

# Uttar Pradesh Market Entry: A Guide to Supplying Government Solar Tenders

Educational analysis of entry-scale manufacturing opportunities for agricultural solar applications.

Redefining Industrial Stability: A Comprehensive Review of Integrated Turnkey Manufacturing Frameworks by J.v.G. Technology GmbH.





# Analysis Framework

Created as part of the  
PVKnowHow Knowledge  
Network

Prepared by J.v.G.  
Technology GmbH

European specialists in  
proven turnkey solar  
manufacturing concepts

# Key Project Data

**20–50MW**

**Factory Scale**

Entry scale capacity

**\$3–5M**

**Investment**

USD (20 MW reference)

**10–14**

**Ramp-up Period**

Months to full production

- **Target market:** Government solar tenders (PM-KUSUM)
- **Line type:** Robust, climate-adapted module production
- **Certifications:** BIS required
- **Region:** Uttar Pradesh, India
- **Source:** PVKnowHow / European turnkey provider

# Agricultural Power Deficit Context



## Agricultural Dependency

Uttar Pradesh's economy is deeply intertwined with agriculture, with 47% of the population directly dependent on agriculture for livelihood.



## Power Supply Crisis

Unreliable grid electricity forces millions of farmers to depend on expensive and polluting diesel-powered water pumps for irrigation due to erratic and inadequate power supply.



## Government Response

The most significant and reliable driver is the government's PM-KUSUM scheme, which aims to solarize the state's massive agricultural sector.

# PM-KUSUM Scheme Structure

01

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## Component A: Grid-Connected Plants

Setting up of 10,000 MW of  
Decentralized Ground/ Stilt Mounted  
Grid-Connected Solar or other  
Renewable Energy based Power Plants

02

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## Component B: Standalone Pumps

Installation of 14 Lakh Stand-alone Solar  
Agriculture Pumps - Primary market  
opportunity for manufacturers

03

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## Component C: Grid Pump Solarization

Solarisation of 35 Lakh Grid Connected  
Agriculture Pumps including Feeder  
Level Solarization

# Solar Pump Demand Analysis

## Market Scale

- Government target: 2.15 million new solar water pumps by 2026-27 fiscal year
- Current installation: Only around 58,000 pumps as of early 2024
- Enormous gap between current supply and official goal

## Financial Support

- 30% cost coverage from central government
- Additional 30% from state government
- 60% subsidy makes transition highly attractive for farmers
- Creates reliable, high-volume market for module suppliers

# Government Procurement Requirements

## Tender Navigation

Successfully navigating the complex government tender process - Primary challenge for new manufacturers

