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Investor Returns and Performance of Renewable Energy IPOs in India

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Abstract: The growing emphasis on sustainable development and clean energy transition has significantly influenced the dynamics of capital markets in India, particularly in the context of Initial Public Offerings (IPOs). Over the past decade, the Indian stock market has witnessed a notable increase in listings, with the renewable energy sector emerging as a key contributor to this trend. Renewable energy firms, supported by favorable government policies and global environmental commitments, have increasingly accessed public markets to mobilize capital for expansion and technological advancement. This study examines the performance of renewable energy IPOs in comparison with conventional energy offerings in the Indian stock market. It focuses on key aspects such as initial price differences, listing-day returns, subscription levels, and investor sentiment. The study also explores the phenomenon of IPO underpricing and its implications for market efficiency and investor behavior.

Further, the research analyzes the role of various determinants such as pricing strategies, market conditions, underwriter reputation, and regulatory environment in influencing IPO outcomes. By integrating financial performance indicators with sustainability-oriented investment perspectives, the study aims to provide a comprehensive understanding of how renewable energy IPOs behave in emerging markets like India. The findings are expected to offer valuable insights for investors, policymakers, and researchers by highlighting the interplay between environmental objectives and financial market performance. Ultimately, the study contributes to bridging the gap between sustainable finance and capital market analysis, emphasizing the importance of renewable energy investments in shaping future economic growth.

Keywords: Renewable Energy IPOs, Sustainable Finance, IPO Underpricing, Indian Stock b Market, Investor Sentiment.

Introduction

Over the past decade, the Indian stock market has experienced significant transformation, marked by a rising number of companies accessing public markets through Initial Public Offerings (IPOs). The energy sector, particularly renewable energy, has emerged as a key contributor to this trend, driven by global sustainability goals, climate change concerns, and the shift toward clean energy sources. In India, strong policy support and institutional initiatives by the Ministry of New and Renewable Energy have accelerated sectoral growth, encouraging firms to expand and raise funds through IPOs. As a result, IPOs have become an essential financial tool for renewable energy companies to mobilize capital and strengthen their market presence.

An IPO is the process through which a private company offers its shares to the public for the first time and becomes listed on a stock exchange. It plays a crucial role in capital formation, enabling firms to finance expansion, reduce debt, and invest in innovation. This is particularly important for capital-intensive sectors like renewable energy, where large investments are required. IPOs also enhance corporate visibility, credibility, and market valuation, while underwriters help reduce the risk of undersubscription, ensuring the effectiveness of the offering.

Renewable energy companies operate under dynamic conditions influenced by regulatory changes, government incentives, technological developments, and environmental concerns. Investor interest in these IPOs is increasingly shaped by Environmental, Social, and Governance (ESG) considerations, reflecting a shift toward sustainable investment preferences. However, this also introduces uncertainty due to market volatility and policy fluctuations. A common feature of IPO markets is underpricing, where shares are offered below their listing price, generating initial gains for investors. In renewable energy IPOs, such trends may be influenced by strong investor optimism regarding future growth and sustainability.

Given India's commitment to clean energy and initiatives like the International Solar Alliance, it becomes important to analyze whether renewable energy IPOs perform differently from conventional energy offerings. This study focuses on evaluating their performance through indicators such as listing-day returns, subscription levels, and pricing strategies. By comparing these with traditional sector IPOs, the research aims to provide insights into investor behavior, market efficiency, and the evolving relationship between sustainable development and capital markets.

Objectives of the study

1. To analyse the short-term performance between Renewable and Non-Renewable Energy IPOs in India.
2. To determine the impact of Nifty Energy Index on IPO listing performance.
3. To compare the under-pricing levels and subscription

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rates of Renewable and Non-renewable energy IPOs

Research hypotheses

- **H1**: Renewable energy IPOs experience higher under-pricing than non-renewable energy IPOs.
- **H2**: Higher subscription rates lead to higher listing-day returns for both renew- able and non-renewable IPOs.
- **H3**: Nifty Energy Index returns don't influence IPO gains on listing day.

Review of Literature

Existing research on IPO performance and under-pricing are a good starting point for examination, and this is an extension of them. The subscription ratio, the issue price, and investor sentiment are just some of the many notable studies that have examined the impacts on the pricing of IPOs. Aside from examining returns on listing day, they also examine the impact of market conditions and firm information on returns in different industries. This study also seeks further to understand the IPO conduct, specifically in the energy sector, by focusing on these findings. These factors specify what makes IPOs successful and provide recommendations to investors and policymakers operating in the jigsaw puzzle of the stock market.

Bajo and Raimondo (2017): examined whether ESG targeted IPOs are valued more highly and concluded that they are. The global sustainability movement has

been compelling increasing numbers of investors towards companies that employ sound Environmental, Social, and Governance (ESG) principles, their study showed. Investors care more and more about ethics and sustainability, and that is the reason ESG targeted IPOs attract higher demand. The research also noted that ESG considerations minimize uncertainty, enhance investor confidence and result in higher valuations. Their results provided insightful information about the relationship between financial markets and sustainability, noting that ESG led companies are more valuable to investors.

Chambers and Dimson (2009): offered a thorough historical examination of IPO infectious diseases and sought progress in the last century. Her work emphasized the impact that legal, regulatory and disclosure practices had on the IPO market, especially in the UK. They examined the pattern of underestimation, is ilustrating that general offers in 1917 and 1945 were underestimated relative to 9.15% during 1946-1986, and were even greater after deregulation in 1986. This paper illustrated how market structure, protection of investment and insurance practices affected IPO efficiency. Your findings give useful insight into the evolution of IPO dynamics and market behavior.

