ORIGINAL RESEARCH PAPER

Commerce

KEY WORDS: Solar Energy, Net Profit Ratio, Tata Power, Adani Green Energy, Financial Performance, India

STUDY ON PROFITABILITY ANALYSIS OF SELECTED SOLAR ENERGY COMPANIES OF INDIA

Miss Kavita Maganbhai Desai — Research Scholar, Subject: Accountancy/Commerce, Hemchandracharya North Gujarat University, Patan - Gujarat

Dr. Arvind M. Patel — Research Supervisor and Principal, Idar Anjana College of Commerce and Arts, Idar – Gujarat

ABSTRACT

India has emerged as one of the world's fastest-growing solar markets, supported by ambitious national targets, falling module prices and favourable policy. Yet rapid capacity addition does not automatically translate into shareholder value. This study examines the financial performance of selected solar-focused energy companies in India, using the Net Profit Ratio (NPR) as the principal indicator of profitability. The sample comprises Adani Green Energy Limited, Tata Power Company Limited and, as a comparator, SJVN Limited. Secondary data were drawn from published results and industry dashboards for FY2022 to FY2025. Descriptive statistics and a simple hypothesis framework were applied. The findings show that Adani Green maintained a net margin of roughly 10 to 13 per cent, Tata Power's consolidated margin hovered near 6.5 to 7 per cent owing to its diversified thermal-heavy portfolio, and hydro-dominated SJVN reported far higher margins. The study concludes that pure-play renewable companies earn superior margins but carry heavy leverage, and recommends balanced capital structures, cost optimisation and technology diversification.

1. INTRODUCTION

Energy security and climate commitments have pushed India towards renewable sources. The country has set a target of 500 GW of non-fossil capacity by 2030, and solar power is expected to contribute the largest share. Auctions conducted by agencies such as the Solar Energy Corporation of India have driven tariffs to historically low levels, attracting both established conglomerates and specialised developers. For investors, lenders and policymakers, a critical question is whether these companies are financially sustainable. Solar projects are capital-intensive, funded largely through debt, and earn revenue under long-term power purchase agreements. Low operating costs and predictable cash flows are advantages, but high depreciation and interest charges can compress bottom-line profit. Financial performance is commonly judged through liquidity, solvency, activity and profitability ratios. Among profitability measures, the Net Profit Ratio shows what portion of every rupee of revenue remains as profit after all expenses, interest and taxes. It is therefore a comprehensive indicator of efficiency and cost control. This paper studies the Net Profit Ratio of selected Indian solar energy companies, tests a hypothesis about differences in profitability, and offers findings and suggestions for managers and investors. The objectives are: (i) to calculate and compare NPR of the selected companies; (ii) to test whether profitability differs significantly across them; and (iii) to recommend measures for improving financial performance.

2. Review of Literature

Profitability of Renewable Energy Firms. Research on renewable energy companies generally finds that firms with long-term contracted revenue enjoy stable and relatively high operating margins compared with conventional utilities. Studies of Indian renewable developers highlight that margins improve as projects move from construction to operation, because interest capitalised during construction is replaced by revenue-generating capacity.

Capital Structure and Financial Risk. A second body of literature stresses that renewable developers rely heavily on debt, making leverage ratios central to their financial health. Researchers argue that although stable tariffs support debt servicing, high interest burdens reduce net profitability and make companies sensitive to interest rate changes and refinancing conditions. Indian studies also note that access to low-cost international capital has been a distinguishing advantage for larger groups.

Policy, Tariffs and Competitiveness. A third strand examines how government incentives, reverse auctions, tax benefits and domestic manufacturing schemes shape company returns. Scholars observe that aggressive bidding reduced tariffs and squeezed margins for some developers, while delays in land acquisition, transmission connectivity and payments from distribution companies increased working capital needs. Together, these studies suggest that profitability in solar depends on scale, funding cost and policy stability, which this paper examines through the Net Profit Ratio.

3. Research Methodology

- **Research Design.** The study is descriptive and analytical in nature, based entirely on secondary data.
- **Sample Selection.** Companies were chosen purposively. Adani Green Energy Limited represents a pure-play renewable developer, and Tata Power Company Limited represents a diversified utility with a rapidly growing solar and renewable business. SJVN Limited, a public sector utility with a hydro-dominated portfolio and growing solar capacity, was added as a comparator under the heading of other companies. Companies such as ReNew, JSW Energy and Waaree Energies could be added in extended studies once audited annual-report data are compiled.
- **Period of Study.** The period covers financial years FY2022 to FY2025 for Adani Green, and FY2023 and FY2024 for Tata Power and SJVN, depending on available data.
- **Data Sources.** Data were collected from company results as reported on financial data platforms and from the IEEFA PowerPulse dashboard of listed power sector companies. Readers should verify figures against audited annual reports before citing them in formal work.
- **Tool of Analysis.** The Net Profit Ratio is calculated as: *Net Profit Ratio (%) = (Net Profit after Tax ÷ Revenue from Operations) × 100* Mean values and percentage changes are used for comparison. A two-sample t-test is proposed for hypothesis testing once a longer series is compiled.
- **Limitations.** The sample is small and the time frame short. Tata Power reports consolidated results that include non-solar businesses, so its margin is not purely a solar margin. Differences in accounting treatment, exceptional items and revenue definitions may affect comparability.

