

Performance and Risk Analysis of Sustainable Mutual Funds in India: A Comparative Study

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Abstract: The Mutual fund market has grown phenomenally in the last decade. A major aspect that draws in so many investors is the consistent performance of these mutual funds. Sustainable investing has gained popularity in recent years; this approach to investing involves the integration of environmental, social, and governance (ESG) factors into investment decisions; sustainable investing has gained significant traction, resulting in the investing of environmental, social, and governance (ESG) Mutual funds. This research evaluates the performance and risk characteristics of ESG mutual funds and the consistency of their performance. The study analyses the performance of ESG mutual funds in terms of Annual return, standard deviation, and Sharpe ratio. Then, it is compared with the average returns of the benchmark indices to show whether the fund has outperformed or underperformed compared to the benchmark returns. The data regarding the benchmark indices is taken from the respective official websites. In this study, the Quant ESG equity fund has emerged as a top performer with the highest returns. ICICI Prudential ESG Fund has shown good risk-adjusted returns and low standard deviation(risk). Even though some ESG funds have underperformed when compared to the benchmark returns, the majority of the ESG mutual funds have outperformed their benchmark indices. This study concludes that as there is an uptrend toward sustainable investing and more investors are becoming aware of environmental, social, and governance (ESG) funds, there will continue to be an uptrend in the ESG fund market.

Keywords: Comparative Study; ESG Indices; ESG Mutual Funds; Indian ESG Mutual Funds; Performance Analysis; Socially Responsible Investing; Sustainable Investing; Sustainable Development Goals.

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1. Introduction

No poverty, Good health and well-being, and Affordable and clean energy are some of the vital matters that must be considered to achieve sustainable development goals in the country. The Sustainable Development Goals (SDGs) 2030 were approved by the UN General Assembly in 2015, and India is an adhering nation to them [21]. India is an avid promoter of sustainable development and was instrumental in developing the UN's objectives. The SDGs seek to save the environment and ensure that by 2030, everyone is prosperous and healthy [22]. As mentioned in (the SDG India Index), the SDGs have gained popularity

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in India as a path towards equitable and sustainable development. The nation has advanced significantly in several SDG-aligned fields. Millions of people have been lifted from poverty due to efforts to lower the poverty rate [23]. India has achieved almost full primary school enrollment and has made progress in expanding access to education [24]. With a decline in the rates of maternal and under-five mortality, maternal and child health indices have improved. Many people now live a better quality of life due to greater access to clean water and sanitary services [12]. India has demonstrated its commitment to the SDGs through collaborations, policy initiatives, and data-driven strategies to monitor progress and expedite efforts towards reaching these objectives [25]. However, governmental financing is insufficient to advance towards sustainable development in India; more financial resources from the business sector and civil society are needed to support government initiatives in India [26] (Figure 1).



Figure 1: Sustainable Development Goals [18]

In India, government projects require private investment, where mutual funds come into play. In this regard, mutual funds may be necessary for converting investor savings into the cash that Indian businesses require for their major initiatives on issues of life on land, innovation, industry, and infrastructure; affordable energy, production and responsible consumption; and overall health and wellbeing [27]. Mutual funds, as shareholders, can thus participate in board meetings, exercise their right to vote, submit shareholder agreements, and encourage institutional investor engagement to put pressure on the companies they invest in to implement business plans that support sustainable development objectives [28].

Environmental, social, and governance come together to form ESG. Sustainable and socially responsible investing are terms that describe its investments without qualification [29]. Mutual funds usually seek out high-quality company stocks based on factors such as management quality, cash flows, industry, competitiveness, etc. Nonetheless, the ESG fund considers financial considerations with a company's environmental, social, and governance performance when making an investment decision [30]. Thus, "conscience" is the defining characteristic of ESG funds as opposed to conventional investment vehicles; that is, ESG funds seek out businesses with a track record of being socially and environmentally responsible as well as ethically run. The Financial Markets Authority of India (SEBI) oversees the fund [15].

ESG measures describe the issues that are considered to influence corporate behaviour in their investment decisions (International Ethics Standards Board for Accountants Handbook of the Code of Ethics for Professional Accountants 2012 Edition [13]).

