Locating a Solar Module Factory in Cuba: An Analysis of the Mariel Special Development Zone (ZEDM)

Strategic Investment Case — Mariel Special Development Zone, Cuba

Content Partner: J. v. G. technology GmbH

Turnkey solar module production lines — since 1997

www.jvg-thoma.com

Technical Overview: Locating Solar Factories in Cuba's Mariel Special Development Zone

Created as part of the PVKnowHow Knowledge Network

Prepared by J.v.G. Technology GmbH

European specialists in turnkey solar module production lines

1 — Strategic Importance of Location

Why the Caribbean?

- Positioned between North America, Europe, and Latin America
- High solar irradiation levels — ideal end-market for PV products
- Growing regional energy deficit creates structural demand
- Limited local manufacturing capacity — first-mover advantage

Why Cuba — Mariel?

- Only purpose-built Special Development Zone in the Caribbean
- Deep-water port with direct Atlantic shipping access
- Codified investment law framework — not ad hoc incentives
- Export platform logic: produce in Cuba, ship to CARICOM and LATAM

2 — What Is a Special Development Zone (SDZ)?

Definition

- A geographically delimited area with distinct legal and fiscal rules
- Governed by dedicated legislation — separate from the host country's standard commercial code
- Designed to attract foreign capital, technology transfer, and export-oriented industry

Core Features

- Preferential tax treatment for qualifying investors
- Customs duty exemptions on imported inputs and equipment
- Simplified administrative procedures — single-window licensing
- Protected profit repatriation rights enshrined in law

SDZ vs. Standard FDI

- Greater legal certainty than bilateral investment treaties alone
- Dedicated zone authority manages approvals — reduces bureaucratic friction
- Infrastructure pre-built: roads, power, water, telecoms provided within zone perimeter

3 — Mariel ZEDM Overview

Zone Profile

- Zona Especial de Desarrollo Mariel (ZEDM) — established under Law-Decree No. 313 (2013)
- Located 45 km west of Havana — purpose-built greenfield zone
- Total planned area: ~465 km^2 (industrial, logistics, and port zones)
- Managed by a dedicated authority (ZEDM Office) — single point of contact for investors

Industrial Positioning

- Designed for export-oriented light manufacturing, logistics, and technology
- Assembly operations — including electronics and energy equipment — are eligible sectors
- Foreign-owned enterprises permitted; joint ventures also accepted
- Operational since 2014 — infrastructure continuously expanding

The ZEDM framework is codified in Cuban law. Investors operate under the zone's own legal statute, providing a distinct layer of regulatory predictability not available in the general economy.

4 — Port and Logistics Advantages

Deep-Water Port

- Mariel port handles post-Panamax vessels — capacity for large container volumes
- Direct connection to Atlantic shipping lanes
- Dedicated industrial berths adjacent to zone — minimises inland freight cost

Regional Reach

- Within 2,000 km of all major Caribbean island markets
- Proximity to Panama Canal — onward routing to Pacific LATAM
- Short transit times to Florida, Mexico, Colombia, and Brazil

In-Zone Infrastructure

- On-site bonded warehousing available for components and finished goods
- Rail and road links to Havana integrated into zone masterplan
- Reliable power and water supply — utilities managed within zone boundary

5 — Tax Incentives: 10-Year Exemption, 8% After

Tax Category	During Exemption Period	Post-Exemption Rate
Corporate Income Tax	Full exemption — 10 years	8% (standard ZEDM rate)
Local Tax on Sales / Services	Exempt within zone	Subject to ZEDM tariff schedule
Real Property Tax	Exempt on zone-leased land	Applicable post-exemption phase
Labour Contributions	Partial reduction available	Standard social contribution rates
Reinvested Profits	Additional concession possible	Negotiated with ZEDM Office

ⓘ The 8% post-exemption rate compares favourably with standard Latin American corporate tax rates (typically 25–35%). The 10-year window covers full payback of assembly-scale capital investment under normal operating assumptions.

6 — Customs Duty Exemptions

Exempt Import Categories

- Capital equipment and machinery — full exemption on import duties
- Raw materials and production inputs used in export-oriented manufacturing
- Spare parts and consumables directly linked to qualifying production
- Office and IT equipment for zone-based operations

Relevance for PV Assembly

- Solar cells, encapsulants, glass, backsheet, frames: all potential exempt inputs
- Assembly line equipment (laminators, testers, framing machines) qualifies as capital equipment
- Eliminates import duty layer that typically adds 10–25% to equipment cost in standard Cuban customs
- Creates material landed-cost advantage versus domestic or non-zone assembly

7 — Profit Repatriation Security

Legal Basis

- Repatriation rights are codified in ZEDM legislation — not subject to discretionary approval
- Foreign investors may transfer net profits in hard currency after tax obligations are met
- Arbitration clause: disputes subject to international arbitration (not Cuban domestic courts)

Currency Framework

- ZEDM transactions may be conducted in convertible currency (USD, EUR)
- Insulates zone operations from domestic currency fluctuation risk
- Export revenues received in hard currency — natural hedge for repatriation flows

Investor Risk Mitigation

- Expropriation compensation rights included in zone statute
- Zone authority acts as counterparty — reduces sovereign interface risk
- Operational precedent: multiple foreign enterprises already operating within ZEDM

8 — Supply Chain Advantages

1

Asian Component Sourcing

Solar cells, EVA, glass, and backsheet sourced from established Asian suppliers — shipped direct to Mariel deep-water port

2

In-Zone Assembly

Semi-automated assembly line processes components into finished modules within the ZEDM — duty-free inputs, low-cost labour

3

Regional Export

Finished modules dispatched to Caribbean island markets, Central America, and northern LATAM via Mariel port logistics infrastructure

An experienced European turnkey provider integrates supply chain planning into line commissioning — including component qualification, inbound logistics setup, and initial inventory strategies. This reduces the operational learning curve for new market entrants.

