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A Study On Solvency Position Of Selected Green Energy Companies In India

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Abstract: Green energy firms are at the vanguard of the global transition to sustainable and renewable energy sources, such as solar, wind, hydro, and biomass. These companies work to reduce carbon emissions and promote environmental sustainability while experiencing financial and operational hurdles. This study examines green energy enterprises' financial performance, growth potential, and obstacles, focusing on investment trends, government legislation, and technology breakthroughs. It also investigates the importance of financial measures in determining the long-term viability and profitability of these businesses. The findings can help investors, governments, and industry stakeholders build a more sustainable energy future.

Key words – Green Energy Sector, Investment, Financial Performance, financial stability.

I. INTRODUCTION

Financial management is critical to green energy companies' long-term viability and competitiveness. Capital investment, debt management, profitability, and risk assessment all have an impact on their financial well-being. Furthermore, financial tools such as green bonds, venture capital, and government subsidies have become critical in promoting the growth of renewable energy initiatives. This study examines the financial environment of green energy companies, focusing on important funding sources, financial issues, and investment methods. It also investigates how financial stability affects industry growth and sustainability, with implications for investors, policymakers, and stakeholders in the renewable energy sector. The green energy sector has emerged as a crucial actor in the worldwide transition to sustainability, with a concentration on renewable sources such as solar, wind, hydro, and biomass. As the demand for clean energy develops, green energy companies will need large financial resources to fund research, development, infrastructure, and operations. The green energy industry's financing is complicated, combining government incentives, private investments, and creative funding approaches to support growth and sustainability.

II. REVIEW OF LITERATURE:

Zhang and Tang (2020) found that firms investing in innovative renewable technologies tend to achieve higher profit margins due to increased energy efficiency and cost reductions. Their study emphasized that advancements in solar panel efficiency, wind turbine design, and battery storage technology have significantly lowered production and operational costs, leading to improved financial performance. Furthermore, they noted that companies integrating smart grid technologies and automation benefit from optimized energy distribution, reducing waste and enhancing overall profitability. The research also highlighted that firms adopting cutting-edge innovations attract more investors and government incentives, further strengthening their financial stability and market competitiveness.

Smith and Lee (2019) emphasized that larger renewable energy companies benefit from economies of scale, leading to lower production costs and improved financial performance. Their study highlighted that as firms expand their operations, they achieve cost efficiencies through bulk purchasing of raw materials, streamlined supply chain management, and reduced per-unit labor costs. Additionally, larger companies can negotiate better financing terms and secure long-term power purchase agreements (PPAs), providing stable revenue streams. The research also pointed out that established renewable energy firms have greater access to advanced technologies and research investments, allowing them to enhance operational efficiency and maintain a competitive edge in the industry.

Gupta and Sharma (2022) suggested that a well-balanced capital structure, consisting of equity financing and long-term debt, enhances financial sustainability and reduces financial risk for green energy firms. Their study emphasized that an optimal mix of debt and equity allows firms to maintain liquidity while funding large-scale renewable energy projects without excessive financial strain. Companies with a higher proportion of equity financing benefit from lower interest obligations, reducing the burden of fixed costs and improving long-term profitability. On the other hand, leveraging long-term debt at favorable interest rates enables firms to finance capital-intensive infrastructure projects without diluting ownership. The research also highlighted that firms with a stable capital structure are more attractive to investors and lenders, as they demonstrate strong financial management and resilience against market fluctuations.

Brown and Wilson (2020) argued that fluctuations in government policies, such as subsidy reductions and tax policy changes, can significantly impact revenue streams and overall financial stability. Their study highlighted that renewable energy firms often rely on government incentives, such as feed-in tariffs, investment tax credits, and production-based subsidies, to offset high initial capital costs and ensure steady returns. When these incentives are reduced or abruptly removed, companies may struggle to maintain profitability, leading to project delays, reduced investor confidence, and financial distress. The research further noted that inconsistent regulatory frameworks create uncertainty, making it difficult for firms to plan long-term investments and expansion strategies.

III.STATEMENT OF THE PROBLEM

Green energy companies have major financial problems that affect their long-term viability and growth. Despite increased investments in renewable energy, many companies face high capital costs, unpredictable government policies, shifting subsidies, and changing market demands. The reliance on government subsidies and external finance frequently causes financial instability, making it difficult for these businesses to maintain constant profitability. Additionally, concerns with capital structure, risk management, and access to finance impede their capacity to scale operations and compete with established energy providers. The purpose of this study is to examine the financial performance, stability, and sustainability of green energy companies, with a focus on important financial metrics, investment trends, and policy influences, in order to propose measures that improve their long-term survival.