4. Net Profit Ratio Analysis

4.1 Adani Green Energy

Adani Green's reported revenue rose from about ₹5,133 crore in FY2022 to ₹11,212 crore in FY2025, while net profit increased from ₹489 crore to ₹1,444 crore. The resulting Net Profit Ratio is shown below.

Year	Revenue (₹ crore)	Net Profit (₹ crore)	NPR (%)
FY2022	5,133	489	9.53
FY2023	7,775	974	12.53
FY2024	9,220	1,100	11.93
FY2025	11,212	1,444	12.88

The four-year mean NPR is approximately 11.72 per cent. The ratio improved sharply between FY2022 and FY2023, dipped slightly in FY2024 and reached its highest level in FY2025.

4.2 Tata Power

Tata Power's consolidated figures, reported in rupees billion, give the following ratios.

Year	Revenue (₹ billion)	Net Income (₹ billion)	NPR (%)
FY2023	551.1	38.1	6.91
FY2024	614.5	40.1	6.53

Revenue grew 11.5 per cent and net income 5.2 per cent, so the margin slipped marginally. The average is about 6.7 per cent. Because Tata Power's revenue includes generation, distribution and trading, this ratio understates the profitability of its renewable arm alone.

5. Hypothesis of Net Profit Ratio

To examine whether profitability differs across the selected companies, the following hypotheses are framed:

H0: There is no significant difference in the mean Net Profit Ratio of Adani Green Energy and Tata Power.

H1: There is a significant difference in the mean Net Profit Ratio of Adani Green Energy and Tata Power.

Adani Green's mean NPR of about 11.72 per cent is nearly five percentage points above Tata Power's mean of about 6.7 per cent, and every annual observation for Adani Green exceeds every observation for Tata Power. This pattern supports rejection of H0 in descriptive terms. A formal t-test is not reliable with only two observations for Tata Power, so the result should be treated as indicative. Researchers should extend the series to at least five to ten years, or use quarterly data, and apply a two-sample t-test at the 5 per cent significance level before drawing statistical conclusions.

6. Major Findings

1. Pure-play Renewable Firms Earn Higher Margins. Adani Green's NPR stayed between 9.5 and 12.9 per cent, well above Tata Power's consolidated 6.5 to 6.9 per cent.
2. Profitability Improved as Capacity Matured. Adani Green's margin rose from 9.53 per cent in FY2022 to 12.88 per cent in FY2025 as operational capacity grew and revenue scaled.
3. Diversification Dilutes Margins. Tata Power's thermal, distribution and trading operations carry thinner margins, which pull down its consolidated ratio even as its renewable segment expands.
4. Asset Mix and Age Strongly Influence Net Profit. SJVN's margins of 35 to 46 per cent show that older, lower-cost assets generate far greater net profit than newly financed solar plants.
5. High Leverage is the Main Risk. Adani Green's debt-to-equity ratio was reported at about 6.6 times in FY2025, indicating that interest costs and refinancing risk remain central to net profit sustainability.

7. Suggestions

1. Strengthen Capital Structure. Solar developers should reduce reliance on short-term and high-cost debt by using green bonds, refinancing at lower rates and bringing in long-term infrastructure investors so that interest expense absorbs less of revenue.
2. Pursue Cost Optimization and Technology Upgrades. Companies should adopt efficient modules, trackers, digital monitoring and in-house manufacturing, together with energy storage, to raise plant load factors and protect margins as tariffs decline.
3. Separate and Disclose Renewable Segment Performance. Diversified firms such as Tata Power should publish segment-wise profitability, and investors should compare companies on a like-for-like basis, supported by stronger payment-security and transmission policies from the government.

8. CONCLUSION

This study examined the Net Profit Ratio of selected Indian solar energy companies. The evidence shows that Adani Green Energy, a pure-play renewable developer, achieved steadily improving margins of around 12 per cent, while Tata Power's diversified structure kept its consolidated margin near 6.5 to 7 per cent. SJVN's exceptionally high margins underline how asset age and funding cost shape profitability. At the same time, heavy borrowing makes renewable developers vulnerable to interest rate shifts and refinancing stress. Sustainable value creation will therefore depend on disciplined capital management, technological efficiency and supportive policy. Future research should enlarge the sample, include companies such as ReNew, JSW Energy and Waaree Energies, and combine the Net Profit Ratio with return on equity, interest coverage and debt-equity measures.

REFERENCES

1. Adani Green Energy Limited. Financials FY2022–FY2025. Equities India. https://equitiesindia.com/stocks/ADANIGREEN/financials
2. Institute for Energy Economics and Financial Analysis (IEEFA). PowerPulse: India Corporate Dashboard, 4Q FY2024. https://ieefa.org/sites/default/files/2024-06/PowerPulse%204Q%20FY2024_0.pdf
3. Pandey, I. M. Financial Management. Vikas Publishing House.
4. Kothari, C. R. Research Methodology: Methods and Techniques. New Age International.
5. Ministry of New and Renewable Energy, Government of India. Annual Reports. https://mnre.gov.in
6. Company annual reports of Tata Power, Adani Green Energy and SJVN (for verification of figures).