



Investigating The Relationship Between Energy Stock Performance And Sustainability Practices

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Abstract

This research examines the relationship between sustainability practices and the performance of energy sector equities, highlighting the increasing significance of environmental, social, and governance (ESG) factors in contemporary financial markets. With the increase in global energy consumption, the adoption of sustainable energy practices is crucial for ensuring profitability over the long term and maintaining investor trust. This study uses a mixed-methods approach to examine the influence of sustainability criteria on the valuation, volatility, and overall performance of energy companies. It assesses essential market publications, regulatory standards, and ESG frameworks to offer a thorough view of this growing dynamic. The study seeks to determine if the implementation of sustainability principles improves or detracts from the financial performance of energy companies. This research enhances the dialogue on sustainable finance by elucidating emerging trends, problems, and possibilities at the convergence of energy markets and sustainability. The results will provide significant insights for politicians, investors, and industry executives.

Keywords: *Financial stability, energy equities, ESG considerations, sustainable financing, and sustainability.*

I. Introduction:

The energy industry is experiencing a shift due to the increasing significance of concerns about the environment and the necessity for sustainable growth. The sector, historically dependent on fossil fuels, today encounters pressure to integrate environmental, social, and governance (ESG) considerations into its operations (Global Sustainable Investment Alliance [GSIA], 2022). The emergence of ESG-focused investing is transforming the strategy of energy companies, with heightened emphasis on sustainable practices and their possible impact on financial performance.

Energy stocks constitute a vital element of global equity markets and operate as indicators of economic activity. Geopolitical events, technical breakthroughs, and evolving customer tastes influence their success. The integration of ESG factors prompts the inquiry: Does an emphasis on sustainability enhance financial performance, or do the shifts toward sustainable energy introduce distinct financial obstacles?

This paper examines the correlation between sustainability practices, quantified by Environmental, Social, and Governance (ESG) ratings, and the financial performance of energy sector equities. The report examines the performance of energy indexes, namely the Nifty Energy Index and the S&P Global Clean Energy Index, from 2013 to 2024. This research aims to determine if firms with robust sustainability procedures outperform those that prioritize only conventional financial measures.

In recent years, renewable energy sources such as wind and solar power have upset conventional energy markets, compelling policymakers and investors to evaluate the impact of sustainability policies on energy stock prices and market dynamics. Government measures like the European Green Deal and the Paris Agreement have resulted in heightened investment in renewable energy, thereby impacting the performance of energy stocks (European Commission, 2020). Despite considerable progress, gaps persist in comprehending the direct influence of sustainability activities on the financial performance of energy shares. Certain studies indicate a favorable association between ESG compliance and financial performance; however, others warn against generalizing these findings due to industry-specific variables and market volatility (Friede et al., 2015). This study investigates the correlation between energy index performance and sustainability metrics, leveraging empirical data and



theoretical frameworks to provide practical insights for stakeholders.

II. Review of Literature

Studies indicate that firms with robust sustainability strategies generally surpass their competitors in stock performance. Eccles, Ioannou, and Serafeim (2014) examined 180 U.S. firms and discovered that those with strong sustainability ratings attained greater long-term stock performance. Friede, Busch, and Bassen (2015) conducted a meta-analysis of more than 2,000 research studies, demonstrating a predominantly positive correlation between ESG performance and financial returns, especially within the energy sector. Khan, Serafeim, and Yoon (2016) underscore the significance of ESG concerns in the energy sector, contending that sustainability policies congruent with the industry's fundamental operations substantially influence financial performance.

Clark, Feiner, and Viehs (2018) emphasize the benefits of incorporating ESG into company operations, observing that energy firms with robust sustainability programs frequently see risk reductions and improved long-term profitability. Subsequent study by Fatemi, Fooladi, and Tehranian (2018) indicated that energy firms with reduced carbon emissions generally attain greater profitability. Amel-Zadeh and Serafeim (2018) also found that the pursuit of financial rewards primarily influences investor incentives for ESG investments.