Data collection

This study depends primarily on secondary data from a variety of well-known financial databases and regulatory authorities to ensure accuracy, reliability and reliability in analysing the performance of India's renewable and non-renewable energy compartments. The data collection process consists of:

Sample size

The study includes a total of 54 IPOs from the Indian stock market, classified into:

Renewable Energy IPOs: 40 companies
Non-Renewable Energy IPOs: 14 companies

This sample size is based on comprehensive data collection for NSE, BSE, SEBI registrations and financial databases. The larger representation of IPOs on renewable energy reflects the growing focus on sustainable investment in India over the past decade.

Despite differences in statistical methods are used to ensure a valid comparative analysis between the two categories. The empirical approach of this study ensures that the results remain statistically significant and reflect actual market trends.

Model Specifications

In order to empirically examine the hypotheses stated in this study, three separate econometric models have been developed. Each model corresponds to a specific hypothesis related to the short-term performance of renewable and non-renewable energy IPOs in India.

Model I: Testing for Under-Pricing Difference (H1)

Hypothesis: H1: Renewable energy IPOs experience higher under-pricing than non- renewable energy IPOs.

Objective: To compare the mean listing-day returns (LDR) between renewable and non-renewable energy IPOs.

Model Specification: This is a mean comparison model using an independent samples t-test, formulated as:

$$LDR_i = \mu + \epsilon_i$$

Where:

- LDR_i = Listing Day Return of IPO i
- μ = Mean return for each group (Renewable / Non-Renewable)
- ϵ_i = Error term

Group-wise LDRs are tested for significant differences using a t-test between two groups:

- Renewable IPOs (Group 1)
- Non-Renewable IPOs (Group 2)

Model II: Correlation-Based Testing for Subscription Impact (H2)

Hypothesis: H2: Higher subscription rates lead to higher listing-day returns for both renewable and non- renewable IPOs.

Objective: To examine the relationship between subscription rate and listing-day return.

Model Specification: As regression was not used, the hypothesis was tested through correlation only. The simplified relationship can be represented as:

$$LDR_i \leftrightarrow SUBRATE_i$$

Where:

- LDR_i = Listing Day Return of IPO i
- $SUBRATE_i$ = Subscription Rate of IPO i

Without assuming cause and effect, the study evaluates the strength and direction of correlation.

Model III: Nifty energy Index and IPO Performance (H3)

Hypothesis: H3: Nifty Energy Index returns do not influence IPO gains on listing day.

Objective: To assess how broader energy sector market performance (Nifty Energy Index) affects IPO listing returns.

Model Specification:

$$LDR_i = \alpha + \beta_1 \times NIFTY\ ENG_i + \epsilon_i$$

Where:

- LDR_i = Listing Day Return of IPO i
- $NIFTY\ ENG_i$ = Return on Nifty Energy Index on the IPO i listing day
- α = Intercept
- β_1 = Coefficient of Nifty Energy Index return
- ϵ_i = Error term

This regression model examines whether performance on the IPO listing day is impacted by larger market movements.

Renewable Energy Sector in India

Energy produced from nearly limitless naturally regenerating resources is referred to as renewable energy. The following are the primary types of renewable energy sources:

Solar Energy: Solar energy is captured using photovoltaic cells or solar thermal systems. These systems help convert sunlight into usable electricity or heat. Photovoltaic cells directly turn sunlight into electricity, while solar thermal systems use sunlight to produce heat, that can provide electricity for residences, industries, or even generate electricity in larger setups.

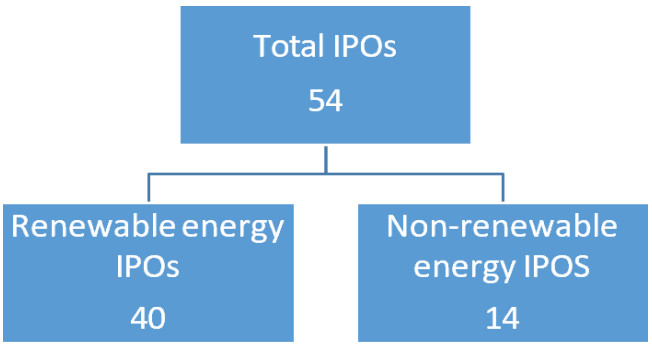
Wind Energy: Wind power is generated through wind turbines, which convert the movement or kinetic energy of the wind and transform it into electricity. The turbine converts the energy as the wind makes the blades rotate. The renewable energy is able to power homes and businesses.

Hydropower: Hydropower is generated with the power of moving water, primarily assisted through the assistance of dams and turbines. Moving water causes the rotation of the turbines, which further powers a generator to generate electricity. It's a source of renewable energy used quite commonly for household power generation, industry usage, and entire communities as a whole.

Biomass Energy: Biomass energy is generated from organic matter such as crop residues, wood, and animal manure. These are converted to produce electricity, heat, or biofuels. Converting natural waste into energy, biomass provides a renewable alternative that can be utilized for residential use, industries, and transportation, allowing less reliance on fossil fuels.

Sources of renewable energy are sustainable, climate friendly, and have negligible amounts of greenhouse gases emitted, thus being vital to combat climate change. They offer economic benefits too, such as reduced operating expenditures, the potential for increased job opportunities, and enhanced energy dependability. India has witnessed widespread shift towards the use of renewable energy due to increasing consciousness.

IPO Performance Comparison



Number of IPOs and Market Share

The short term market performance of renewable and non-renewable energy companies clearly differs, according to an in depth study of 54 initial public offerings (IPOs) from the Indian energy sector (2014–2024).

