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Effect of Climate Action on Renewable Energy Stock Price

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Abstract

The UN SDG 13 recommends that effective climate action is imperative for attaining target climate change reduction. Similarly, effective investment in renewable energy is a vital strategy for curbing climate change. This paper evaluates the effect of climate action on renewable energy stock price. It adopts a short review and brief quantitative approach. Data on climate action index and renewable energy stock price were retrieved from the MSCI and Fusion Media respectively. The simple OLS results indicate that the climate action index has a negative effect on the renewable energy stock (within the ambits of this study). The paper offers some implication for clean energy stock investors who may want to sell short or long during the time of reduced prices and to make a hedging profit when the prices rise. The findings provide an agenda for further research to expand future research data to other climate action indexes and renewable energy stocks.

Keywords: *Climate Change; Climate Action; Renewable Energy; Stock Price; SDG*

JEL Classification: G1; G2; G11; G12; Q2; A29

Introduction

The United Nations Sustainable Development Goals, herein after referred to as (UNSDG) enunciated many goals toward the achievement of desired outcomes of sustainable development. Amongst these goals includes *"Goal 13: Take urgent action to combat climate change and its impacts*" (UN, 2023, p.1). UNSDG 13 can thus be regarded as a call for immediate action from all humans and organizations within the climate earth. This responsibility connects governments that make public policy decisions and policies, organisations (profit and non-profit) that play advocacy role regarding climate change initiative and stock exchange markets where corporate stocks are sold. This is important because the financial sector of the economy is affected directly or indirectly by the risks of climate change (Salisu et al, 2023; Zhou et al, 2023).

Accordingly, climate actions and/or events are bourgeoning from all sectors of human society. The recent years have seen an increase in zero-carbon energy investments. There has also been a growth in the investment community's awareness regarding the climate change risks and the risks implicit in

climate transition regulations meant to drive economies toward a zero-carbon future. Whilst scholars acknowledge and welcome the enormous benefit of non-carbon transitions; they also recognise that fossil energy industries face large risks from zero-carbon transition as they contribute hugely to carbon emissions. The jittery inherent in climate-related energy investments ripples into the performance of financial markets (van Benthem, 2023).

Experts opine that one amongst other avenues to contain rising climate change is through a committed and effective investment in renewable energy (**Murray-West, 2023**). Hence renewable energy stocks have added to existing energy portfolios in the stock market but remains distinct given its climate compliance characteristics. Whilst renewable energy companies and their stocks thereof contribute to climate change control advocacy, it also supports climate change policies and/or actions by providing green finances required to hoist and maintain renewable energy investments. Although there are existing literature on climate actions, climate events, green energy, renewable energy, sustainable energy, sustainable development and renewable energy stocks, there is a paucity of prior empirical research that have combined four global Climate Action Index to evaluate the effect of climate action on renewable energy stock performance.

Consequently, this paper contributes by analysing the effect of climate action on renewable energy stocks. The aim is to ascertain if climate action (using climate action index) influences renewable energy stocks significantly and what implication there is for renewable energy investors.

Literature Review

Renewable energy comprises all energy sources that possess a characteristic of steady replenishment by nature and are inexhaustible given the constancy of natural supply and replacement (Krupnik et al, 2022). The world economy is moving quickly to change its energy sources. The world is switching from carbon-reliant fossil fuels to other energy sources, such as renewable energy, because of worries about climate change. Over the coming three decades, it is expected to cost more than $150 trillion to decarbonize the world economy. (DiLLalo, 2023). Others, meanwhile, are making direct investments in initiatives to generate renewable energy. Clean energy is becoming more affordable due to lowering costs for, energy storage batteries, solar, panels, and wind turbines, giving the industry a more appealing investment option. However, some are making green investments to be seen as globally responsible citizens. (DiLLalo, 2023). Governments are also promoting and enacting legislation to boost investment in the renewable industry in an effort to hasten the process of global decarbonization (Zhang et al, 2022). In November 2021, President Biden signed a $1.2 trillion infrastructure package that includes money to speed up investments in clean energy. Congress, meantime, worked into the summer of 2022 to come to an agreement on a $369 billion tax and climate plan that would hasten the nation's move away from fossil fuels. (DiLLalo, 2023)

Mohammed et al (2023) uses event analysis to look at how the 2022 conflict in Ukraine affected the markets for renewable energy. Daily samples of data from August 3 to March 30, 2022 were used. The findings show that whereas traditional energy markets were severely impacted in the post-war period, renewable energy markets had positive and large accumulated irregularities. Additionally, we discover greater pairwise return connectivity following the announcement event compared to both before and throughout the Ukrainian conflict. The more reliable net information transmitters to further cleaner energy alternatives are the geothermal and full cell markets. Finally, given its capabilities to act as diversifications and hedging instruments, renewable energy seemed increasingly relevant both all through and at the end of the Russian invasion of Ukraine. (Mohammed et al, 2023)

In their research Bai et al (2023) highlights that as a socially responsible investment asset genre, renewable energy stocks are somewhat attractive, however they attract higher price fluctuations more than

some other conventional organisational stock prices. Hence, Bai et al (2023) research analysed the impact and the diversification effect of China's carbon neutral Bond (CNB), which is a new SRI type of asset that was launched or initiated in 2021 on green energy stocks which use a new minimum interrelated portfolio. The results from their research indicate that China's CNB has a weak relationship with green energy share prices; in addition, different Green Energy shares or stocks draws some benefit differently from the diversification impact from CNB. In their final findings, Bai et al (2023) found that the green energy Sharp ratios within the CNB have their level of significance greater than other stocks in different method of allocations (Bai, et al, 2023).

