

A Guide to Establishing a Solar Factory in an Indian Special Economic Zone (SEZ)

A factual, strategic overview for investors and manufacturers

Content Partner: J. v. G. technology GmbH

Turnkey solar module production lines — since 1997

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Technical Overview: Establishing Solar Factories in Indian SEZs



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

100–5...

Scale

Typical export-oriented solar module production capacity per facility

Varies

Investment

Depends on automation level, module format, and overall scope

Few M...


Ramp-Up

Typical timeline after installation completion, line commissioning included

SEZ / I...

Region

Export-oriented units in notified Special Economic Zones across India

 Line type: Automated solar module production line · Source: PVKnowHow / J.v.G. Technology GmbH · Based on composite scenarios

The SEZ Concept: Duty-Free Enclave

What an SEZ Is

- A geographically defined zone treated as foreign territory for customs purposes
- Governed by the SEZ Act 2005 and SEZ Rules 2006
- Operates under a dedicated single regulatory framework separate from Domestic Tariff Area (DTA)
- Units commit to net positive foreign exchange earnings (NFE)

Core Principle

- All goods imported into the zone are treated as not entering Indian customs territory
- No basic customs duty on capital equipment, raw materials, or components
- Manufacturing inputs flow in duty-free; finished goods flow out as exports
- Physical boundary and access controls enforced by customs and development authority

Financial Incentives: Duty-Free Imports and GST Zero-Rating

Zero Basic Customs Duty

- Capital goods (production lines, laminators, testers) imported duty-free
- Raw materials — glass, EVA, backsheet, cells, frames — enter without import tariff
- Significant cost advantage vs. DTA manufacturers subject to standard duty schedules

GST Zero-Rating on Exports

- Goods exported from SEZ are zero-rated under India's GST framework
- No GST charged on outbound supplies; input tax credit fully available
- Eliminates embedded tax cost in export pricing — improves global competitiveness

Additional Fiscal Benefits

- No IGST on procurement of goods and services for authorized operations
- State-level concessions (stamp duty, electricity duty) available in many notified zones
- Net financial impact: materially lower capital and operating cost structure vs. DTA


Tax Considerations and Evolving Policy: The DESH Bill

Current Tax Position (SEZ Act 2005)

- Income tax holiday (Section 10AA) available for eligible SEZ units
- 100% tax exemption on export income for first 5 years; partial thereafter
- Minimum Alternate Tax (MAT) applies – reduces effective benefit for some entities
- Sunset clauses mean new units must verify current eligibility window

DESH Bill – Policy Transition

- Development of Enterprise and Service Hubs (DESH) Bill proposed to replace SEZ Act
- Aims to allow domestic sales alongside exports – relaxing NFE rigidity
- Shift from export-only to broader enterprise hub model under consideration
- Investors should monitor legislative progress; transition terms remain subject to change

 Policy is actively evolving. All tax and incentive structures should be verified against current notifications and legal counsel before investment decisions.

Operational Advantages: Single-Window Clearance

Approval Coordination

- Development Commissioner (DC) serves as single point of contact for all approvals
- Reduces dependency on multiple central and state ministry interfaces
- Faster resolution of import/export documentation and customs queries

Regulatory Streamlining

- Self-certification mechanisms available for compliant SEZ units
- Online filing portals (ICEGATE, SEZ Online) reduce physical documentation burden
- Quarterly compliance reporting replaces transaction-by-transaction approvals

Labour and Compliance Flexibility

- SEZ units may receive partial exemption from certain state labour laws
- Multi-shift operations facilitated with zone authority coordination
- Practical flexibility to scale workforce in line with production ramp-up

Infrastructure Benefits: Power, Logistics, and Ports

Power Supply

- Most notified SEZs are served by dedicated or priority power infrastructure
- Uninterrupted supply critical for lamination and automated line operation
- On-site captive generation and solar rooftop options permitted within zone

Logistics and Warehousing

- Bonded warehousing within zone eliminates re-import duties on materials
- Dedicated road and rail connectivity to ports in major zones (Kandla, JNPT, Chennai)
- On-zone customs presence reduces port dwell time for time-sensitive shipments

Port and Export Proximity

- Coastal SEZs allow direct container loading for module export markets (EU, US, MENA)
- Proximity to port reduces logistics cost and transit risk for fragile module cargo
- Export documentation handled within zone – streamlined container clearance