Number of IPOs and Market Share

40 were from the renewable energy sector (approximately 74%).
14 were from the non-renewable energy sector (approximately 26%).

This disparity in IPO frequency is a reflection of the strength and growth of the renewable energy industry, which has emerged as a top destination for promoters and investors both.

Listing-Day Returns (LDR) and Under-pricing Initial public offerings (IPOs) in the renewable energy space have consistently done well on their listing day. Thus, investors generally receive high returns on the listing day from such IPOs, as these tend to be underpriced. The strong listing performance indicates how keen and interested investors are about green energy firms. Accordingly, on their listing day, IPOs like IREDA, Vikram Solar, and Waaree Energies registered good

price appreciation, often giving returns of double digit figures. Such results reflect the confidence of investors in the future growth of renewable energy companies as well as an increasing need for clean energy. IPOs are often seen as a speculation on the day of listing to garner exceptional returns on the day itself. The impact of many determinants like issue size, over subscription, age of the business, possession of promoters after issue, and many other such underlying factors, on the success of IPOs is, however, unknown. Investors are not sure whether they should sell the stock on the listing day or retain it for a short tenure. Investors may fail to analyse the stock properly in coming up with an investment strategy if such issues are not fixed.

By comparison, initial public offerings (IPOs) of non-renewable energy companies like Jupiter Wagons and ONGC Petro Additions saw their listing-day returns lower or less steady. Although investors still have interest in these companies, their performance has been less predictable, with some listing prices being volatile or less prominent growth. Contributing in no small measure to increasing environmental concerns and global efforts to cap carbon emissions, this divergence implies that non-renewable energy firms might struggle to generate the same degree of excitement as renewable energy firms. Based on the overall distinction in listing day performance, renewable energy companies are well placed to gain both long term investors who seek future growth opportunities and short term investors seeking rapid returns. Renewable energy companies expect to benefit from enhanced market sentiment,

technological innovation, and greater government support as the world continues to make the transition to sustainable energy. Besides supporting renewable energy firms to grow financially, the trend makes their case in India's transition towards a cleaner and more sustainable energy regime.

Subscription Rates Interest in renewable energy initial public offerings (IPOs) from investors has been astounding, with most of them being hugely oversubscribed. This means that there was much higher demand for the shares in the IPOs than the available shares. Subscription levels were often over ten times the size of the issue, indicating the popularity of the renewable energy companies. A prime example is IREDA, which saw a staggering 38 times oversubscription against its

issue size. The massive demand shows to what extent investors have faith in the renewable energy sector and its future. Nonetheless, orders for initial public offerings (IPOs) by non-renewable energy firms were much lower. These initial public offerings (IPOs) hardly attracted investors; some barely reached the subscription level. The gulf in performance between renewable and non-renewable initial public offerings (IPOs) suggests that investors are more attracted to the promising future of the renewable energy sector. There are several reasons why there is such a high demand for renewable initial public offerings. Renewable energy companies are those that make renewable energy, and they are behind the global movement towards sustainability and green energy. As industries transition to renewable energy solutions, they offer opportunities for long-term growth. The popularity of renewable energy firms over conventional fossil fuel companies is also boosted by the fact that most investors nowadays prefer ESG (Environmental, Social, and Governance).

Descriptive Overview of Energy Sector IPOs

This section gives a brief overview of the key information in terms of IPOs (Initial Public Offerings) of India's energy industry. 54 IPOs of the period 2014-2024 have been considered in the research work. Among them, 14 are of companies that handle non-renewable energy and 40 are of listed companies of renewable energy. Analyzing these IPOs, efforts are made to find key market trends and patterns.

A number of main points are under consideration. The issue price is the term assigned to the issue price of the shares that are being issued to investors during the initial public offering (IPO). Listing price, being the price at which the shares are being offered when the stock market first lists them, is second. Third is the underpricing rate, a comparison between the issue price and listing price. The sum of money received through the IPO is referred to as the offer size. Lastly, the subscription rate refers to the ratio of the number of bids made by investors to the number offered.

We can understand more about the IPOs' performance and how investors reacted through these facts. This overview gives us significant information about market behavior, investor demand, and pricing. It also indicates how renewable and non-renewable energy firms are unique in the Indian initial public offering (IPO) market.

The mean, min, max, and the std dev are descriptive statistics giving details on information on dispersion and central tendency for all categories.

Below is a comparative overview table:

Multiple trends can be seen in the following table:

IPOs of renewable energy tended to have lower issue prices compared to non-renewable energy. IPOs of non-renewable companies had a higher average issue price of |302.21, while renewable IPOs tended to have an average issue price of |164.35. This shows that the initial prices of renewable company shares were lower than those of non-renewable company shares. Renewable IPOs had a much larger variation in listing prices, the price on which shares trade when they are listed for the first time in the public market even though issue pricing is low. Listing prices of renewable initial public offerings (IPOs) varied extensively; the maximum price was |2550. This indicates that the market is extremely keen on renewable energy companies. In some cases, it also carries the connotation of over optimism, when investors spurred prices up higher on the inaugural trading day. Such trends prove the |growing enthusiasm in renewable energy initial public offers (IPOs) and their powerful investor appeal compared to non-renewable ones.