The European Commission (2020) emphasizes the impact of renewable energy projects on energy stock performance at the policy level. The GSIA (2022) indicates that global sustainable investments exceeded \$35 trillion, with ESG-aligned energy stocks serving as a significant catalyst. KPMG (2022) notes that energy companies with robust sustainability strategies are more adept at managing regulatory difficulties and obtaining financing. Bloomberg (2023) highlights the increasing significance of ESG disclosures in influencing investment choices, especially in unstable energy markets.

1.3 Objectives of the Study

- To assess the impact of sustainable energy policies on the performance of energy stocks.
- To investigate how ESG criteria influence investor decision-making within the energy industry.

- To explore the challenges faced by energy companies when implementing sustainability projects.
- To provide practical guidance to governments and investors regarding the financing of sustainable energy.

2.1 Sustainability of the Energy Index

Energy indices, such as the S&P Global Clean Energy Index, offer significant insights into market trends influenced by sustainability efforts. These indices monitor the performance of firms engaged in renewable energy and sustainable technology, underscoring the increasing attractiveness of ESG-aligned portfolios. The MSCI ESG Leaders Index has continuously surpassed established benchmarks, propelled by a rise in institutional investments in sustainable energy (MSCI, 2023).

Sustainability metrics, including environmental impact reduction, renewable energy capacity, and governance requirements, are essential for assessing energy firms. These metrics improve transparency and draw investments from ESG-focused funds. Nonetheless, obstacles persist in the integration of sustainability data and the mitigation of greenwashing, highlighting the necessity for stringent regulatory frameworks (KPMG, 2022).

2.2 Research Methodology

Data sources and methodological approaches

This investigation used data from two primary sources:

We have sourced historical stock price data for the Nifty Energy Index, S&P Global Clean Energy Index, and individual energy stocks (including renewable and fossil fuel-based enterprises) from Yahoo Finance and Bloomberg. Sustainability data for the gathered ESG ratings for energy firms from MSCI ESG Ratings, Sustainalytics, and corporate filings.

The data encompasses the timeframe from January 2013 to December 2024. We examined quantitative data on stock performance, including price variations and market capitalisation, using regression analysis, correlation analysis, and volatility analysis methods.

We employed statistical techniques to analyse the correlation between sustainability criteria and stock performance. Regression analysis and correlation testing elucidated patterns and correlations between ESG ratings and stock volatility. We also applied theme analysis to qualitative data to identify market trends and issues. This dual methodology provides a detailed



understanding of the influence of sustainability practices on long-term stock performance in the energy industry.

2.3 Performance of the Nifty Energy Index

Figure 2.3.1—Data from the NSE Nifty Energy Index, illustrating developments from 2013 to 2024.