ESG mutual funds are thematic mutual fund schemes that invest in companies that perform well on environmental (E), social (S), and governance (G) parameters [14].



Figure 2: ESG [16]

To analyze the performance of the ESG funds, this research used annual return, standard deviation, and Sharpe ratio.

1.1. Annual return

The percentage change in an investment over one year is known as the annual return. The percentage change in investment across periods less or greater than a year expressed as an annual rate of return, is known as the annualized return [18].

1.2. Standard deviation

It is a numerical figure 2, usually presented as a percentage, which helps indicate how far a mutual fund's returns could vary from its average yearly earnings. When applied to historical performance data, it gauges a fund's volatility; a higher standard deviation implies more volatility. A mutual fund with a standard deviation of 2 isn't automatically better or worse than another fund with a standard deviation of 4, and their value comes from what you compare them to [19].

When picking a fund, you can utilize standard deviation to evaluate the level of risk that aligns with your risk tolerance and investment horizon. For example, fund A is riskier than fund B; you'd select the one that best aligns with your comfort level for taking on risk [31].

1.3. Sharpe ratio

The Sharpe ratio describes how much excess return you receive for the extra volatility you endure for holding a riskier asset. It is the compensation for the additional risk taken for not holding a risk-free asset [20].

2. Review of Literature

Yue et al. [1] look at how popular sustainable investments affect investment returns and hazards. It uses quantitative analysis to compare 30 sustainable funds with 30 traditional ones while considering various points of view. Results point to lower risk in sustainable funds, but no conclusive proof of higher returns exists. It is found that the Fama–French three-factor model explains the data well. The assessment emphasizes the need for additional research to comprehend how sustainability and financial returns are related fully.

Singh et al. [2] evaluate the performance of ESG funds in India over the preceding five years, taking note of their increasing popularity, particularly in the financial services and technology sectors. Through the use of benchmark comparisons, it identifies sector preferences and seeks to comprehend the progress of ESG funds in India. By utilizing a systematic literature review and BFSI sector data analysis, the study uncovers slower growth in ESG investments in India compared to developed economies, which is attributed to the hesitant adoption of ESG factors in portfolios. In-depth discussions regarding portfolio performance and risk-return ratios enhance the findings.

Dopierała & Mosionek-Schweda [3] assessed the performance of mutual funds with a climate theme in Denmark, Norway, and Sweden between 2010 and 2019, paying particular attention to the funds' asset allocation strategies and their industry and regional concentrations. The study uses both absolute and relative performance approaches to designate climate-friendly funds using a relative carbon footprint assessment. The results show that asset allocations based on industry and geography significantly impact fund performance. The analysis concludes that the state of the market mostly determines the performance of these funds and that they do not generate abnormal returns. Portfolio returns are also influenced by firm size and value; portfolios in emerging markets with positive values show the significance of the momentum component.

Goyal & Aggarwal [4] compare the performance of market and blue-chip portfolios with portfolios of Environment, Social, and Governance (ESG) stocks in the Indian stock market between January 2008 and September 2013. Based on several metrics, such as absolute rate of return, Treynor ratio, Jensen ratio, Sharpe ratio, and CAPM, the research concludes that ESG portfolios beat both market and blue-chip portfolios. ESG stocks have an aggressive risk profile, produce better returns, and correlate more strongly with blue chip and market portfolios. The ability of ESG portfolios to generate larger abnormal returns than the market and blue-chip portfolios is confirmed by regression analysis, which may have consequences for socially conscious investors looking for higher returns.

Drei et al. [5] cover the years 2010–2019 and update a previous study on the effect of ESG investing on asset pricing. It validates the mixed impacts of ESG, which penalizes investors in the short term but rewards them later on, particularly in Europe. Recent research reveals differences between active and passive management, a transatlantic gap, and a shift in the performance impact of ESG ratings. The social pillar becomes more important, and factor investing and ESG become entwined. The research highlights the dynamically changing nature of ESG investing, illuminating its intricate correlation with market performance and providing valuable perspectives for both theoretical and pragmatic purposes.