Table 1: Descriptive Statistics of Key IPO Variables (Renewable vs. Non-Renewable Energy Sectors)

Variable	Renewable IPOs (n = 40)	Non-Renewable IPOs (n = 14)
Issue Price		
Mean		
	164.35	302.21
Min	10	20
Max	1503	1650
SD	258.91	417.87
Listing Price		
Mean		
	250.01	328.96
Min	11	20
Max	2550	1500
SD	420.29	379.54

Underpricing (%)		
Mean		
	57.39	11.12
Min	-14.29	-27.42
Max	298.94	90
SD	70.31	32.27
Offer Size (cr)		
Mean		
	880.10	247.33
Min	1.6	4
Max	10000	1039.64
SD	2018.20	353.03
Subscription Rate		
Mean		
	122.76	105.31
Min	0.85	1.48
Max	856.21	431.71
SD	196.01	156.28

This information shows that the underpricing methods of renewable and non-renewable initial public offerings (IPOs) are very different. Renovable IPOs recorded a much higher rate of 57.39% compared to 11.12% for non-renewable IPOs. Underpricing is where the issue price of shares is fixed lower than their actual value, and this makes the price jump in the first day of trading. At listing time, this allows investors to make huge profits. These firms were often underpriced throughout the IPO process, as indicated by the higher underpricing in renewable IPOs. This could be because they belong to a fast growing or popular industry that is attracting much attention from financiers willing to finance renewable energy ventures.

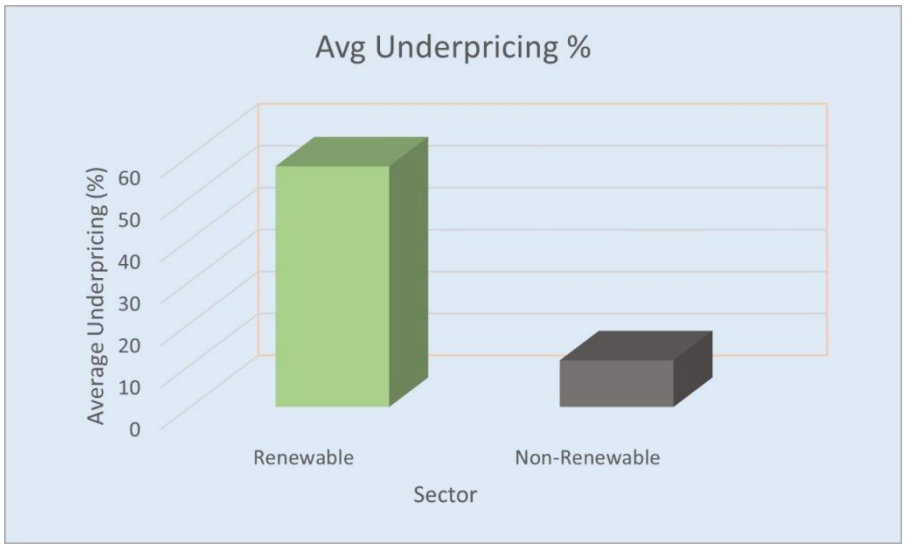


Figure 1: Average underpricing %

With much lower average underpricing, non-renewable IPOs had a more stable pricing trend and less investor enthusiasm. This trend illustrates increasing popularity of initial public offerings (IPOs) in the renewable energy segment and the scope for spectacular opening day performance.

The size of IPO offers in renewable energy was much larger compared to non-renewable energy IPOs. The size of non-renewable IPO offers averaged |247.33crore, while the average offer size of the case involving renewable IPOs was |880.10 crore. This shows the increased interest and funding of the

renewable industry, as renewable energy companies used to raise greater amounts of funds when they offered their initial public offerings (IPOs). The offer sizes in the case of the renewable segment are significantly different. For the case of renewable IPOs, the standard deviation was |2018.20 crore, which is very large. There were certain renewable IPOs that were significantly larger than the mean and others that were smaller, as reflected by a high standard deviation. The gap was probably caused by a pair of unusually massive first public offerings (IPOs), which pushed the segment's mean. With a very broad range of firm sizes and significant investor demand, this information shows the variety in the renewable energy initial public offering (IPO) marketplace.

The subscription rate is one of the key indicators of investor demand throughout the IPO process. Relative to non-renewable energy IPOs, whose average subscription rate was 105.31 times, renewable energy IPOs enjoyed a higher average subscription rate of 122.76 times. As a result, stocks of renewable energy firms were generally more heavily oversubscribed, implying that investors were more keen on this emerging industry. Investor interest in renewable energy has been evidenced by this higher subscription ratio, which can be attributed to the sec- tor's image of having enormous potential and forward thinking. Renewable and non-renewable initial public offering subscription rates were varied. Demand has been weaker in some instances and extremely strong in others. This demonstrates that investors' behavior is not the same and differs according to a multitude of factors, including the business, its position, and the state of the market when the business floats an initial public offering.

An extensive summary of IPOs' performance within India's non-renewable and renewable energy sector is introduced via these description statistics. These indicate a portion of the core trends and movements that define IPOs on renewables and non-renewables. For instance, renewable first-public issues of securities have smaller issue prices, translating to the shareholder being able to buy shares for a lesser fee. But such IPOs are so much sought after by the public because they generate market frenzy and give better returns in the short term. The findings are also an indication of the growing urge of investors to invest in firms that deal in renewable energy, marking a sign of the global trend of sustainable and clean energy. But in comparison with renewables, non-renewables IPOs seem more and more unattractive because of their lower returns, as well as due to a lack of investor interest in them. These early results form a solid foundation for further research. Further information on investor attitudes and market behavior in the energy sectors will then be revealed through comparative and detailed studies in the subsequent sections of the chapter.

Sector-Wise Analysis

Indian energy sector initial public offerings (IPO) performance during recent years is deliberated comprehensively within this segment. It is positioned against a number of the principal drivers such as day listed performance of the aforementioned initial public offerings (IPO), mean returns accruing to the investor base, trends of investments, and broader sentiment among the investor class. The segment try to capture fundamental differences between renewable and non-renewable energy IPOs through the exploration of such factors.

