

# A Study on the Growth of Green Energy Funds toward Sustainable Development in India

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## **Abstract**

The fundamental purpose of implementing renewable energy in India is to repair the environmental damage caused by mankind's irresponsibility over the years. It is a means of living a fully sustainable and prosperous life. India's energy consumption has risen dramatically in recent years due to its booming economy and expanding population. India has set extravagant targets for increasing the proportion of renewable energy in its energy mix, aiming to generate 450 GW of renewable energy capacity by 2030. To meet this goal, the Indian mutual fund industry stimulates investment in green energy sectors. Many companies support green energy, as it has become the new market interest as the world shows interest in sustainable solutions. The study relies on secondary sources gathered through AMFI, the Scopus database, integrated reports of



selected companies, and websites containing information regarding investment in green energy sector funds and the growth in investment through assessing net asset values (NAV). The study suggests that investing in green energy funds will help India meet its ambitious goal of increasing the share of renewable energy in its energy mix.

**Keywords:** Mutual fund Investment, Green Energy Funds, Solar energy Funds, Sustainable Development

### Introduction

Energy derived from renewable sources is called "green energy." Green energy is often expressed using terms like clean, sustainable, or renewable energy. Green energy production has little to no environmental influence because it does not emit harmful greenhouse gases into the atmosphere. Some important green energy sources include electricity produced by solar, wind, geothermal, biogas, low-impact hydroelectricity, and some certified biomass sources.

One of the only ways to repair the environmental harm mankind's irresponsibility has caused over the years is to use renewable energy. It is a means to live a fully sustainable and prosperous life.

Due to its booming economy and expanding population, India has seen a dramatic increase in energy use in recent years. India has set high goals for increasing the amount of renewable energy in its energy mix, with a goal of creating 450 GW of renewable energy capacity by 2030. This is done to deal with this need while also balancing the pillars of profitability and sustainability. From 2014 to 2021, India's renewable energy capacity increased by 250 percent, while FDI into the non-conventional energy industry totaled US\$12.57 billion between April 2000 and June 2022.

According to a recent research report from the Institute of Energy Economics and Financial Analysis, India saw a record-high investment in renewable energy in FY22, with a stunning \$14.5 billion invested, indicating a massive 125 percent increase from the previous year. Furthermore, compared to the prepandemic era of FY 2019–20, this implies an increase of 72%. The nation is expected to draw investments totaling more than \$20 billion in renewable energy in 2023 alone (Singh, 2023).

Following Russia's invasion of Ukraine in 2022, skyrocketing oil and gas costs forced governments in import-dependent countries like India to look for alternatives. Switching to renewable energy is also viewed as a means to reduce carbon footprint, reach net-zero goals, and reduce imports. Thus, in 2022, the government vigorously promoted the use of electric vehicles, the creation of green hydrogen, the production of solar equipment, and energy storage to meet its lofty goal of 500 GW of renewable capacity by 2030.

# **Challenges Related to India's Energy Sector**

Energy Poverty and Inequality: India's enormous access disparities are a major issue. Kerosene lights are still used in around 77 million homes in India. The problem has gotten significantly worse in India's rural areas, with up to 44% of homes lacking access to electricity. Several efforts and programs have been developed in India to alleviate the energy crisis; however, they have encountered logistical issues and have insufficient local execution.

Import Dependence and Weaponization of Supply Chain: The cost of imported crude oil in India surged by 76% to USD 90.3 billion in the first half of 2022-2023, while total volume increased by 15%. India's energy security is severely threatened by its rising reliance on imported oil, and the challenge is made worse by



the current disruption of the global supply chain caused by a disturbance in geopolitics. In terms of renewable energy, India relies heavily on other nations like China for solar panels. Due to India's current incapacity of producing solar wafers and polysilicon, there is no backward integration in the solar value chain, making the transition to clean energy more challenging.

Climate Change-Induced Energy Crisis: Climate change has a direct impact on fuel availability, energy consumption, and the physical durability of current and future energy infrastructure. Reducing the use of fossil fuels is crucial because climate change-related heat waves and disrupted monsoons are already stressing out the world's energy supply.

Women's Health at Risk: Women are at risk because they frequently participate actively in household tasks and depend on non-clean sources of energy like coal, cow dung, and wood for heating. The use of unclean energy sources raises the risk of respiratory, cardiovascular, and mental illnesses in women and raises maternal and infant mortality as well.