Bennani et al. [6] look at the success of ESG (Environment, Social, and Governance) investments from 2010 to 2017, when institutional interest in ESG strategies grew. According to research, ESG investments started to pay off in 2014, especially in America and Europe, where they affected both best- and worst-performing assets. As anticipated, ESG had very little effect on volatility and drawdown control throughout this time. As long as the investor was willing to assume the risk of tracking mistakes, implementing an ESG strategy increased the information ratio in passive management. The study also demonstrates the relationship between factor investing and ESG, highlighting how ESG is changing as an alpha and beta approach.

Vishali and Shafi [7] focus this research on environmental, social, and governance mutual funds as a means of examining socially responsible investment (SRI) in India. It analyses historical trends, evaluates fund performance, and discusses opportunities and difficulties in the field using both exploratory and empirical methodologies. The analysis notes the underperformance of the Adithya Birla Sun Life ESG Fund in the same category and the better performance of the ICICI Prudential ESG Fund in the Direct Plan-Growth option compared to other chosen ESG funds in India.

Alabdullah and Naseer [8] compare fund performance to benchmarks using secondary data from financial platforms, literature, and mutual fund websites. Quant ESG Equity Mutual Fund stands out for its cost-effectiveness and strong risk-adjusted returns. The study emphasizes the importance of ESG factors for investors, encouraging thoughtful selection of sustainable theme funds. The study provides thorough insights into ESG fund dynamics in the Indian context despite its dependence on secondary data. It is advantageous for investors looking to make well-informed investment decisions.

Dutta & Paul [9] examined this study during the 24 months that followed the start of COVID-19. Focusing on four ESG funds, the study uses secondary data analysis to investigate performance and risk indicators. Using metrics including the coefficient of determination, Sharpe ratio, Treynor ratio, alpha, beta, and compound annual growth rate (CAGR), the study attempts to help stakeholders choose suitable ESG schemes. The results show that most funds underperformed in terms of Treynor Ratio, Sharpe Ratio, and CAGR; both periods showed evidence of a conservative investment strategy. For the most part, the level of diversity is adequate for most funds, offering useful information to stakeholders navigating ESG investments in India.

Ghosh & Paul [10] examined evolving economic trends and efforts in sustainable finance. In light of dwindling GDP and consumption spending, increased foreign direct investment, and an optimistic market attitude, the Indian government has launched sustainable finance plans, including startup and MSME business loans specifically targeting the energy industry. Mutual funds, particularly ESG funds, provide a variety of investing possibilities since ordinary investors are increasingly gravitating toward equity investments. ESG funds fall under SEBI's Thematic category and incorporate non-financial aspects into investment decisions. The main purpose of this exploratory and empirical study is to evaluate the risk-return parameters of ESG funds in India and provide insight into how they perform in the context of a changing financial environment.

Alabdullah and AL-Qallaf [11] explore Socially Responsible Investment (SRI) through the lens of Environmental, Social, and Governance (ESG) screens, focusing on ESG fund schemes offered by SBI Mutual Fund. It benchmarks these funds against the Nifty 100 ESG indices and conducts a correlation analysis to compare their performance. Methodologically, the study relies on secondary data sources from SBI Mutual Fund and NIFTY indices. The goal is to evaluate the efficacy of ESG Equity Funds in mutual fund portfolios and facilitate small and medium-sized investors' participation in ESG-driven schemes, contributing to the advancement of socially conscious investment practices.

3. Objective of the study

- To analyze the performance of the selected funds in terms of risk and return metrics

- To compare their performance with the help of benchmark indices
- To provide data and insights to investors, aiding them in making informed investment decisions

4. Research Methodology

This study attempts to compare and study the performance of the selected ESG mutual funds in India. This study focuses on the select nine active ESG mutual funds in India. The mutual funds selected for this study are Mirae Asset Nifty 100 ESG Sector Leaders ETF, Invesco India ESG Equity Fund, Quantum India ESG Equity Fund, Aditya Birla Sun Life ESG Fund, Axis ESG Equity Fund, SBI Magnum Equity ESG Fund, ICICI Prudential ESG Fund, Quant ESG Equity Fund and Kotak ESG Opportunities Fund.