Solid day-of-listing performance and enhanced returns set clean and green initial public offerings (IPOs) in evidence, attesting to heightened market demand for clean and sustainable energy projects. Although they can remain tangible, non-renewable first time stock issues (IPOs) are more recurrent and stable patterns, indicating towards their existence but less demand among investors. Patterns and some attributes determining the two categories are framed through this research. It further details how the activities of the investors are determined in terms of industry specific considerations like long-run opportunities for growth and sustainability goals.

Renewable Energy IPOs

The Indian IPO market has seen unprecedented growth in renewable energy companies in recent years. Investors are preferring renewable energy companies more and more because of this trend, which is a manifestation of efforts worldwide to turn their attention towards sustainability and green energy. Data from 40 renewable energy IPOs have been compared for this study.

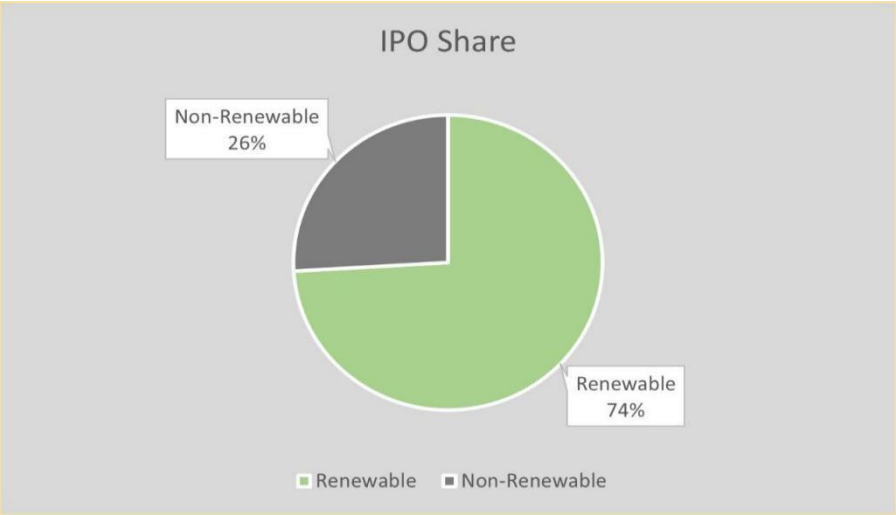


Figure 2: Share of IPOs

These initial public offering (IPOs) also tended to exhibit a listing day return, or underpricing, of around 57.39%. Due to this, shares were usually priced lower at the time of first public offering (IPO) than on the first trading day. This increased underpricing explained the huge first day returns for investors in renewable IPOs. The performances of these IPOs differed considerably, however. This variation was measured using the standard deviation, which emerged at 70.31%. This means that part of the IPOs were more mid-range or even poor-performing, but others performed exceptionally well.

In particular, certain initial public offerings (IPOs) logged spectacular first-day returns, including underpricing by up to 299%. That is to say, the market is quite hopeful regarding certain renewable energy companies. However, some initial public offerings (IPOs) opened lower than their issue price, indicating that investors' demand for green companies was not uniform. These results depict the potential alongside the risk in investment in the sector.

Key Observations:

Strong market demand was shown by the average listing price of |250.01 and the average issue price of |164.35. The average offer size was |880.10 crore, but with significant variation (max: |10,000 crore), suggesting both large institutional-backed and smaller private company offerings. The average subscription rate was 122.76 times, indicating strong investor interest and, for the most part, oversubscription most cases.

Non-Renewable Energy IPO

IPOs in the non-renewable energy industry, comprising firms in the oil, gas, and thermal power sectors, have fared worse than IPOs in the renewable energy industry. For their overall market performance, 14 initial public offerings (IPOs) from the non-renewable sector were analyzed in this research.

Non-renewable IPOs averaged a listing-day gain of 11.12%, much weaker than that for renewable IPOs. Their first-day performance was more solid and reliable, as their 32.27% standard deviation implies. This means that compared with renewable IPOs, there was less dispersion in the listing-day gains of IPOs even when some performed better or worse than average.

For non-renewable IPOs, the degree of underpricing was also modest. In this sector, the lowest listing-day return declined to 27.42%, whereas the highest one was 90%. These figures indicate that investor sentiment towards non-renewable initial public offerings (IPOs) was very subdued. In comparison to renewable energy initial public offerings, there was not much passion and high demand.

Investors' current perception of non-renewable energy firms is summed up in this more predictable and stable performance. Despite the fact that they can stay as essential to the energy mix, renewable firms are more attractive since they are perceived as forward looking and in harmony with the sustainability.

Key Observations:

The mean issue price was |302.21, and the mean listing price was |328.96. The average offer size was |247.33 crore, indicating mostly mid-sized offerings. The subscription rate averaged 105.31 times, slightly lower than that of renewable IPOs but still reflective of decent investor interest.

Subscription Trend Analysis

During an initial public offering (IPO), the subscription level is the major indicator of investor passion and market demand. It reflects the proportion of times investors have subscribed for shares to available shares. Strong passion and conviction in the business

are indicated by higher subscription levels. Subscription levels of renewable and non-renewable energy initial public offerings (IPOs) are taken into account here. Renewable energy IPOs result in higher subscription levels, as they reflect higher interest in green energy projects. Non-renewable energy IPOs display consistent but cautious investor demand, reflecting the stability of the industry and lesser appeal as investment when trending towards sustainability.