Widening Coal Demand-Supply Gap: According to Ministry of Coal data from 2021, there is an increasing discrepancy between domestic coal output and consumption. Even if significant reserves exist, coal extraction has reduced in the main coal-producing states. The problem is getting worse because of the rising costs and outstanding contractual disputes with power producers.

Rising Demand, Rising Energy Costs: The International Energy Agency anticipated in its World Energy Outlook report that India's energy demand will rise by more than 3% per year. Alone due to the country's rapid urbanization and industrialization. The price of petroleum is rising rapidly across the board at the same time. To curb all these challenges Govt. of India has promoted many schemes (India's Green-Energy Transition, 2022)

## **Efforts towards Green Energy Transition**

- In 2019, India announced it would increase its installed renewable energy capacity to 450 GW by 2030.
- The Indian government has also launched the output Linked Incentive Scheme (PLI) initiative to strengthen the industrial sector and increase raw material output for renewable energy.
- The PM-KUSUM (Pradhan Mantri-Kisan Urja Suraksha evam Utthaan Mahabhiyan) program uses solar energy to provide farmers with water and financial stability.
- Solarization of water pumps is an example of distributed power that is delivered to the consumer's door.
- The Ministry of New and Renewable Energy's website also hosts the Akshay Urja Portal and the India Renewable Idea Exchange (IRIX) Portal. IRIX is a forum that encourages the exchange of ideas between energy-conscious Indians and the global community.

Green investing tries to encourage business activities that benefit the natural environment. Green investments are focused on firms or projects that are committed to natural resource conservation, pollution reduction, or other environmentally conscious business practices. Green investments, while falling under the SRI umbrella, are more particular. To support green projects, some investors purchase green bonds, green exchange-traded funds, green index funds, green mutual funds, or stock in environmentally friendly enterprises. While profit is not the main motivator for these investors, there is some evidence that green investment can match or outperform more traditional assets in terms of returns. (Chen, 2022)



## Objective

To study the growth of green energy/Renewable energy funds in India.

# Methodology

The present study is purely based on secondary data. For the study purpose, Net Asset Value (NAVs) from 2019 to 2023 (April to March) have been extracted from the respective websites of Asset Management Companies (AMCs) and the Association of Mutual Funds in India (AMFI). Some relevant information was collected from various websites and scholarly research articles from Scopus-indexed journals, and periodicals like Economic Times.

#### **Green Funds**

A "green fund" is a mutual fund or other kind of investment vehicle that only invests in companies that are deemed to be socially or environmentally responsible. A green fund can be a focused investment vehicle for businesses involved in eco-friendly endeavors like renewable energy, sustainable living, eco-friendly transportation, and water and waste management. "Green energy" is a relatively recent term. Despite increased interest in sustainable solutions, many corporations now promote green energy as the next industrial trend. For investors, green energy is now a viable investment alternative. Green energy mutual funds, as the name suggests, invest in companies involved in the green energy and resources industries i.e., businesses that produce energy from sources like wind, solar, hydro, etc. In India, the state of renewable energy systems like solar and wind systems is satisfactory, however further development of renewable energy sources is needed.

Given the country's tremendous renewable energy potential, consistent regulatory measures and an investor-friendly administration may be key elements in supporting India in becoming a global leader in clean and green energy.

The government must make efforts to attract private capital. R&D should be used to overcome insufficient technology and a lack of infrastructure required for the establishment of sustainable technologies. The government should provide additional funding to foster innovation and research in this subject. Beyond just the economic gains, societal benefits will arise from making investments economically feasible through the implementation of efficient regulations and tax incentives.(Charles Rajesh Kumar & Majid, 2020).

The obstacles can be overcome by implementing important strategic measures such as fostering an environment that attracts investment, facilitating easy access to financing, building transmission and distribution infrastructure, cultivating talent, and growing the domestic component manufacturing sector. India could attain its goal of industrialization through clean energy with the help of such innovative measures (Kar et al., 2016).

In India, Solar witnessed a shift from a simple obligation to improve society to a more robust possibility for socioeconomic prosperity. Due to its obvious threefold benefits—economic, social, and environmental—solar has grown in popularity among investors and is also helping the nation's economy grow(Kapoor et al., 2014).

