

# Co-relation between Challenge Management and Solar Energy Adoption in Jharkhand

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# Background & Context

- Jharkhand is a tribal & forest-dominated state with high solar potential
  - 24.7% tribal population; 91.7% live in remote rural/forest areas
  - Solar power achieved: 227 MW vs 1092 MW planned (FY25)
  - Energy access critical for livelihood, irrigation & conflict reduction

# Research Gap & Need

- Low solar adoption despite abundant solar radiation
- Limited documented statistical evidence for policy use
- Need to link adoption challenges with socio-economic outcomes
- This study provides correlation-based empirical evidence

# Objectives & Hypotheses

- Objectives:
  - Examine challenges affecting solar adoption
  - Assess socio-economic & environmental impacts
- Hypotheses:
  - Awareness & cost reduction influence adoption
  - Solar adoption improves livelihood & employment
  - Solar adoption enhances environmental sustainability

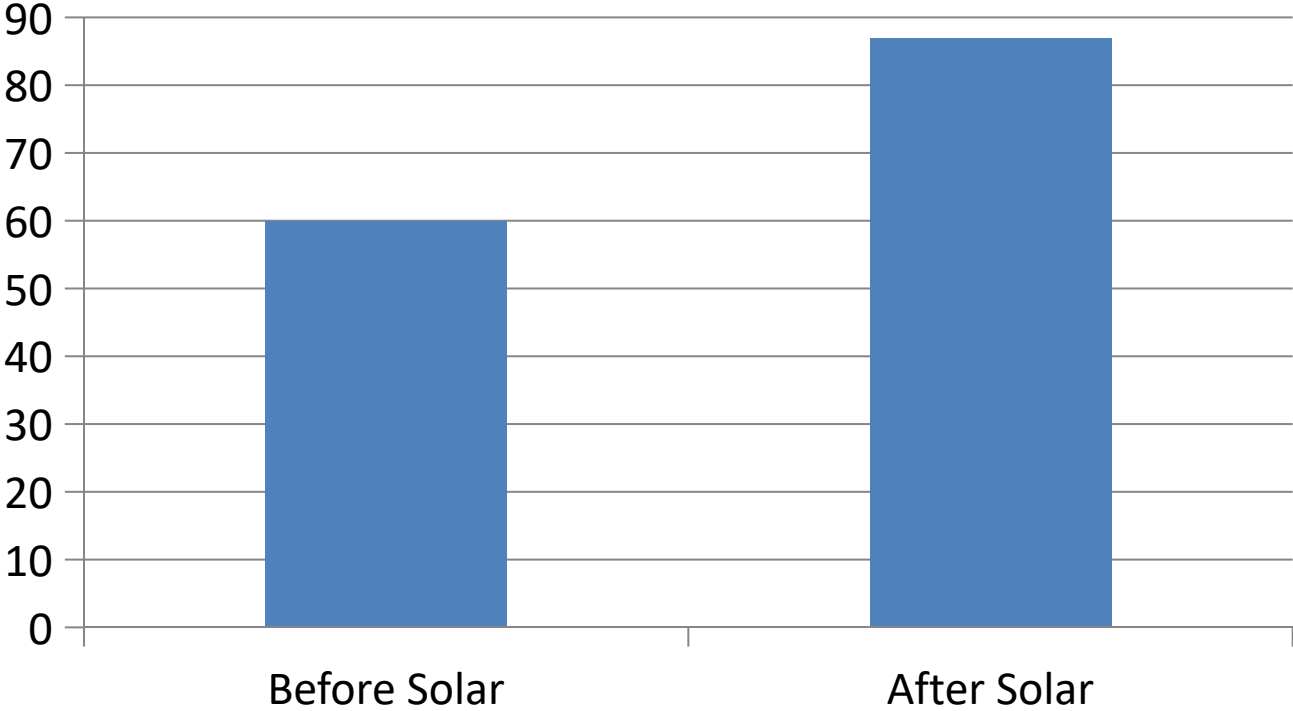
# Research Methodology

- Mixed-methods research design
- Quantitative survey: 300 households (150 rural, 150 urban)
- Qualitative interviews: residents, officials, implementers
- Statistical tools: Correlation, Paired t-test, Regression analysis