Setup Process: LoA, Approvals, and Leasing

- 1 — Site Selection and Developer Agreement**
 - Identify notified SEZ; negotiate lease or plot allocation with zone developer
 - Confirm zone type (sector-specific or multi-product) matches manufacturing activity
- 2 — Application to Development Commissioner**
 - Submit Form-F application with business plan, projected NFE, investment details
 - Approval committee (UAC) reviews; DC issues Letter of Approval (LoA)
- 3 — Unit Registration and Bonding**
 - LoA triggers customs bonding of the unit's premises
 - Register on SEZ Online portal; obtain Importer-Exporter Code (IEC) if not held
- 4 — Infrastructure Build-Out and Line Installation**
 - Civil works, utilities, and production line commissioning within bonded premises
 - An experienced European turnkey provider can compress this phase significantly
- 5 — Commencement and First Export**
 - Notify DC of commencement of production; file first shipping bill as SEZ export
 - NFE clock begins; quarterly reporting obligations activated


Export Model and the NFE Requirement

Net Foreign Exchange (NFE) Obligation

- SEZ units must achieve positive NFE cumulatively over a 5-year block
- $NFE = \text{Export earnings (FOB)} - \text{import costs (CIF)}$ over the block period
- Failure to maintain positive NFE triggers customs duty recovery on all prior imports
- NFE compliance is monitored quarterly; reported to Development Commissioner

Export Market Strategy

- Primary markets: EU, US, MENA, Southeast Asia — high demand, no Indian module quota restrictions in SEZ
- Module pricing benchmarked against global spot market (OPIS/Bloomberg)
- Long-term offtake agreements with international EPCs improve NFE predictability
- Currency hedging policy advisable given USD/EUR invoice exposure

 Solar modules exported from SEZ units are not subject to India's Basic Customs Duty (BCD) applicable to DTA manufacturers, preserving price competitiveness in international tenders.

DTA Sales: Domestic Market Access and Constraints

Aspect	Current SEZ Act Position	DESH Bill Direction
DTA Sales Permitted?	Yes — with prior DC approval	Expanded domestic access proposed
Duty Liability on DTA Sales	Full customs duty payable on goods sold into DTA	May be relaxed under new framework
Impact on NFE	DTA sales do not count as export earnings for NFE	Under review in proposed legislation
GST Treatment	DTA supplies treated as deemed imports — GST applies	Expected to align with standard DTA GST
Strategic Implication	Limits ability to serve domestic Indian solar market	Could make SEZ viable dual-market model

❏ DTA sales are a secondary channel. The primary business case for SEZ solar manufacturing remains export-oriented. Domestic market access should be modeled conservatively until DESH Bill is enacted.

Risk and Compliance Overview

1

Regulatory Risk

Policy changes (BCD rates, DESH transition, NFE rules) can alter the financial model; continuous monitoring essential

2

Operational Compliance

Customs bonding, NFE reporting, and DC approvals require dedicated in-house compliance function from day one

3

Supply Chain Exposure

Duty-free inputs are tied to export commitments; disruption to export markets directly endangers NFE position

Key Compliance Obligations

- Quarterly NFE reporting to Development Commissioner
- Annual performance review by Unit Approval Committee (UAC)
- Customs reconciliation of all bonded imports vs. consumption and export
- Maintenance of transaction-level records for customs audit (minimum 5 years)

Mitigation Factors

- Diversified export market base reduces single-market NFE risk
- Long-term offtake contracts lock in export revenue streams
- Engaging experienced SEZ customs advisors reduces procedural non-compliance risk
- Proven turnkey manufacturing concept includes compliance framework handover

Strategic Conclusion: India SEZ as Global Export Hub

Cost Competitiveness

- Duty-free inputs plus low-cost skilled labour create a structurally competitive cost base
- Suitable for high-volume, export-oriented production at 100–500 MW scale

Market Access

- India's trade relationships and export infrastructure support EU, US, and MENA delivery
- Diversification away from single-country supply chains increasingly valued by buyers

Technology Readiness

- Automated turnkey production lines are available and deployable within SEZ constraints
- A proven turnkey manufacturing concept reduces time-to-production and technical risk

- ✔ India's SEZ framework, when combined with an export-first strategy and a structured turnkey manufacturing approach, represents a viable and analytically sound pathway to globally competitive solar module production.

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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