When the COVID-19 pandemic struck, the energy sector had just begun to prioritize sustainability. (Steffen et al. 2020). Numerous nations issued orders for a total lockdown, requiring their inhabitants to remain confined to their houses. There have been severe repercussions all across the world as a result of the total shutdown of industry, including prospective initiatives like those in the renewable energy sector. The International Monetary Fund (IMF)'s economists are concerned that this closure could trigger a worldwide



economic slump that could be as severe as the financial crisis of 2007–2008. After reaching a record high in 2017, renewable energy investment have now started to fall (Article: COVID-19: Clean energy challenges and opportunities, Standard Chartered 2020). Continuous investment in renewable energy, energy efficiency, and other environmentally friendly initiatives reduced substantially in 2020-21 as a result of the COVID-19 epidemic and the global economic crisis. The COVID-19 outbreak, as well as economic downturns, prompted a considerable decline in oil and gas prices. Lower fossil fuel prices are detrimental to the development of renewable energy projects, as solar, wind, and other renewable energy sources are less cost effective when compared to power sources. This reduces investor interest in renewable technologies, putting the Paris Climate Agreement and other SDGs at risk.

India has consistently demonstrated a progressive tendency when it comes to the integration of renewable energy sources within the grid. The research on its solar energy front demonstrates its desire to increase environmental sustainability.

Sustainable development is made possible by employing sustainable energy and ensuring that all citizens have access to cost-effective, dependable, sustainable, and modern energy. Because of strong government support and an increasingly advantageous economic environment, India is quickly becoming one of the world's top leaders in the most lucrative sectors for renewable energy. The government has established legislation, programs, and a liberal environment in order to tempt international investment and drive the country forward in the sector of renewable energy. (Charles Rajesh Kumar and Majid 2020)

## Renewable Energy in India

According to the REN21 Renewables 2022 Global Status Report, India ranks fourth in the world for installed renewable energy capacity (including large hydro), fourth for wind power, and fourth for solar power. At COP26, the country increased its target to 500 GW of non-fossil fuel energy by 2030. This is a significant commitment under the Panchamrit. This is the world's largest renewable energy expansion plan. In 2022, India had the highest year-over-year growth of 9.83% in the addition of renewable energy. Over the previous nine years, installed solar energy capacity expanded by 24.4 times to 67.07 GW in July 2023. The capacity that has been set for renewable energy sources (including large hydro) has expanded by around 128% since 2014.

#### Exploring Green Energy Mutual Funds in India

As a result of growing environmental concerns, the Indian government has established high goals for renewable energy. As a result, there has been a significant rise in interest in green energy mutual funds. These funds invest in companies involved in the generation of renewable energy as well as the development of machinery and auxiliary infrastructure. The following three leading energy funds in India have been selected based on their holdings in renewable energy stocks and NAVs over the last 5 years. The direct and regular plans have been selected for the study purpose

#### Tata Resources and Energy Fund:

Launched in 2015, this thematic green energy fund from Tata not only evaluates the financial performance of companies but also considers their environmental impact, social responsibility, and corporate governance practices. It has an AUM (assets under management) of close to ₹300 crore, making it a mid-sized fund in the thematic energy sector. Since its launch, Tata Resources & Energy Fund is reported to have generated annual returns around the 18% mark annually and has doubled the invested capital every three years. The scheme's investment objective is to seek long-term capital appreciation by investing at least 80% of its net assets in equity/equity-related instruments of corporations in India's resources and energy sectors, notably cement, energy, metals, chemicals, fertilizers, and paper.



Table No 1

Tata Resources & Energy Fund - Allocation to Renewable Energy Stocks

| Stocks                   | Holding % |
|--------------------------|-----------|
| Reliance Industries Ltd. | 7.64      |
| NTPC Ltd.                | 5.39      |
| Tata Power Company Ltd.  | 3.33      |

Data on July 31, 2023 (Source: ACE MF; information collected by Personal FN Research)

The total amount allocated by the scheme to stocks of companies engaged in the green energy revolution is 18.22%. The companies most exposed are NTPC Ltd. and RIL. Furthermore, the scheme has an appropriate level of exposure to major players in the industry, such as GAIL (India) Ltd. and Tata Power Company Ltd.