Average Subscription Rates:

Renewable Energy IPOs: 122.76 times
Non-Renewable Energy IPOs: 105.31 times

There was high demand for renewable and non-renewable energy initial public offerings (IPOs), but the average subscription ratio for renewable energy IPOs was higher. This shows that, particularly in recent years, since clean energy gained in demand and became a principal sector for sustainable development, investors had more faith in renewable energy companies.

Interpretation of Market Demand Patterns:

Clean energy projects have solid investor confidence reflected in the improvement in subscription level of initial public offerings (IPOs) by renewable energy companies. Many factors are explaining this trend. Subsidy and tax break are some among the incentives as well as the policies that have been provided by governments around the world to push renewable energy making these projects interesting to investors. As a result of the rising need for green solutions, renewable energy companies are also thought to have positive long-term growth prospects. Environmental, social, and governance, or ESG, factors are also extremely important. Companies that place high emphasis on social values, environmental sustainability, and ethical governance are attracting more and more investors.

Demand for renewable initial public offerings has been fueled by the global move towards sustainability. The clean energy sector is an obvious option for future investment since clean energy sources like solar, wind, and hydropower supplement economic potential and climate goals. The increasing subscription rates are a sign that people are increasingly confident about renewable energy as a future-oriented and promising sector.

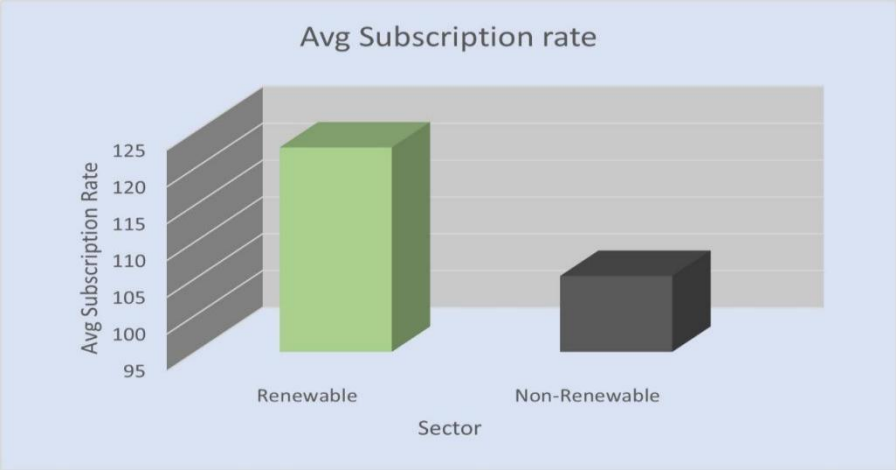


Figure 3: Average Subscription rate

While they raised fewer subscriptions overall than renewable energy IPOs, non-renewable energy investor demand did not lose its steam. This means that the non- renewable energy industry is still a strong option, especially for some classes of investors. Banks and funds are institutional investors who typically look for dividend paying, stable companies. Non-renewable firms dealing in industries like oil and gas are viewed as stable, established entities. These companies are well-established in the market due to the fact that they give stable returns and subscribe a large percentage of the world's energy needs. Although clean energy is becoming popular, non-clean energy sources still have to supply power to homes and companies. Many consistent subscription rates confirm that the sector has grown up and is stable, as well as demonstrating investor caution. While the market is most keen on renewables, stability and long term security seeking investors remain highly interested in non-renewables.

Offer Size and Market Trends

The aggregate value of shares being offered by a company to its investors is revealed by the offer size of an IPO. It is a key factor that determines the size of the company, its financial requirement, and the level of market faith in its operations. Larger offer sizes typically indicate that the company is either established, has massive growth capital requirements or has high investor confidence. To identify patterns and determine which sector has larger IPOs, this section presents a comparison of the average offer sizes of IPOs in the renewable and non-renewal energy sectors.

According to the data, IPOs of renewable energy are found to have bigger mean offer sizes than those of non-renewable energy. This could be an indication of the greater appeal of the renewable energy industry as governments and investors prioritize sustainable development. Larger IPOs at the beginning in the sector also reflect the long-term growth aspirations of renewable energy companies that require massive funding.

However, though smaller on average, non-renewable IPOs indicate a consistent and persistent presence. Given that they have experience in proven areas like coal, oil, and gas, these firms may not need so much money to expand. Everything considered, learning about offer sizes provides insight into the general direction of India's energy industry by detecting areas of high investor faith and capital concentrations.

Average Offer Size (|in Crore):

Renewable Energy IPOs: |880.10 crore
Non-Renewable Energy IPOs: |247.33 crore

The evidence clearly indicates that renewable energy IPOs are significantly larger than non-renewable energy IPOs. Because of their increasing significance and market demand, renewable initial public offerings (IPOs) tend to have larger capital. The extensive range of offer sizes in this category is exhibited by the standard deviation of |2018.20 crore. What this implies is that a couple of hugely large IPOs, usually from big solar or green energy companies, have pushed the average far higher, even as numerous renewable IPOs are fairly ordinary size. These enormous IPOs show how hopeful the market happens to be and how excited the investors are about renewable energy ventures. By comparison, non-renewable initial public offerings (IPOs) are smaller, which reflects their consistent but small market presence.

Market Trend Interpretation: Apparent strong investor belief in long-term financing of clean energy projects finds expression through the bigger average size of offers in renewable energy initial public offerings (IPOs). It indicates higher importance of renewable energy for India's total energy market. Firms that share global sustainability and carbon emission lowering objectives are poised to receive investment support. The dominance of the renewable industry also owes to the fact that it can keep growing as nations compete to fulfill their climate targets.