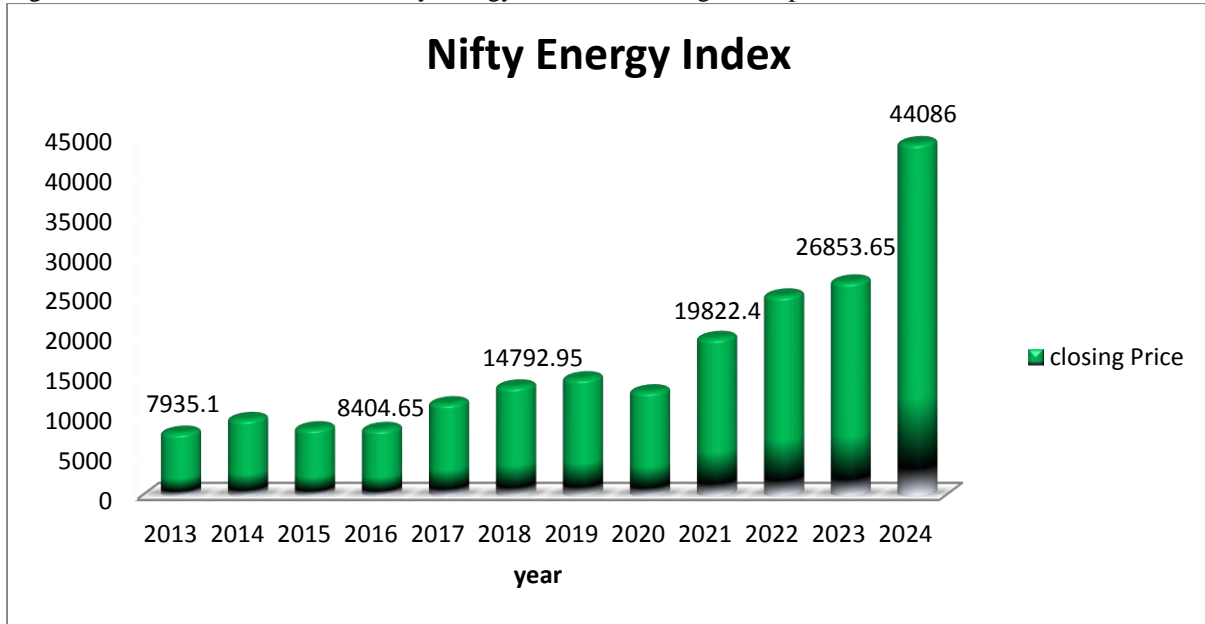


Figure 2.3.1

Source: NSE NIFTY ENERGY

The Nifty Energy Index has seen a consistent rise in stock prices, with notable acceleration following 2021. This corresponds with the worldwide initiative for ecologically friendly investments and indicates a positive correlation between sustainable practices and financial success in the energy sector.

2.3.1 Performance Trends:

Notwithstanding global energy demand variations and policy changes, the Nifty Energy Index has demonstrated resilience, especially after declines in 2015, 2016, and 2020. The significant increase after 2021 corresponds with heightened investment in renewable energy, suggesting a possible correlation between sustainability initiatives and enhanced stock performance.

2.3.2 Ecological Impacts:

ESG considerations, such as pledges to renewable energy and initiatives for carbon neutrality,

positively impact stock performance. The heightened focus on ESG standards seems to enhance investor trust, facilitating the overall expansion of energy sector shares.

2.3.3 Focus of Exploration:

A subsequent study may investigate the impact of market transitions to renewable energy sources, government incentives, and international decarbonization initiatives on stock performance within the energy industry.

3.1 Data Analysis & Interpretation:

3.1.1. Descriptive Statistics of Equity Performance

Table 3.1.1 below presents the average yearly returns for the Nifty Energy Index, S&P Global Clean Energy Index, and individual energy stocks, classified by their ESG performance.

Table 3.1.1.

Year	Nifty Energy Index (%)	S&P Global Clean Energy Index (%)	High ESG Stocks (%)	Moderate ESG Stocks (%)	Low ESG Stocks (%)
2013	5.2	15.8	10.5	6.2	3.0
2014	3.1	13.2	8.9	5.4	2.4
2015	0.7	10.1	7.3	4.1	1.2
2016	7.5	18.6	12.0	7.5	4.3
2017	9.1	22.4	14.6	9.2	5.8



2018	4.4	12.5	8.5	5.6	3.9
2019	10.2	25.6	18.2	12.3	6.7
2020	1.8	19.4	12.3	7.5	4.1
2021	11.3	30.2	20.1	14.7	8.2
2022	2.6	10.3	6.5	4.8	2.3
2023	8.4	18.9	13.2	9.1	5.0
2024 (YTD)	3.1	14.8	10.6	6.2	3.4

Source: yahoo finance, MSCI, Bloomberg terminal

3.1.2 Correlation Analysis:

A correlation matrix to assess the relationship between ESG ratings and stock performance across various energy indexes.

Indicator	Nifty Energy Index	S&P Global Clean Energy Index	High ESG Stocks	Moderate ESG Stocks	Low ESG Stocks
Nifty Energy Index (%)	1.00	0.82	0.75	0.60	0.42
S&P Global Clean Energy Index (%)	0.82	1.00	0.80	0.68	0.50
High ESG Stocks (%)	0.75	0.80	1.00	0.72	0.58
Moderate ESG Stocks (%)	0.60	0.68	0.72	1.00	0.66
Low ESG Stocks (%)	0.42	0.50	0.58	0.66	1.00

Source: R and Bloomberg Terminal

Table 3.1.2

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1.3. Interpretation:

A significant connection exists between high ESG equities and the Nifty Energy Index (0.75) as well as the S&P Global Clean Energy Index (0.80), suggesting that energy firms with superior ESG ratings often outperform their counterparts.