The mutual fund’s performance is compared in terms of annual return, standard deviation, and Sharpe ratio for the last three years [32]. The mutual funds are then compared with their respective benchmark indices. The performance is then graded as outperformed if the selected mutual fund performance is higher than the benchmark indices and underperformed if the selected mutual fund performance is lower than the benchmark indices [33].

4.1. Average return for benchmark

The benchmark indices taken for this study are the NIFTY Sector Leaders ESG Index, S&P BSE100 ESG Index, and MSCI India ESG Leaders Index. The average return of the benchmarks for the last three years (2021-22, 2023-24) is shown in Table 1.

Table 1: The Average return of the benchmarks for the last three years (2021-22 -2023-24)

Benchmark	Average Return
NIFTY Sector Leaders ESG Index	14.42
S&P BSE100 ESG Index	12.85
MSCI India ESG Leaders Index	10.41

4.2. Risk return analysis of mutual funds

Table 2 shows the average return, standard deviation, and Sharpe ratio for the last three years (2021-22 -2023-24) for the selected ESG mutual funds.

Table 2: The average return, average standard deviation and Sharpe ratio for the last three years (2021-22 -2023-24) for the selected ESG mutual fund

ESG Fund	Average Return	Standard Deviation	Sharpe Ratio
Mirae Asset Nifty 100 ESG Sector Leaders	14.19%	13.13	0.79
Quantum India ESG equity fund	14.76%	11.83	0.89
Invesco ESG equity fund	16.35%	12.94	0.62
Axis ESG equity fund	11.52%	14.53	0.59.
Adithya Birla Sunlife ESG fund	12.47%	14.69	0.64
Kotak ESG Opportunities Fund	12.08%	13.09	0.10
ICICI Prudential ESG Fund	17.68%	11.29	1.09
Quant equity ESG fund	37.05%	17.50	1.56
SBI ESG equity fund	14.89%	12.81	0.89

Table 3: Comparative Benchmark Analysis(NSE)

Fund	Average return	Benchmark return (NSE)	Performance	Assessment
Mirae Asset Nifty 100 ESG Sector Leaders ETF	14.19	14.42	Underperformed	Rejected
quantum India ESG equity fund	14.76	14.42	Outperformed	Accepted
Invesco India ESG equity fund	16.35	14.42	Outperformed	Accepted
Axis ESG fund	11.52	14.42	Underperformed	Rejected
aditya birla sun life ESG	12.47	14.42	Underperformed	Rejected
Kotak ESG opportunities fund.	12.08	14.42	Underperformed	Rejected

ICICI Prudential ESG Fund	17.68	14.42	Outperformed	Accepted
Quant esg fund	37.05	14.42	Outperformed	Accepted
SBI magnum	14.89	14.42	Outperformed	Accepted

Table 4: Comparative Benchmark Analysis(BSE)

Fund	Average return	Benchmark return (BSE)	Performance	Assessment
Mirae Asset Nifty 100 ESG Sector Leaders ETF	14.19	12.85	Outperformed	Accepted
quantum India	14.76	12.85	Outperformed	Accepted
invesco India esg	16.35	12.85	Outperformed	Accepted
axis ESG equity fund	11.52	12.85	Underperformed	Rejected
Aditya Birla Sun Life ESG Fund	12.47	12.85	Underperformed	Rejected
Kotak ESG fund	12.08	12.85	Underperformed	Rejected
ICICI prudential Fund	17.68	12.85	Outperformed	Accepted
Quant ESG Fund	37.05	12.85	Outperformed	Accepted
SBI Magnum ESG Fund	14.89	12.85	Outperformed	Accepted

Table 5: Comparative Benchmark Analysis(MSCI)

Fund	Average return	Benchmark return (MSCI)	Performance	Assessment
Mirae Asset Nifty 100 ESG Sector Leaders ETF	14.19	10.41	Outperformed	Accepted
Quantum India fund	14.76	10.41	Outperformed	Accepted
Invesco India fund	16.35	10.41	Outperformed	Accepted
Axis Equity ESG fund	11.52	10.41	Outperformed	Accepted
Aditya Birla ESG Fund	12.47	10.41	Outperformed	Accepted
Kotak ESG Fund	12.08	10.41	Outperformed	Accepted
ICICI Prudential ESG Fund	17.68	10.41	Outperformed	Accepted
Quant fund	37.05	10.41	Outperformed	Accepted
SBI ESG Fund	14.89	10.41	Outperformed	Accepted

5. Findings and Discussion

The research compared the nine active ESG mutual fund companies in India in terms of average annual returns, standard deviation, which is how much the fund deviates from the category returns, and Sharpe ratio, which is the risk-adjusted returns of the mutual fund [34].