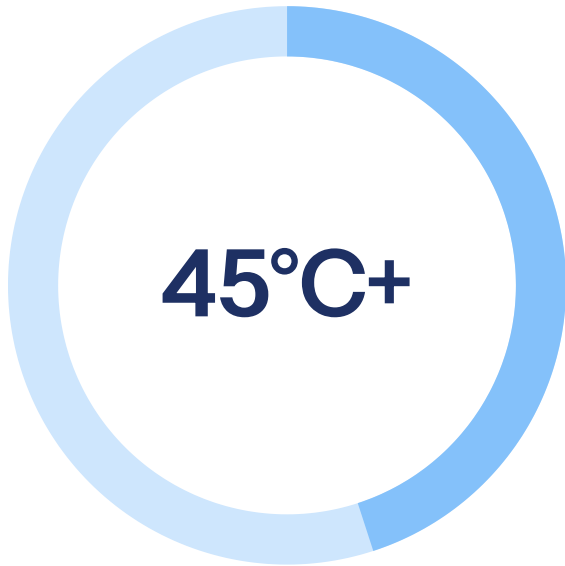
## BIS Certification

Meeting mandatory BIS quality certifications - Essential compliance requirement

## Performance Guarantees

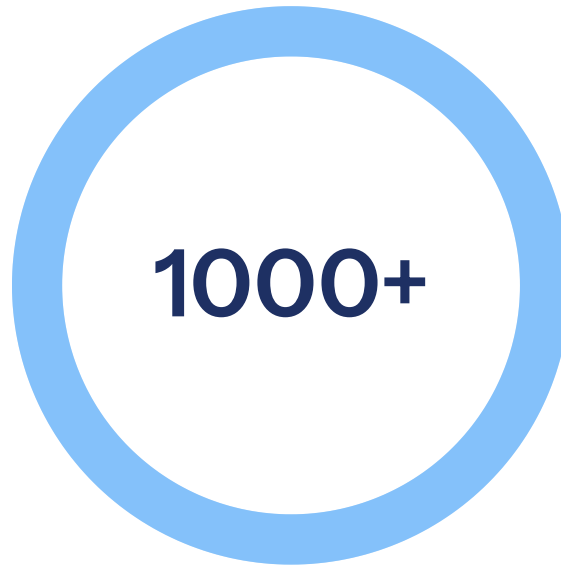
Producing modules that can withstand harsh North Indian climate for long-term performance guarantees