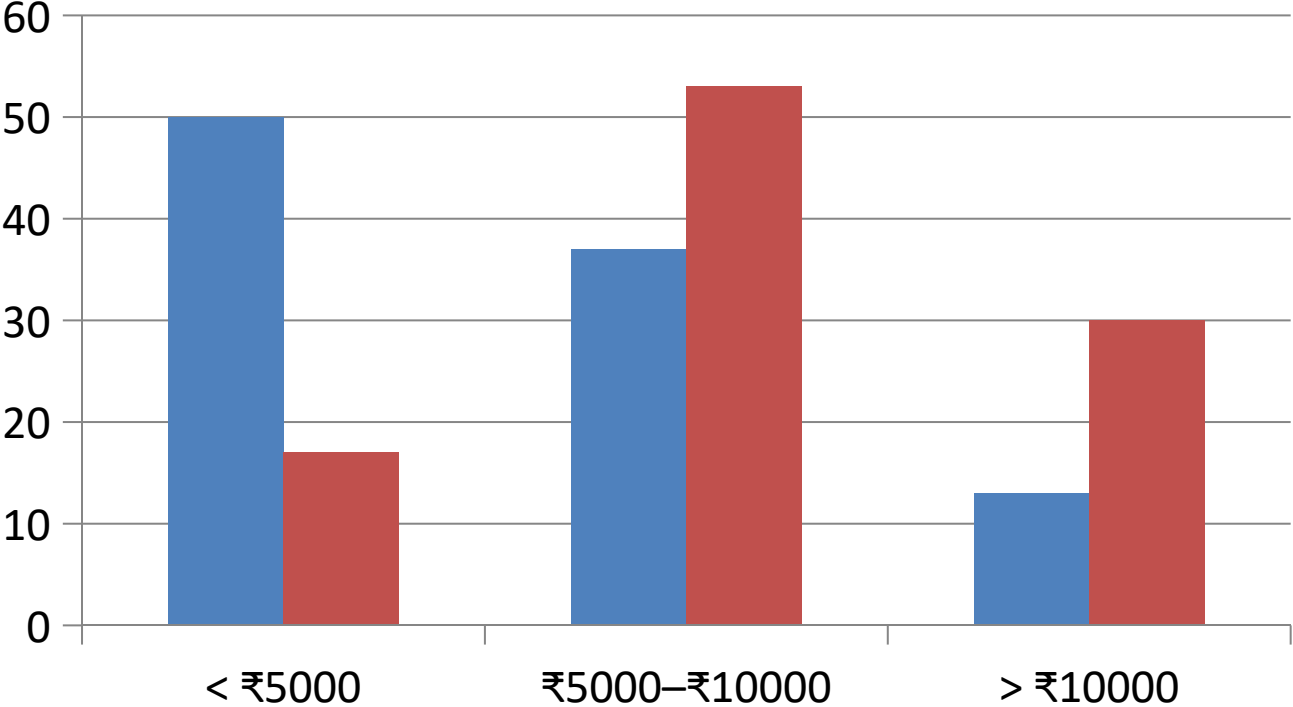
# Sample Demographic Profile

Category	Group	Percentage
Gender	Male	60%
Gender	Female	40%
Location	Rural	50%
Location	Urban	50%

# Employment Status Before & After Solar Adoption



# Income Improvement After Solar Projects



# Key Statistical Results

- Awareness vs adoption:  $r = 0.78 - 0.81$  (strong correlation)
- Solar adoption vs employment/livelihood:  $r = 0.73 - 0.84$
- Paired t-test (employment):  $t = 12.35$ ,  $p < 0.001$
- Regression (carbon reduction):  $R^2 = 0.56$

# Conclusion & Policy Implications

- Solar energy significantly improves socio-economic conditions
- Strong role in employment, income & rural electrification
- Reduces carbon footprint & human-wildlife conflict
- Policy focus: awareness, cost reduction & decentralized solar models