs

# Site Selection: Key Decision Criteria

1

## Power

Reliable supply + competitive tariff; Naivasha geothermal (~KES 5/kWh) offers best-in-class cost

2

## Logistics

SGR/ICD access for raw material imports; proximity to Port of Mombasa corridor

3

## Cost & Incentives

SEZ/EPZ fiscal regime: tax holiday, 0% duty on cells, subsidised utilities

4

## Market Proximity

Access to Nairobi C&I demand + EAC regional export via Northern Corridor

- ☐ Recommended site profile: SEZ location on SGR corridor with direct ICD access, geothermal power connection, and proximity to Nairobi commercial demand base.

# Strategic Conclusion: Feasibility & Positioning

## Market Feasibility

- USD 296M import gap (2020–2024) confirms sustained, growing demand
- Market CAGR of 13.5% to 2030 supports multi-year ramp-up logic
- Quality gap in import supply = competitive opportunity for certified local output

## Structural Advantages

- Strong incentive stack: SEZ tax, 0% cell duty, subsidised power, VAT exemption
- SGR logistics + Port of Mombasa = reliable component import corridor
- Workforce cost structure competitive; training included in turnkey delivery

## Key Risks to Manage

- Grid reliability: captive/backup power recommended for production continuity
- FX exposure on imported components: USD/KES hedging required
- Infrastructure delivery timelines in newer SEZ zones require due diligence

✔ **Overall assessment:** Kenya presents a credible, commercially viable location for automated solar module production — subject to careful site selection, incentive structuring, and supply chain planning. An experienced European turnkey provider reduces technology and ramp-up risk significantly.

# About the Content Partner

## **J. v. G. technology GmbH** – The DESERT Company

Founded in 1997 in Bavaria, Germany. Family-owned engineering company specializing in turnkey solar module production lines.

More than 90 factory projects delivered worldwide.

On-site team training included – no prior manufacturing experience required.

### Key areas:

Turnkey PV manufacturing lines | DESERT Technology® |  
TÜV-certified module designs | Factory planning to production

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