

An Investor's Guide to TKDN-Compliant Solar Module Manufacturing in Indonesia

A comprehensive assessment of turnkey manufacturing opportunities for institutional investors seeking infrastructure-style renewable energy investments with local content compliance.

Reimagining Turnkey Integration: Technical Infrastructure Reviews and Proactive Operational Analytics from J.v.G. Technology GmbH.





Report Details

Created as part of the
PVKnowHow Knowledge
Network

Prepared by J.v.G.
Technology GmbH

European specialists in
turnkey solar module
production lines



**Strategic analysis for
institutional investment in
TKDN-compliant solar
manufacturing infrastructure**



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Knowledge Network



Prepared by an experienced European
turnkey provider
Specialists in semi-automated solar
module production lines

Indonesia's Renewable Energy Investment Context

Indonesia's installed solar energy capacity had only reached 0.7 GW until August 2024, of its total potential of up to 3,200 GW. The government aims for renewable energy to constitute 23% of its total energy mix by 2025, with PLN proposing that the renewable energy mix must reach 75% in Indonesia and targets net-zero emissions by 2060.



Manufacturing Growth Opportunity

Solar PV globally dominates renewable energy contributions, reaching 73% of total installed renewable energy capacity by 2023



TKDN Compliance Strategy

Meeting the TKDN threshold is the fundamental requirement for participating in government-backed projects and tenders issued by PLN



Strategic Market Position

Indonesia's archipelago location and industrial base create opportunities for regional export and domestic supply chain development

Why Local Content Requirements Matter



Market Access Protection

TKDN creates a separate, protected market segment inaccessible to standard importers, offering a unique opportunity for local manufacturers



Industrial Development

TKDN reduces reliance on imports, creates skilled jobs, and fosters a robust domestic manufacturing ecosystem



Government Project Access

Participation in most government-sponsored projects hinges on manufacturers meeting minimum 40% TKDN for ground-mounted solar power plants

What TKDN Is and How It Is Calculated

TKDN (Tingkat Komponen Dalam Negeri) is a measure of the local components used in producing goods, services, or a combination of both. The calculation is managed by the Indonesian Ministry of Industry and uses a cost-based approach.

Materials Component

- Value of components sourced from Indonesian suppliers counts toward local content
- Aluminum frames, glass, junction boxes
- Imported components are considered foreign content

Labor & Overhead

- Cost of the local workforce involved in assembly and production contributes significantly to TKDN value
- Factory operational costs incurred within Indonesia
- Direct and indirect production expenses

Strategic BOM for TKDN Compliance

Local Components (High TKDN Value)

- Aluminum Frames: Indonesia has a domestic aluminum extrusion industry capable of producing high-quality frames
- Solar Glass: Local glass manufacturers can supply tempered, low-iron glass
- Junction Boxes & Cables: Growing number of local suppliers
- Packaging Materials: Cartons, corner pieces, and pallets readily available locally

Imported Components (Foreign Content)

- Solar Cells: Currently, high-efficiency solar cells are predominantly manufactured abroad. Importing them is standard practice
- EVA (Ethylene Vinyl Acetate) encapsulant
- Backsheet materials from international suppliers
- Specialized polymer films for module quality

Factory Configuration: 50-100 MW Annual Capacity

Semi-Automated Production Line

Turnkey manufacturing line optimized for TKDN compliance with quality control systems and certification readiness

Location Strategy

Site near Jakarta, Java, recommended for logistical advantages, including proximity to major ports and access to skilled labor pool

Supply Chain Integration

Comprehensive supplier audit to identify and qualify Indonesian providers of aluminum frames, solar glass, junction boxes, and packaging materials

Certification Readiness

Certification process managed by independent bodies like PT Surveyor Indonesia (PTSI) conducting thorough audit of production facility



Investment & Staffing Requirements

1

Infrastructure Development

- Factory site preparation and utilities connection
- Building construction and facility setup
- Initial workforce recruitment and assessment

2

Technology Transfer Implementation

- An experienced European turnkey provider delivers equipment installation
- Comprehensive technical training programs
- TKDN compliance systems and local supplier integration

Certification Process

TKDN Certification Steps

- Compliance with TKDN requirements must be verified by an independent entity. Results submitted to DGNRE
- Detailed audit of manufacturing process and cost structure
- Documentation of local supply chain and labor costs
- Verification of claimed TKDN percentage accuracy

PLN Market Access

- Securing official PLN certification qualifies products for government projects through rigorous technical audits
- Product performance testing and quality verification
- Compliance with international standards
- Administrative sanctions apply for non-compliance

Timeline to Market

Months 1-3: Foundation

Site preparation, regulatory compliance, and initial local supplier identification and qualification process

Months 4-8: Installation

Turnkey line installation, comprehensive technical training programs, and quality systems implementation

Months 9-12: Ramp-up

Production optimization, TKDN certification process, and transition to autonomous operation with ongoing support

Months 12+: Certification

PLN certification process completion and full market access for government and private sector projects

Competitive Positioning

Protected Market Access

TKDN regulation creates a protected market for producers who can successfully navigate local sourcing and manufacturing complexities

Supply Chain Advantage

Building a resilient, domestic-focused manufacturing ecosystem presents both challenge and opportunity

Technology Leadership

European technical standards and quality systems with proven turnkey implementation methodology

Regulatory Compliance

Recent policy relaxations benefit manufacturers with investment commitment to locally produce and meet LCR by 2025

Key Project Data

MW

Production Capacity

Annual manufacturing output

Line Type

Semi-automated turnkey
manufacturing line with quality
control systems

Months

Ramp-up Period

Training to autonomous operation (+
certification)

Million USD

Investment Range

Semi-automated turnkey line
investment

Region

Indonesia

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

Strategic Investment Conclusion

Market Opportunity

Indonesia's massive solar potential of 3,200 GW with only 0.7 GW currently installed creates substantial manufacturing demand

Protected Market Access

TKDN compliance creates sustainable competitive advantage with an experienced European turnkey provider reducing technology and operational risks

Operational Excellence

Proven methodology enables autonomous operation within 9-12 months with comprehensive training and ongoing support framework



Market Opportunity

Huge untapped solar potential in Indonesia



TKDN Compliance

Essential for government project access



Turnkey Production

Semi-automated lines with European expertise



Local BOM Strategy

Maximize frames, glass, packaging locally



Imported Components

High-efficiency cells and specialty films



Certification Path

Independent audits, DGNRE & PLN approval



Timeline to Market

12 months to ramp and certification



Investment Focus

Infrastructure, training, supplier integration

Source & Authorship

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Turnkey Solar Module Production Lines

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