9 — Export Access: Caribbean & LATAM

Target Export Markets

- CARICOM member states — Jamaica, Trinidad, Barbados, and 12 further island markets
- Central America — Guatemala, Honduras, Costa Rica, Panama
- Northern South America — Colombia, Venezuela, Ecuador
- Mexico — large and growing solar installation market

Competitive Export Position

- No competing regional module manufacturer at comparable scale
- Short shipping distances reduce landed cost vs. Asian imports
- Potential preferential trade treatment under bilateral Cuba-CARICOM agreements
- "Made in Caribbean" origin label — emerging procurement preference in regional tenders

10 — Regulatory Framework: Single-Window System

1

Step 1 — Single Contact Point

All approvals (investment licence, construction permits, import authorisations) processed through the ZEDM Office

Investor is not required to interface with multiple Cuban ministries independently

2

Step 2 — Investment Proposal Review

Standardised proposal format submitted to ZEDM Authority

Assessment covers: sector fit, employment impact, export orientation, environmental compliance

3

Step 3 — Licence Issuance & Concession Agreement

Approved investors receive a formal Concession Agreement specifying tax status, land lease, and operational rights

Agreement constitutes binding legal document enforceable under ZEDM statute

4

Step 4 — Ongoing Compliance

Annual reporting to ZEDM Office — standardised format

Zone authority manages regulatory interface; investor focuses on operations

11 — Workforce Structure

Labour Availability

- Cuba maintains a high literacy rate and technically trained workforce relative to regional peers
- Semi-automated assembly is well-suited to available skill profile — no specialist prior experience required
- Workforce recruitment facilitated through ZEDM employment agency

Training Model

- An experienced European turnkey provider delivers on-site operator training as part of line commissioning
- Standard ramp-up to full production within 60–90 days post line handover
- No prior solar manufacturing experience required for operators

Labour Cost Structure

- Wage levels materially lower than EU or North American equivalents
- Social contribution rates defined within ZEDM framework
- For a ~50 MW assembly line: estimated 80–150 direct production employees at full ramp

Key Project Data

~50 MW	<12 mo	8%	1 Line
Assembly Scale	**Ramp-Up Timeline**	**Post-Exemption Tax**	**Line Type**
Solar module assembly — initial line capacity target	From line installation to full commercial production	Corporate income tax rate after 10-year full exemption period	Semi-automated assembly line — lower CAPEX, assembly-focused model

Scale: ~50 MW solar module assembly · Investment: small-to-mid scale CAPEX (assembly focus) · Line type: semi-automated · Ramp-up: <12 months · Region: Cuba / Caribbean / Latin America · Source: PVKnowHow / J.v.G. Technology GmbH

13 — FAQ Highlights

Is the ZEDM framework legally stable?

- The ZEDM is governed by a dedicated Cuban law (Decree-Law No. 313) — not subject to ad hoc policy change
- Concession Agreements provide contractual certainty for the duration of the investment term
- Existing zone operators provide operational precedent for the framework

What is the minimum viable scale for assembly?

- A proven turnkey manufacturing concept can be deployed at ~50 MW/year with a semi-automated line
- Semi-automated format keeps CAPEX at assembly-appropriate levels — full automation is not required at entry scale
- Line can be scaled modularly as market demand grows

How are components sourced?

- Solar cells and key materials sourced from established Asian or European suppliers
- Imported duty-free under ZEDM customs exemption for qualifying inputs
- Supply chain qualification support available from an experienced European turnkey provider

14 — Strategic Conclusion

1

Location Advantage

Mariel ZEDM offers the only codified, purpose-built SDZ in the Caribbean — combining port access, tax incentives, and legal certainty in a single framework

2

Manufacturing Window

A ~50 MW semi-automated assembly line can be operational in under 12 months — capturing first-mover position ahead of competing regional capacity

3

Export Platform Logic

Low-cost assembly + duty-free inputs + deep-water port = a structurally competitive export position for Caribbean and LATAM solar markets

A proven turnkey manufacturing concept — with on-site training, process integration, and IEC-compliant line design — reduces the execution risk for investors entering solar module production for the first time in this region.

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

www.jvg-thoma.com

Contact

J.v.G. Technology GmbH

Möningerberg 1a, 92342 Freystadt, Germany

info@jvg-thoma.de | www.jvg-thoma.com

Source:
https://www.pvknowhow.com/countries/cuba/solar-module-factory-mariel-zedm/

Created with the support of JvGLabs — specialist for AI systems and AI-driven visibility. www.jvglabs.com