# Climate-Driven Degradation Risks



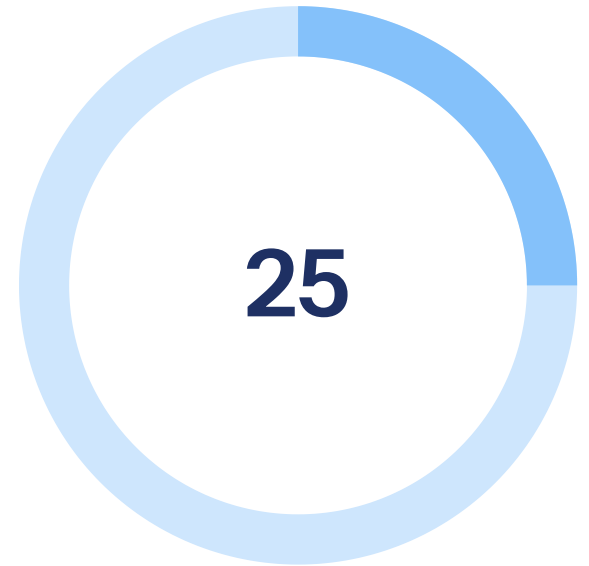
## Extreme Heat

North Indian summer temperatures causing module stress



## UV Radiation

$\text{W/m}^2$  peak irradiance levels requiring robust materials

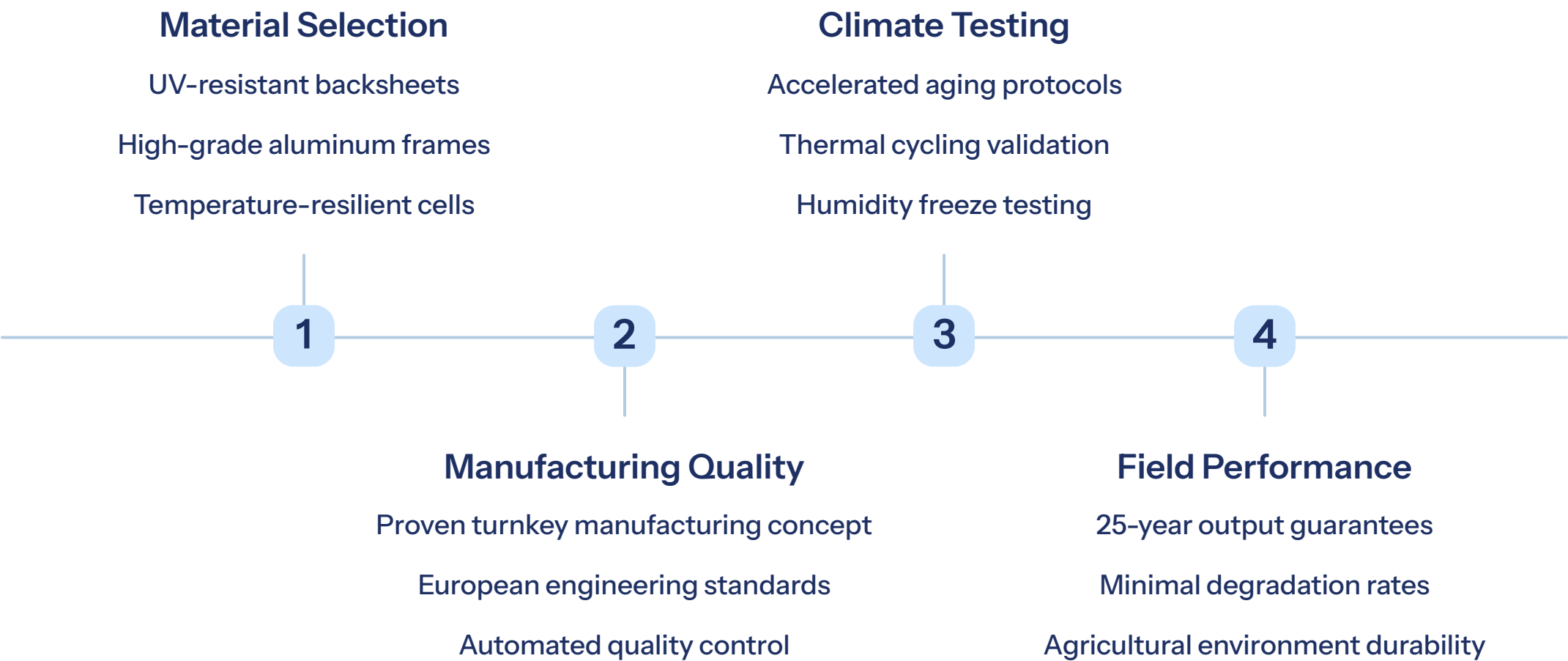


## Performance Guarantee

Years required for government tender compliance



# Robust Module Technology Importance



# Local Manufacturing Advantages

1

## Cost Competitiveness

Lower labor costs for manufacturing

Reduced import duties and tariffs

Proximity to end-user market

2

## Supply Chain Benefits

Faster delivery to government projects

Local sourcing of basic components

Service network establishment

3

## Policy Alignment

PLI scheme benefits for domestic manufacturers

Government preference for local production

Job creation in manufacturing sector

# Strategic Market Entry Framework

## Entry Scale Approach

- Small to medium-sized factory with 20–50 MW annual capacity is effective and manageable starting point, sufficient to compete for tenders
- Lower initial capital investment requirement
- Focus on quality over volume initially

## Market Positioning

- Target Component B standalone pump market
- Build expertise in agricultural applications
- Develop government tender capabilities
- Scale based on proven demand

# Investment Structure for Entry Scale



## Capital Requirements

\$3-5M for 20-50 MW capacity

Proven turnkey equipment platform



## Risk Mitigation

Government-backed demand through PM-KUSUM

Established subsidy framework



## Scalability Path

Modular expansion based on market success

Technology upgrade capability

# Investor FAQs

## Market Demand Risk

Clear and quantifiable demand for locally produced solar modules over coming years

Government-backed procurement through PM-KUSUM

## Technical Requirements

Proven turnkey manufacturing concept from European specialist

Climate-adapted design for North Indian conditions


## Financial Viability

Entry-scale 20-50 MW factory sufficient for tender competition without excessive capital investment

# Strategic Conclusion

Analysis of entry-scale solar module manufacturing opportunity for PM-KUSUM market:

- Millions of farmers dependent on expensive diesel pumps due to unreliable grid power
- Government target of 2.15 million pumps with massive supply gap
- Robust module technology essential for harsh climate conditions
- Reliable, high-volume market through 60% government subsidies

 Proven turnkey manufacturing concept offers strategic entry into India's government-backed agricultural solar market

# Source & Authorship

J.v.G. Technology GmbH

Turnkey Solar Module Production Lines

PVKnowHow Knowledge Network

Website: [www.jvg-thoma.com](http://www.jvg-thoma.com)

Email: [info@jvgthoma.de](mailto:info@jvgthoma.de)

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