The trend is supported by various variables. Investors find renewable energy projects appealing on account of policies by governments to offer incentives and subsidies. With increasingly more investors placing greater importance on environmentally responsible companies, ESG factors become increasingly important. Global climate finance efforts also lend financial support to facilitate the large-scale adoption of renewable power. All these factors combined assist renewable energy companies in financing their ambitious clean energy goals by raising additional funds from initial public offerings (IPOs).

Figure 4: Average Offer size

However, there are significant challenges to be faced by non-renewable energy IPOs. In the first place, they have tougher environmental regulations and regulatory risks that discourage huge investments. The current transition in the energy sector to cleaner

sources of energy is also a problem because it may limit the future growth prospect of fossilfuel companies. Because of this, non-renewable IPOs tend to have typically smaller offer sizes, which is a result of investor prudence and limited scalability in growth.

Hypothesis I: Under-pricing of Renewable vs. Non- Renewable Energy IPOs

Hypothesis:

- Null Hypothesis (H_0): Renewable and non-renewable energy IPOs experience equal levels of underpricing.
- Alternative Hypothesis (H_1): Renewable energy IPOs experience higher under-pricing than non-renewable energy IPOs.

Method:

The underpricing methods for the two IPO categories were compared using Welch's t-test, an independent two-sample t-test that assumes unequal variances.

Statistical Output:

Table 2: Descriptive Statistics for Underpricing (%)

Group	N	Mean (%)	Std. Deviation
Renewable IPOs	40	57.39	70.31
Non-Renewable IPOs	14	11.12	32.27

Table 5.2: Welch's t-test Results for Underpricing

Test Statistic	Value
t-Statistic	-3.217
p-Value (One-Tailed)	0.00117
Degrees of Freedom (df)	47

Graphical Representation

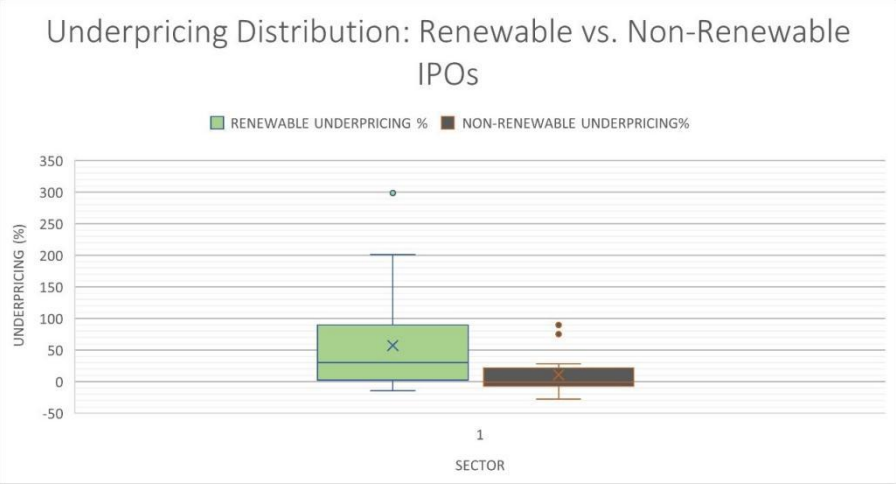


Figure 5: Underpricing Distribution: Reneweble vs Non-Reneweble IPOs

The null hypothesis is strongly rejected by the p-value of 0.00117, which is significantly smaller than the 0.05 significance level. This indicates that IPOs for renewable energy have a far larger average underpricing than IPOs for non-renewable energy. According to the findings, IPOs for renewable energy may see stronger underpricing than those for non-renewable energy because they draw greater investor interest or exhibit distinct market trends. All things considered; our analysis shows a clear distinction between the two IPO kinds.

Hypothesis II: Relationship between Subscription Rate and Listing-Day Return

Hypothesis:

- Null Hypothesis (H_0): Subscription rates do not influence IPO listing-day returns.
- Alternative Hypothesis (H_2): Higher subscription rates lead to higher listing-day returns.

Method:

The strength and direction of the relationship between underpricing (a stand-in for listing-day return) and subscription rate was determined using a Pearson correlation analysis.

Statistical Output:

- Correlation Coefficient (r): 0.1736

Graphical Representation

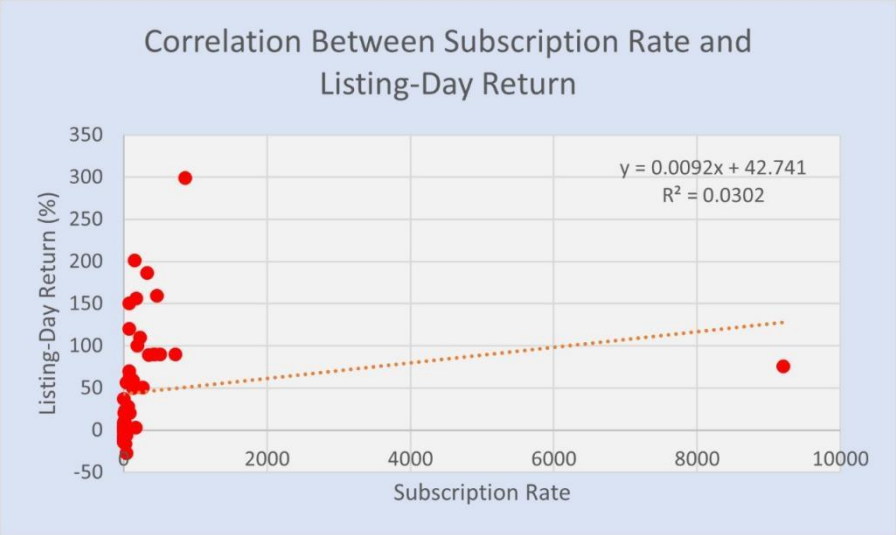


Figure 6: Correlation Between Subscription Rate and Listing-Day Return

Interpretation:

A weak positive association between the listing-day return and the subscription rate is indicated by the correlation value of 0.1736. Despite the weak correlation, it implies that a stock's early returns on the day of launching are marginally higher when more investors express interest in it. This indicates that a higher subscription rate, which indicates greater investor interest, frequently results in a slight improvement in the stock's performance on the first day of trade. The link shows how investor interest can have some impact on initial stock returns, even though it is not statistically significant.