IV.OBJECTIVES

1. To know the short term and long term solvency position of selected companies.
2. To Evaluate Debt Management

V.RESEARCH METHODOLOGY

This study uses an analytical research methodology to assess the financial performance of green energy companies by examining solvency ratios over a 10-year period (2015 – 2016 to 2023 – 2024). The study focuses on five key renewable energy companies: Adani Green Energy, Suzlon Energy, Tata Power, JSW Energy, and NTPC Green.

STATISTICAL TOOLS

The following are the statistical tools used to analyse the data

- Ratio Analysis, Mean, Standard Deviation , CAGR.

VI.LIMITATIONS OF THE STUDY

- The study is purely an analytical study and it depends on the published annual reports of the companies and records of statistical officials.
- The researcher made the analysis for 10 years only.
- The study is confined to only selected Green energy companies.

VII.ANALYSIS AND INTERPRETATION

SHORT TERM AND LONG TERM SOLVENCY RATIOS

Ratio	Year / Company	NTPC	Suzlon	Tata power	Adani	JSW
CURRENT RATIO	Mar-15	1.65	0.97	0.65	2.06	1.28
	Mar-16	1.14	0.68	0.48	1.9	0.48
	Mar-17	0.94	0.61	0.33	1.28	0.62
	Mar-18	1.01	0.58	0.47	1.99	0.93
	Mar-19	0.84	0.31	0.49	2.96	1.07
	Mar-20	0.96	0.12	0.5	3.64	1.34
	Mar-21	0.91	0.68	0.43	2.76	1.33
	Mar-22	0.91	0.77	0.55	2.02	3.49
	Mar-23	1.05	0.75	0.45	1.43	0.7
	Mar-24	0.99	0.79	0.52	0.95	0.81
	Mean	1.04	0.626	0.487	2.099	1.205
	S.D	0.22	0.23	0.08	0.78	0.81
	CAGR	-5.52	-2.25	-2.45	-8.24	-4.96
LIQUID RATIO	Mar-15	0.53	0.89	0.42	1.16	0.41
	Mar-16	0.41	0.47	0.26	1.14	0.35
	Mar-17	0.35	0.32	0.2	1.24	0.39
	Mar-18	0.44	0.32	0.12	0.55	0.73
	Mar-19	0.39	0.17	0.18	0.47	0.84
	Mar-20	0.38	0.06	0.13	0.89	0.76
	Mar-21	0.37	0.23	0.16	0.7	0.72
	Mar-22	0.39	0.19	0.23	0.73	1.41
	Mar-23	0.61	0.22	0.25	0.94	0.4
	Mar-24	0.48	0.16	0.29	1.08	0.57
	Mean	0.435	0.303	0.224	0.89	0.658
	S.D	0.077	0.224	0.084	0.255	0.302
	CAGR	-1	-15.59	-3.58	-0.74	3.32
DEBT EQUITY RATIO	Mar-15	0.96	-5.43	0.671	0.82	1
	Mar-16	0.95	9.05	0.681	2.07	1.41
	Mar-17	1.04	5.88	0.678	2.16	1.38
	Mar-18	1.13	20.18	0.958	2.22	1.11
	Mar-19	1.26	-0.72	1.091	2.97	0.94
	Mar-20	1.41	-0.86	1.167	2.14	1.19
	Mar-21	1.38	-1.11	1.114	1.57	1.04

SOLVENCY RATIO	Mar-22	1.33	-1.09	2.269	2.73	0.81
	Mar-23	1.33	1.64	1.592	1.69	0.87
	Mar-24	1.24	0.18	1.242	1.22	0.78
	Mean	1.203	2.772	1.1463	1.959	1.053
	S.D	0.172	0.491	0.65297	0.22091	7.32389
	CAGR	0.026	0.064	0.04053	-0.0245	-1.711
	Mar-15	0.078	-0.3725	0.0467	0.0216	0.0661
	Mar-16	0.074	0.019	0.0536	0.0400	-0.0093
	Mar-17	0.063	0.0542	0.0243	0.0205	0.0815
	Mar-18	0.066	-0.0574	-0.0694	0.0185	0.0897
	Mar-19	0.065	-0.8178	0.0664	0.0406	0.1076
	Mar-20	0.055	-0.453	0.0331	0.0590	0.0722
	Mar-21	0.07	-0.0395	0.0369	0.0377	0.0913
	Mar-22	0.077	-0.1287	0.0849	0.0390	0.1304
	Mar-23	0.079	0.3889	0.0883	0.0437	0.0573
	Mar-24	0.079	0.0297	0.0709	0.0708	0.0727
	Mean	0.0706	-0.1377	0.04357	0.03915	0.07595
	S.D	0.00818	0.04518	0.01669	0.03676	0.33333
	CAGR	0.00127	0.04264	0.12618	0.00956	-1.776

Source : Computed

INFERENCE

Current Ratio

Adani had the greatest average current ratio (2.099), while Suzlon (0.626) and Tata Power (0.487) had the lowest. JSW (1.205) and NTPC (1.04) had moderate liquidity levels. However, Adani (-8.24% CAGR) and NTPC (-5.52% CAGR) saw large reductions, indicating a deterioration in short-term financial health. The S.D. values demonstrate that Adani (0.78) and JSW (0.81) fluctuated significantly, indicating liquidity instability.