The following tables show the Highest and Lowest NAVs of different schemes of Tata Resources and Energy Fund from 1<sup>st</sup> October 2019 to 1<sup>st</sup> October 2023

| Table No: 2   |         |         |
|---|---------|---------|
| Data on Tata Resources & Energy Fund-Direct Plan-Growth |         |         |
| Years   | High    | Low     |
| 2019  | 16.0715 | 14.6364 |
| 2020  | 21.3012 | 11.3713 |
| 2021  | 34.6864 | 20.9263 |
| 2022  | 34.7289 | 26.5626 |
| 2023  | 38.4122 | 30.4126 |

Source: AMFI data on Net Asset Values of Tata Resources and Energy Fund

| Table No:3  Data on Tata Resources & Energy Fund-Regular Plan-Growth |         |         |
|--|---------|---------|
| Years  | High    | Low     |
| 2019   | 15.0374 | 13.7081 |
| 2020   | 19.5342 | 10.5585 |
| 2021   | 31.4203 | 19.1755 |
| 2022   | 31.2065 | 23.792  |
| 2023   | 33.7206 | 26.9291 |

Source: AMFI data on Net Asset Values of Tata Resources and Energy Fund



## **Analysis**

It is evident from the AMFI data on the top and lowest NAVs of the Tata Resources and Energy Fund that there has been a twofold increase in investment in these funds between 2019 and 2023. The rise in the bull rate over the past few years can be attributed to India's rising recognition of the significance of green and renewable energy. Except for the years 2019–20 and 2020–21, there hasn't been a significant change in the NAVs over the years.

## **DSP Natural Resources and New Energy Fund**

The DSP Natural Resources & New Energy Fund was established in December 2012 and invests in securities of Indian-domiciled businesses with a primary focus on the following industries:

- The discovery, development, extraction, or distribution of natural resources, such as mining, energy, etc.
- The fields of energy technology and alternative energy, with a focus on energy storage, automobile and on-site power production, renewable energy, and enabling technologies.

Currently, the AUM of the program stands at Rs 727.92 crore. Of the total market capitalization that it invests in, 52.22% is allocated to large-cap stocks, 13.15% to mid-cap stocks, and 7.34% to small-cap stocks. This is an Equity Sectoral/Thematic, Natural Resources & New Energy fund that holds 35% in the S&P BSE Oil & Gas Index, 30% in the S&P BSE Metal Index, and 35% in the MSCI World Energy Index buffer about 30% its benchmark is 10/40 Net Total Return. This fund's risk rating is classified as Very High Risk. As of September 30, 2023, the total AUM was \$749.68 crore.

Table No: 4

DSP Natural Resources & New Energy Fund - Allocation to Renewable Energy Stocks

| Stocks                   | Holding % |
|--------------------------|-----------|
| Reliance Industries Ltd. | 6.27      |
| GAIL (India) Ltd.        | 4.89      |

Data as of 31st July 2023 (Source: ACE MF, data collated by Personal FN Research)

Reliance Industries Ltd.'s stock has the largest percentage of the total allocation to renewable energy equities (11.16%). A fair amount of the scheme's equity is invested in GAIL (India) Ltd. stocks, which are dedicated to lowering carbon emissions and implementing renewable energy projects.

| Table No:5  DSP Natural Resources and New Energy Fund -Direct Plan-Growth |        |        |
|---|--------|--------|
| Years   | High   | Low    |
| 2019  | 34.369 | 29.47  |
| 2020  | 34.826 | 20.32  |
| 2021  | 46.055 | 37.939 |
| 2022  | 62.454 | 53.888 |
| 2023  | 64.497 | 59.71  |

Source: AMFI data on Net Asset Values of DSP Natural Resources and New Energy Fund



| Table No:6                                |        |        |
|---|--------|--------|
| DSP Natural Resources and New Energy Fund |        |        |
| Years                                     | High   | Low    |
| 2019                                      | 33.075 | 28.386 |
| 2020                                      | 33.268 | 19.381 |
| 2021                                      | 43.494 | 35.866 |
| 2022                                      | 58.237 | 50.301 |
| 2023                                      | 59.587 | 55.053 |

Source: AMFI data on Net Asset Values of DSP Natural Resources and New Energy Fund

## Analysis

It is evident from the AMFI data on the top and lowest NAVs of the DSP Natural Resources and New Energy Fund that there has been a twofold increase in investment in these funds between 2019 and 2023. The rise in the bull rate over the past few years can be attributed to India's rising recognition of the significance of green and renewable energy.

