

# Financial Modeling for a Tunisian Solar Factory: A Complete Investment Case from CAPEX to ROI

Turnkey Manufacturing Analysis by J.v.G. Technology GmbH





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 Framework



## Knowledge Base

Industrial development methodology  
and best practices



## Technology Provider

An experienced European turnkey  
provider



## Manufacturing Expertise

Proven turnkey manufacturing concept

# Brownfield vs Greenfield Analysis

## Greenfield Approach

- New construction on undeveloped land
- Complete design freedom for optimal efficiency
- 12-18 month development timeline
- Higher initial capital requirements

## Brownfield Conversion

- Repurposing existing industrial facilities
- 20-40% lower initial capital expenditure
- 8-10 month operational timeline
- Design constraints from existing structure

# Brownfield Strategic Advantages



## Capital Efficiency

Significant reduction in capital expenditure by eliminating land acquisition and new construction costs



## Time-to-Market

Operational in 8-10 months versus 12-18 months for greenfield development



## Infrastructure Access

Existing foundations, utilities, and logistics connections already in place



# Tunisia Economic Context

Tunisia targets 35% renewable electricity by 2030, creating stable domestic demand. Strategic position as solar export hub to Europe creates compelling manufacturing opportunities.

1

## Strategic Location

- Established export infrastructure to EU markets
- Streamlined permit processes
- Reliable utilities and logistics networks

2

## Financial Incentives

- Tax holidays and customs duty exemptions
- Reduced import duties on equipment
- Attractive investment incentives

# Engineering and Infrastructure Requirements

## Structural Assessment

Technical audit of structural integrity, floor load capacity, and electrical systems required

## Environmental Controls

HVAC system upgrades for dust-free manufacturing environment

## Equipment Integration

Retrofitting costs for electrical and structural upgrades can be substantial

## Floor Reinforcement

Structural reinforcement to support production equipment load capacity

# Key Project Data

## Scale

50 MW

## Investment

€3.5–5.0 million CAPEX

## Line Type

Semi-automated solar module production

## Ramp-up

12–18 months

## Region

Tunisia

## Source

PVKnowHow / An experienced European turnkey provider

# Investment Distribution & Timeline

## Investment Breakdown

- Site acquisition: 10-20% of total investment
- Building retrofitting: 25-35% of investment
- Production equipment: 40-50% of investment

## Implementation Timeline

- Months 1-3: Site assessment and approvals
- Months 4-5: Building retrofitting
- Months 6-7: Equipment procurement
- Months 8-12: Commissioning and ramp-up

# Technology Integration

## Production Technology

TOPCon tunnel oxide passivated contact with 25% efficiency potential

## Line Compatibility

Utilizes existing PERC infrastructure with additional oxide deposition steps

## Compliance Standards

Dual UL and IEC certification for international market access

# Risk Assessment

## Technical Risk

- Structural integrity assessment
- Equipment integration challenges
- Quality certification timeline

## Financial Risk

- Unexpected retrofitting costs
- Investment recovery timeline
- Market demand fluctuations

## Operational Risk

- Skilled workforce availability
- Supply chain logistics
- Regulatory compliance changes

# Strategic Conclusion

## **Brownfield Advantages**

More pragmatic and financially accessible route for first-time market entrants

## **Tunisia Positioning**

Strategic location provides logistical advantages for domestic and export markets

## **Implementation Viability**

Compelling business case for emerging markets with established industrial zones

# Source & Authorship

J.v.G. Technology GmbH

Turnkey Solar Module Production Lines

PVKnowHow Knowledge Network

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