Table 3 shows that Quant ESG Equity Fund has shown the highest average return at 37.05 percent while ICICI Prudential ESG Fund (17.68), Invesco (16.35) and SBI (14.89) ranked 2nd,3rd and 4th respectively. The lowest average return is 11.52 percent generated by Axis ESG Fund. The highest risk or standard deviation is by Quant ESG Fund at 17.50 percent, followed by Aditya Birla ESG Fund and Axis Fund [35].

ICICI Prudential ESG Fund takes the lowest risk at 11.29 percent and Quantum India ESG at 11.83 percent. The Sharpe ratio is highest for Quant ESG at 1.56 percent and ICICI Prudential ESG Fund at 1.09 percent, respectively, and the lowest Sharpe ratio is 0.10 by Kotak and 0.59 for Axis ESG Fund. Thus, it's known from the above table that Quant ESG Fund is the best-performing fund since it has the highest average return and high Sharpe ratio, and the worst-performing fund is Axis ESG Fund with a low average return and Sharpe ratio with high risk [36]-[41].

The ESG funds are then compared with the benchmark average return to see if the funds have underperformed or outperformed the indices [42] (Figure 3).

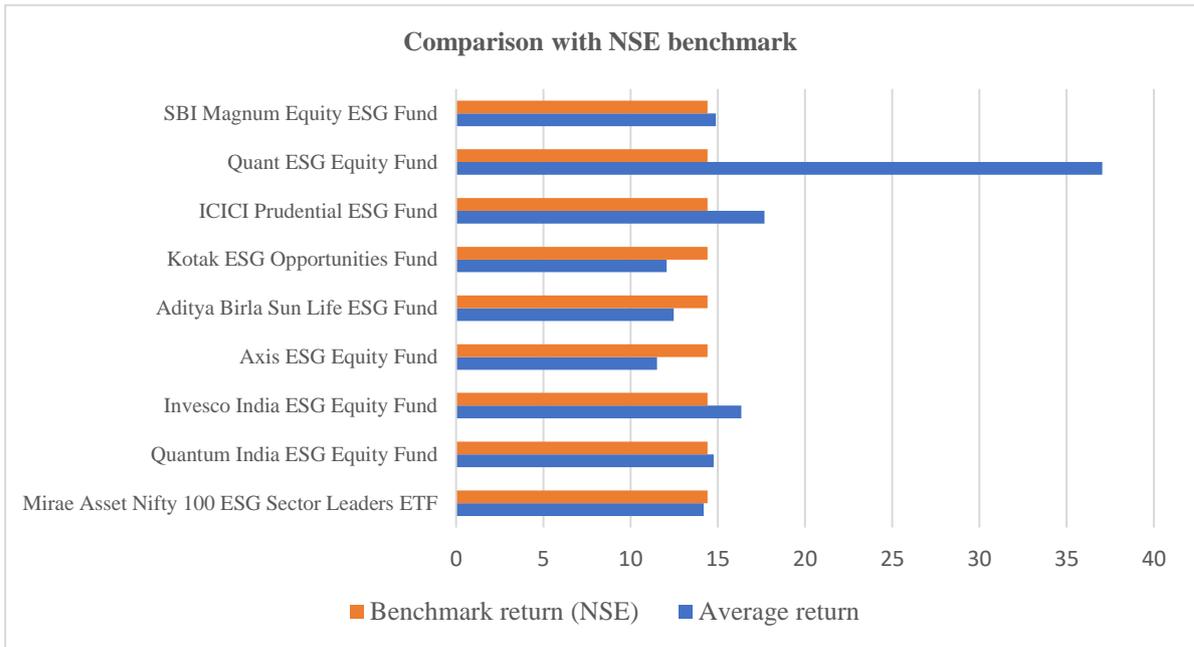


Figure 3: NSE Benchmark Comparison

The comparative analysis presented in the table sheds light on the performance of various selected mutual funds against the NSE benchmark. Mirae, Axis, Aditya Birla, and Kotak exhibited underperformance relative to the benchmark. Conversely, the remaining selected mutual funds demonstrated robust performance, surpassing the benchmark returns [43]-[47].