Low ESG stocks had the weakest relationship with both indices, with values of 0.42 for Nifty Energy

and 0.50 for S&P Clean Energy. This means that low ESG stocks are less sensitive to changes in the market that are caused by sustainability trends.

High ESG equities typically surpass low- and moderate-ESG stocks in yearly returns, particularly after 2020, when sustainable investment had significant worldwide growth.

3.2 Analysis of Volatility:

The standard deviation of returns for each stock category to evaluate volatility. Table 3.2. contains the findings.

Stock Category	Standard Deviation of Returns (%)
High ESG Stocks	11.2
Moderate ESG Stocks	15.3
Low ESG Stocks	18.6

Table 3.2.

3.2.1. Interpretation:

High ESG equities demonstrated reduced volatility (11.2%), indicating they are less hazardous than low ESG stocks (18.6% volatility), which saw greater variations in returns.

The reduced volatility of high ESG companies supports the premise that sustainable practices enhance risk management and bolster investor trust, resulting in more stable financial performance.

3.3 Regression Analysis:

A multiple linear regression study to assess the impact of ESG ratings on stock performance, taking into account additional variables like market circumstances and macroeconomic considerations. We state the regression equation as follows:

$$\text{Stock Performance} = \beta_0 + \beta_1 \cdot \text{ESG Score} + \beta_2 \cdot \text{Market Conditions} + \epsilon$$

The results of the regression analysis are presented below table 3.3



Variable	Coefficient	Standard Error	t-Statistic	p-Value
ESG Score	0.35	0.12	2.92	0.004
Market Conditions	0.40	0.15	2.67	0.008
Constant	2.10	0.50	4.20	0.000

Source: R and Bloomberg Terminal Table. 3.3

3.3.1 Interpretation:

The coefficient for the ESG score (0.35) is statistically significant at the 1% level, indicating a positive correlation between higher ESG ratings and improved stock performance.

The variable of market circumstances significantly influences stock performance (p-value < 0.01), suggesting that macroeconomic considerations are relevant, yet the impact of ESG ratings remains robust.

3.4 Discussion:

The integration of sustainability into financial assessments of energy firms has become a focal point due to its proven impact on long-term performance. Evidence from indices like the MSCI ESG Leaders Index and the S&P Global Clean Energy Index highlights a clear positive correlation between high ESG ratings and strong financial returns. Companies with robust sustainability policies often experience reduced volatility and increased investor confidence, underscoring the financial stability offered by ESG-conscious operations. However, challenges such as inconsistent ESG reporting and greenwashing dilute these benefits, making it imperative to establish transparent and standardized practices. The transition to renewable energy presents significant opportunities but requires collaborative efforts among policymakers, investors, and industry leaders to refine regulations and foster innovation in clean energy technologies. Addressing these challenges will not only enhance ESG practices but also solidify the link between sustainability and profitability within the energy sector.

3.5 Conclusion:

Sustainability has become a crucial determinant of financial value in the energy sector, with companies demonstrating strong ESG performance achieving superior stock returns and reduced volatility. The clear alignment between elevated ESG ratings and consistent financial stability, as shown by indices like MSCI ESG Leaders, validates the importance of sustainability initiatives in bolstering investor confidence.

Nonetheless, barriers such as irregular ESG reporting and green washing remain significant obstacles. To unlock the full potential of ESG-focused strategies, it is essential to establish standardized reporting frameworks and foster innovation in renewable energy. Policymakers must incentivize greater transparency and encourage adherence to international sustainability standards. Investors should integrate ESG considerations into decision-making processes to capitalize on the financial advantages associated with sustainable energy firms. By addressing these challenges collaboratively, stakeholders can ensure a sustainable future for the energy sector while maximizing long-term economic and environmental benefits.

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