Hypothesis III: Impact of Nifty Energy Index Returns on IPO Performance

Hypothesis:

- Null Hypothesis (H_0): Nifty Energy Index returns do not influence IPO listing- day returns.
- Alternative Hypothesis (H_3): Nifty Energy Index returns influence IPO listing- day returns.

Method:

To find out if the Nifty Energy Index return on the listing day significantly affects IPO results, a simple linear regression analysis was performed.

Regression Output Summary:

Table 3: Regression Summary: LDR vs. Nifty Energy Index Return

Statistic	**Value**
R-Square	0.0031
t-Statistic (Variable)	0.405
p-Value	0.687
Coefficient (β_1)	3.52

Graphical Representation

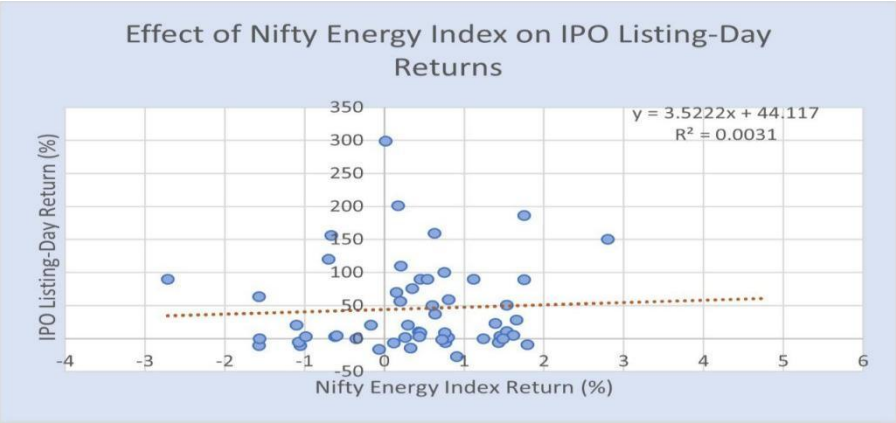


Figure 7: Effect of Nifty Energy Index on IPO Listing-Day Returns

Interpretation:

There appears to be no significant correlation between the listing-day performance of initial public offerings (IPOs) and the returns of the Nifty Energy Index, as indicated by the extremely low R^2 value and high p-value. This indicates that the performance of initial public offerings (IPOs) on their first trading day is not much impacted by changes in the Nifty Energy Index. The conclusion that the index has little or no impact is further supported by the fact that zero is included in the confidence interval. Overall, these results suggest that there is no meaningful correlation between the performance of the Nifty Energy Index and the early returns of initial public offerings.

Conclusion

This study examines the short-term performance of Initial Public Offerings (IPOs) in both renewable and non-renewable energy sectors in the Indian stock market during the period 2014 to 2024. Using statistical tools such as regression analysis, correlation testing, and descriptive methods, the research analyzes trends in investor subscription, IPO underpricing, and the influence of market conditions. The findings highlight notable differences between renewable and conventional energy IPOs, reflecting evolving investor preferences and market sentiment within the context of India's changing financial and energy landscape. IPOs present attractive opportunities for investors seeking early entry into growing firms; however, they also involve considerable risk due to market uncertainty and the unpredictable post-listing performance of companies. Therefore, careful evaluation of financial strength, business models, and growth prospects is essential before investing.

A key finding of the study is the significantly higher level of underpricing observed in renewable energy IPOs compared to non-renewable ones. This is reflected in higher listing-day returns, indicating strong investor demand for companies aligned with sustainability and clean energy goals. The results suggest that investor sentiment is increasingly influenced by environmental concerns, supportive government policies, and long-term growth expectations in the renewable energy sector. This trend is further supported by higher over subscription rates for renewable IPOs, demonstrating greater investor enthusiasm. The analysis also reveals a positive, though relatively weak, correlation between subscription levels and listing-day returns, indicating that while investor interest contributes to short-term performance, other factors also play a role.

Another important observation is that the short-term performance of energy IPOs appears to be relatively independent of broader market movements, as measured by sectoral indices. This suggests that firm-specific characteristics, pricing strategies, and prevailing investor sentiment have a greater influence on IPO outcomes than overall market conditions on the listing day. The findings underscore the importance of strategic pricing and timing for successful IPO launches, particularly in the renewable energy sector where investor expectations are high.

Overall, the study highlights the growing importance of renewable energy IPOs in India's capital markets, driven by the country's ongoing energy transition and focus on sustainable development. As India continues to expand its renewable energy capacity and implement climate-oriented policies, capital markets play a crucial role in mobilizing investments. The results indicate that renewable energy IPOs not only attract greater investor attention but also tend to outperform their non-renewable counterparts in the short term. This reflects a broader shift toward sustainable investing and reinforces the potential of renewable energy companies to deliver both financial returns and environmental benefits.

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