Quant ESG emerged as a standout performer, exceeding the index by nearly 23 percent. This exceptional outperformance underscores the effectiveness of its ESG-focused investment approach in delivering superior returns. Similarly, ICICI Prudential ESG Fund showcased commendable performance by outperforming the index by 3.26 percent, while Invesco demonstrated notable outperformance of almost 2 percent [48].

These findings underscore the importance of selecting ESG-focused mutual funds with a track record of strong performance. Investors who align their investment objectives with sustainability goals can leverage such insights to construct resilient and high-performing portfolios [49]-[53] (Figure 4).

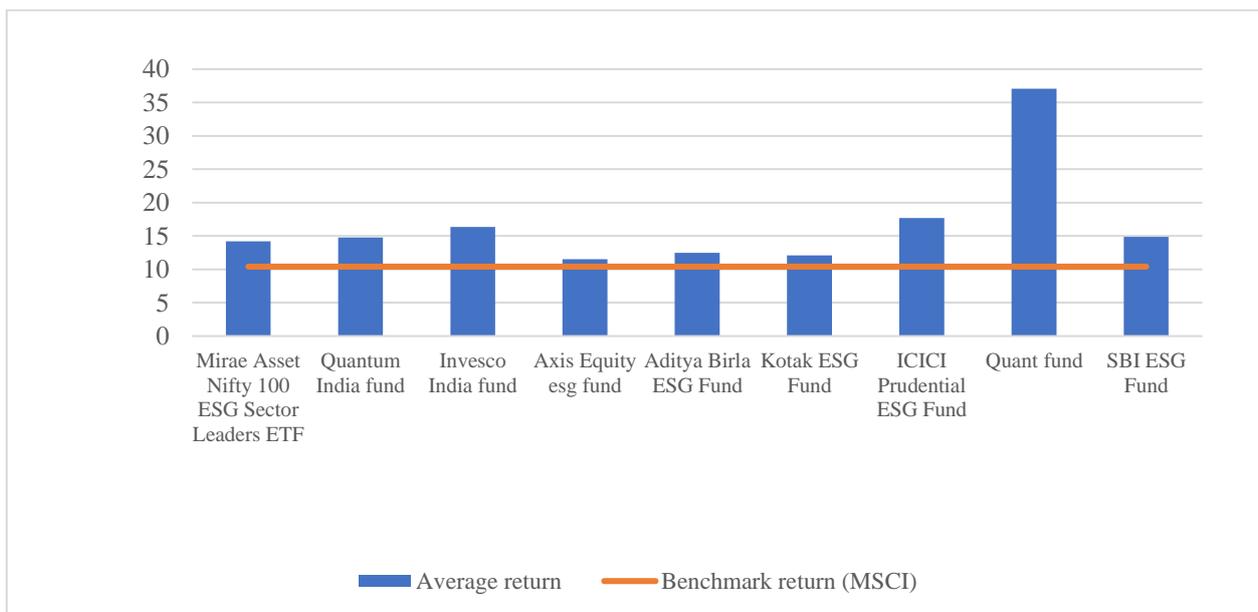


Figure 4: BSE Benchmark Comparison

The comparative analysis presented in the table 4 illustrates the performance of various ESG-focused mutual funds against the BSE benchmark. Notably, Axis Fund, Aditya Birla ESG, and Kotak ESG Fund exhibited underperformance about the benchmark. Conversely, the remaining selected mutual funds demonstrated outperformance, indicating their ability to generate higher returns than the market index [54]-[56].

Among the standout performers, Quant Equity Fund distinguished itself by surpassing the index by an impressive margin of nearly 24 percent. This substantial outperformance underscores the efficacy of its investment strategy in delivering superior returns to investors [57]. Similarly, ICICI Prudential ESG Fund showcased commendable performance by outperforming the index by 4.83 percent, while Invesco ESG Fund achieved a notable outperformance of 3.5 percent [58].