Liquid Ratio

The liquid ratio followed a similar pattern, with Adani (mean: 0.89) keeping the highest and Tata Power (0.224) having the lowest. Suzlon experienced a negative CAGR (-15.59%), indicating a steep fall in liquidity, but JSW (3.32%) witnessed a little recovery. Suzlon and JSW have the highest S.D. values (0.224 and 0.302, respectively), indicating considerable liquidity volatility.

Debt Equity Ratio

Suzlon had the highest average debt-to-equity ratio (2.772), whereas NTPC (1.203), Tata Power (1.1463), and JSW (1.053) maintained balanced debt-equity levels. Adani (1.959) demonstrated moderate although constant leverage. Suzlon's high S.D. (7.32) demonstrates severe volatility in leverage. The CAGR numbers for NTPC (0.026) and Tata Power (0.0405) imply stability, however Adani (-0.0245) and JSW (-1.71) demonstrated a decrease in leverage reliance.

Solvency ratio

The solvency ratio, which is crucial for long-term stability, revealed that NTPC (mean: 0.0706) and JSW (0.0759) had the highest average solvency, whereas Suzlon (-0.1377) suffered with negative solvency. Tata Power (0.0436) and Adani (0.0391) shown moderate solvency. Suzlon has the largest standard deviation (0.0451), indicating extreme volatility. Tata Power (CAGR: 12.61%) demonstrated the greatest improvement in solvency, while JSW (-1.77%) experienced a fall.

VIII. FINDINGS

The solvency condition of selected green energy enterprises in India varies greatly, with major variances in liquidity, debt levels, and long-term financial stability. The current ratio research shows that Adani has the greatest average (2.099), suggesting excellent liquidity, whereas Suzlon (0.626) and Tata Power (0.487) have lesser liquidity. The falling CAGR across all enterprises indicates deterioration in short-term financial stability. Similarly, the liquid ratio shows that Adani (0.89) has a stronger cash position, whereas Suzlon (0.303) and Tata Power (0.224) have liquidity issues, with Suzlon having a sharp negative CAGR (-15.59), indicating serious financial difficulty. The debt-equity ratio suggests that Suzlon (2.772) is highly leveraged, indicating an overreliance on borrowed capital, whilst NTPC (1.203), Tata Power (1.1463), and JSW (1.053) have moderate debt levels. Suzlon's debt-equity ratio has a standard deviation of 7.32, indicating significant financial volatility. Solvency ratio research shows that NTPC (0.0706) and JSW (0.0759) have superior financial health, although Suzlon (-0.1377) has severe bankruptcy concerns, while Tata Power (0.0436) and Adani (0.0391) have intermediate solvency. The negative CAGR for JSW's solvency (-1.776) indicates diminishing long-term sustainability.

IX. SUGGESTIONS

Several initiatives should be implemented to help these green energy enterprises improve their financial status. Companies with limited liquidity, such as Suzlon and Tata Power, must prioritize increasing short-term assets and streamlining working capital management to improve financial stability. To avoid financial risk, highly leveraged companies like Suzlon should lessen their reliance on debt and consider equity financing. Government policy stability and long-term incentives can help green energy companies maintain operations while lowering financial volatility. Companies could also use risk-mitigation methods like revenue diversification, cost-cutting initiatives, and good cash flow management to avoid liquidity crises. Furthermore, companies suffering with solvency, such as Adani and JSW, should prioritize minimizing financial liabilities while increasing profitability through efficient resource allocation and investment strategies.

X. CONCLUSION

The study reveals that the solvency status of Indian green energy businesses is highly uneven, with NTPC and JSW displaying more solid financial performance, but Suzlon is in significant financial crisis, with negative solvency and high debt. Tata Power and Adani retain respectable financial positions, although they face significant financial risks that necessitate deliberate intervention. Overall, the falling liquidity and solvency trends in most enterprises point to the need for improved financial management and regulatory support. To achieve long-term financial viability, green energy companies must develop strong financial strategies, optimize their capital structure, and connect their operations with changing government policies and market demands.

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