## Nippon India Power and Infra Fund

The majority of the investments made by Nippon India Power & Infra Fund are in Indian businesses involved in the power and infrastructure sectors. The fund is benchmarked against Nifty Infrastructure and currently has an AUM of Rs 2,544.80 crore.

Table No7

Data on Allocation to Energy Stocks

| Stocks                                    | Holding % |
|---|-----------|
| NTPC Ltd.                                 | 7.47      |
| Reliance Industries Ltd.                  | 6.46      |
| Sterling and Wilson Renewable Energy Ltd. | 3.79      |
| Tata Power Company Ltd.                   | 1.90      |

Data on July 31, 2023 (collected by Personal FN Research and sourced from ACE MF)

The plan allocates its investments over a range of market caps; as of July 2023, large caps accounted for 48.93% of the allocation, followed by mid-caps (16.46%) and small-caps (28.90%). The largest allocation to renewable energy equities is made by the Nippon India Power & Infra Fund, which also holds stakes in



well-known green energy companies Tata Power Company Ltd. and Sterling and Wilson Renewable Energy Ltd. at 7.47% and 6.46%, respectively, in NTPC Ltd. and RIL. The fund now has 19.63% of its assets invested in stocks related to renewable energy.

| Table No: 8  Data on Nippon India Power & Infra Fund-Growth Plan -Growth Option and Bonus Option |          |          |
|--|----------|----------|
| Years  | High     | Low      |
| 2019   | 105.0177 | 87.0298  |
| 2020   | 105.0392 | 59.8299  |
| 2021   | 164.9613 | 104.6822 |
| 2022   | 182.621  | 133.531  |
| 2023   | 178.4884 | 168.6223 |

Source: AMFI data on Net Asset Value of Nippon India Power and Infra Fund

| Table No: 9<br>Data on Nippon India Power & Infra Fund - Direct-Growth Plan - Growth Option<br>and Bonus Option |          |          |
|---|----------|----------|
| Years High Low  |          |          |
| 2019  | 109.1827 | 90.6114  |
| 2020  | 110.1833 | 62.4978  |
| 2021  | 173.8595 | 109.8648 |
| 2022  | 193.8301 | 141.3029 |
| 2023  | 189.7268 | 179.1117 |

Source: AMFI data on Net Asset Value of Nippon India Power and Infra Fund

Analysis: It is evident from the AMFI data on the top and lowest NAVs of the Nippon India Power and Infra Fund that there has been an increase in investment in selected schemes of Growth and Direct plan between 2019 and 2023. The NAVs of the Growth option and Bonus Option are the same for a direct plan as well as a Growth plan. Except for the years 2019–20 and 2020–21, there hasn't been a significant change in the NAVs over the years.

The rise in the bull rate over the past few years can be attributed to India's rising recognition of the significance of renewable and green energy and also to the infrastructure of renewable energy sources in these years.

#### **Discussions**

Considering data from various renewable energy sector funds, we observe that these sectoral funds have grown steadily over the past few years. The public and businesses' growing concern over environmental issues encourages them to invest in these sectors. Apart from these, the Indian government has actively supported finances for the renewable energy sectors. The government has established a number of



initiatives and programs and allocated significant sums of money in the Union Budget for FY 2023–2024 to promote this vision and assist both the public and commercial sectors in achieving this aim. The government committed Rs 19,500 crore (\$2.57 billion) for a PLI plan in order to boost the production of high-efficiency solar modules. Under the moniker Mission Innovation Clean Tech Exchange, India launched a global endeavor to accelerate the development of clean energy.

## Conclusion

For individual investors looking for sustainable long-term capital gain, the renewable energy industry is a good investment option because it is on the route to conversion and is expected to have significant growth potential. Mutual fund investments in renewable energy stocks can give investors access to the growth of this sector. Before investing, it's crucial to conduct a thorough examination of the businesses that are responsible for producing and distributing renewable energy. Due to the sector's recent development, it's possible that many businesses in the sector are not yet profitable while others have only recently begun to do so.

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