These findings shed light on the varying performance outcomes among ESG-focused mutual funds and highlight the importance of thorough fund selection and due diligence [59]. Investors seeking to capitalize on the potential of ESG investing should consider the overarching ESG principles and the track record and performance history of individual funds. Such insights are invaluable for constructing well-balanced and high-performing investment portfolios aligned with both financial objectives and sustainability goals (Figure 5).

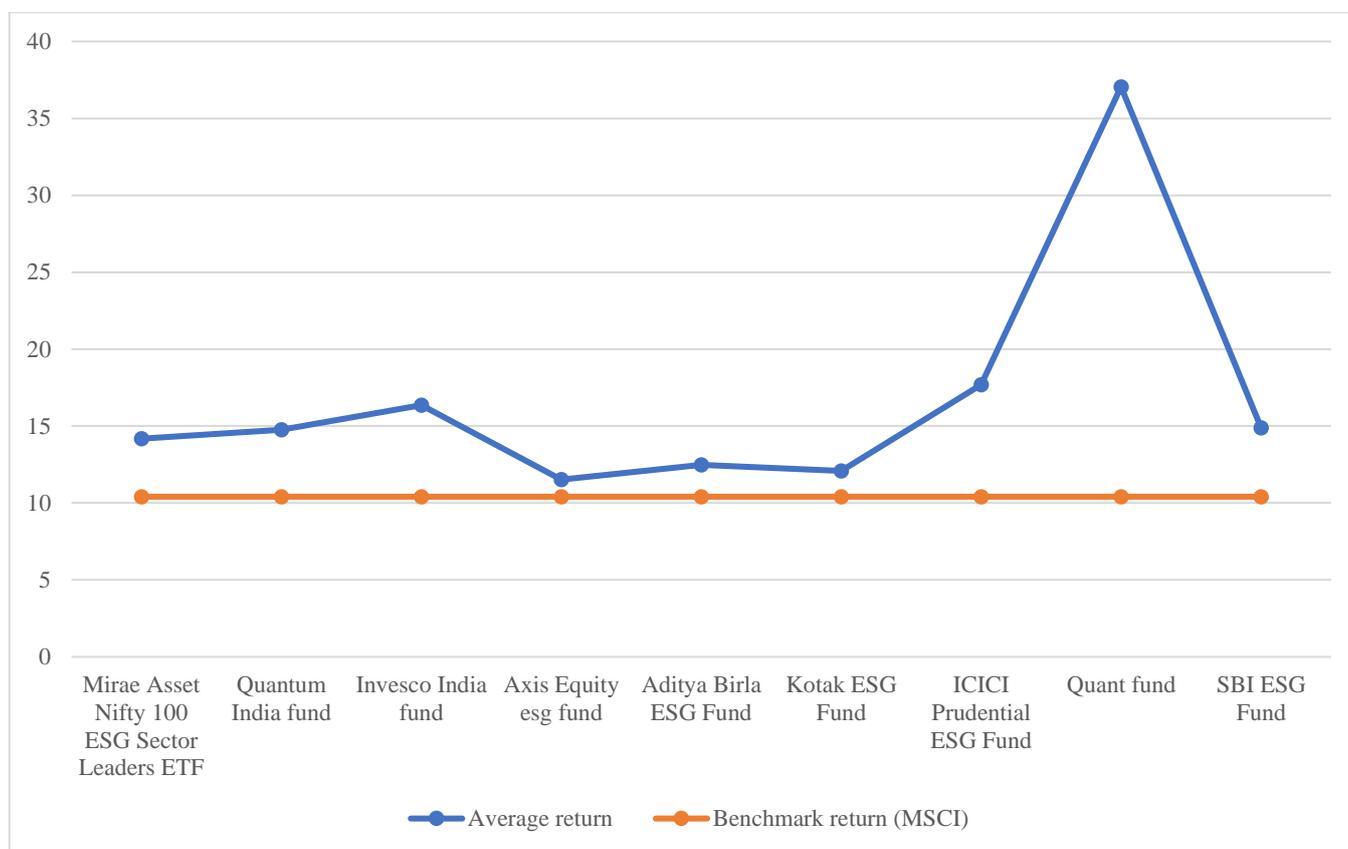


Figure 5: MSCI Benchmark Comparison

Table 5 presents a comparative analysis of the performance of selected ESG mutual funds against the MSCI benchmark returns, revealing compelling insights into the efficacy of ESG investing strategies. Notably, all the chosen mutual funds have surpassed the benchmark return, underscoring the potential for superior financial performance within ESG-focused investments. Particularly noteworthy is Quant, which has exhibited exceptional performance by outperforming the index by nearly 27 percent. This substantial margin speaks volumes about the effectiveness of its ESG-centric investment approach in generating alpha for investors.

Similarly, ICICI Prudential ESG Fund and Invesco have demonstrated commendable performance, surpassing the benchmark by 7 percent and 6 percent, respectively. Such consistent outperformance across multiple funds reaffirms the robustness of ESG investment strategies in capturing value beyond traditional financial metrics. These findings not only highlight the financial viability of ESG investing but also underscore its potential to deliver tangible returns for investors. Moreover, the observed outperformance against the benchmark is a compelling incentive for investors to consider integrating ESG principles into their

investment decisions. As such, these results contribute to the growing body of evidence supporting the case for sustainable and socially responsible investing as a viable pathway towards achieving both financial prosperity and positive societal impact.

5.1. Discussion

From the findings of this study, we can understand that ESG funds are performing well. Many funds have outperformed the benchmarks, and the funds show promising returns. As these mutual funds invest in companies that follow the ESG criteria, the companies follow sustainable development. They will continue to grow in the future, so investors can expect great long-term returns from these mutual funds. Also, companies that are harmful to the environment may become redundant as India aims to bring more regulations regarding ESG criteria and achieve net zero emissions by 2070.

Furthermore, the study reveals a notable trend wherein ESG-focused companies exhibit greater resilience during economic downturns compared to their counterparts. This resilience is attributed to their proactive management of environmental, social, and governance risks, which fosters stronger long-term financial performance. Additionally, investor interest in ESG funds continues to grow, indicating a shifting paradigm towards sustainable investing practices globally. With increasing awareness and advocacy for sustainability, ESG funds are likely to attract more capital inflows, further driving their performance.

Moreover, the integration of ESG factors in investment decisions not only aligns with ethical considerations but also mitigates risks associated with regulatory changes and societal shifts toward sustainability. As such, the findings underscore the potential for ESG funds to serve as a cornerstone in constructing diversified and resilient investment portfolios for investors seeking both financial returns and positive societal impact. Consequently, policymakers, asset managers, and investors alike are encouraged to explore the opportunities ESG investing presents for driving sustainable economic growth and fostering a more equitable and resilient financial system.

6. Conclusion

Thus, the comparative study conducted for the period (2021-22 -2023-24) shows a positive trend toward sustainable investing. Most of the selected nine mutual funds have outperformed the benchmark indices, indicating the effectiveness of ESG strategies in India in generating competitive returns. Quant ESG equity Fund has emerged as the top mutual fund with high returns but is associated with higher risk; ICICI Prudential ESG Fund has shown good risk-adjusted returns and low standard deviation. Despite some mutual funds like Axis ESG, Aditya Birla Sun Life ESG, and Kotak Opportunities ESG Fund, which have underperformed against the benchmarks, overall, we can see a growing trend towards ESG investing in India. As the awareness about environmental, social, and governance factors increases among investors, the positive trend will continue to grow. This study provides valuable data to investors for investing in ESG mutual funds, but investors need to study all fund related documents before investing.

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Data Availability Statement: The data for this research paper was sourced from publicly available information and databases. Average returns of the NIFTY Sector Leaders ESG Index, S&P BSE100 ESG Index, and MSCI India ESG Leaders Index were directly obtained from their respective official websites. Additionally, data on average returns, standard deviations, and Sharpe ratios for the selected 9 ESG mutual funds were sourced from the Economic Times website. All data utilized in this study represent publicly accessible information as of the date of data collection. Further details on any data transformations or calculations performed are provided in the methodology section of this paper.

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