Pandey, et al (2023) analysed the effect of the Glasgow Climate Pact (GCP) on the stock returns of world clean energy stocks. They further examined how and if some firm-specific factors and country-related factors contribute to influence the aggregate stock returns of clean energy. They applied a combination of multivariate regression technique and event study approach. Their findings suggest that the Glasgow Climate Pact has a negative impact on the clean energy stock prices. In addition, they also found that climate change performance index (CCPI) of some countries has a positive effect on the cumulative abnormal returns (CARs) of clean energy companies' stocks. However, on the contrary, they find that corporate specific variables such as size, the liquidity of stock, BTM etc, show negative impact on cumulative abnormal returns of clean energy stocks. Using the autoregressive distributive lag approach, Fu et al (2022) found that amplified financial strain index coupled with oil & gold prices constitutes a significant depressive impact on the stock market performance of clean energy stocks both in the long-run performance and on the short-run performance. However, further analysis shows that the natural gas exhibits some positive effect on clean energy stock prices within the long run performance but shows no significant effect in the short run.

Material and Method

This paper combines a brief review of the related literature with a brief quantitative analysis of using a simple regression to evaluate the link between climate action and stock price of renewable energy companies. Therefore, in this paper, the Climate Action Index (CAI) represents the independent variable, whilst the stock price of renewable energy companies represents the dependent variable. The data on renewable energy companies stock price were collected from the Fusion Media's stock market data archives (Investing.com archive). Furthermore, the data on Climate Action Index were collected from the archives of Morgan Stanley Capital International (MSCI). The MSCI indexes "*serve as a consistent framework for reducing carbon emissions by identifying companies that are comparatively more prepared to lead their sector's low-carbon transition than their peers"* (MSCI, 2023, p.1). Furthermore, according to MSCI:

> *"The MSCI Climate Action Indexes are designed to help institutional investors seeking to invest for the transition and finance companies' emissions reduction to drive change in the real economy. Financial and investment firms can provide essential support and capital to companies, technologies and business models decarbonizing the global economy"* (MSCI, 2023, p.1).

Four climate action indexes were used from the MSCI Index namely the Climate Action Index (USA), Climate Action Index (Europe), Climate Action Index (Emerging Markets) and Climate Action Index (World) – all for four years (2019 – 2022). Furthermore, the renewable stock drawn from the Fusion Media archive was the Renewable Energy Group Inc (REGI) Historical Stock Price Data for (2019 – 2022).

Results and Discussion

Table 1 shows a P value of 0.037 and a negative regression coefficient of (0.537), which indicates that the climate action has the propensity to affect renewable energy stock negatively (with the boundaries of this study). This finding provides a comparison with previous research findings with diverse results. Whilst some previous research found a positive significant effect (), others found a negative effect (Pandey, et al. 2023). Uniquely, some previous research found multiple directional effect in the same result; as an instance, Pandey, et al (2023) findings show that the Glasgow Climate Pact indicated a negative impact on the clean energy stock prices. Still in the same study, Pandey, et al (2023) also found that CCPI showed a positive effect on the cumulative abnormal returns (CARs) of clean energy companies' stocks. Albeit the direction of the effect, what remains important is that climate action has the capacity to influence the performance of renewable energy companies' stocks; the negative effect could stem from the initial shock reaction of the stock markets, which may change at the long run ((see example Fu et al (2022). Furthermore, the positive effect could signal a welcome news about climate action by the stock market investors (Santi, 2023). The paper holds some implication for clean energy stock investors who may want to buy more stocks during the time of reduced prices and to make a hedging gain when the prices shoot up. It also provides implication for renewable energy companies for interna strategic financial planning policies to understand when to expect a reduction in their stock price and to make advanced adaptation and recovery plan.

Table 1 Results for Effect of Climate Action on Renewable Energy Stock Price

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,523338
R Square	0,273882
Adjusted R Square	0,222017
Standard Error	15,46922
Observations	16

ANOVA

	df	*SS*	*MS*	*F*	*ignificance F*
Regression	1	1263,635	1263,635	5,28062	0,037495
Residual	14	3350,155	239,2968		
Total	15	4613,79			

	Coefficients	*tandard Err*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95,0%*	*Upper 95,0%*
Intercept	54,63289	4,278451	12,76931	4,2E-09	45,45653	63,80926	45,45653	63,80926
CAI	-0,53734	0,233835	-2,29796	0,037495	-1,03887	-0,03582	-1,03887	-0,03582

Where CAI = climate action index (independent variable), and stock price = dependent variable

Conclusion

The United Nations Sustainable Development Goal Goal 13 suggests that an urgent action is required for combating the rate of climate change and for reducing the impacts (UN, 2023). Towards the fulfilment of this directive climate action indexes have emerged to assist organisations and countries

reduces their rate of impact on climate change (MSCI, 2023). Whilst the overall goal of climate action is following the UN recommendations, stock market investors may have different reactions when events, actions or announcements regarding new climate actions are made. In the same vein, financial markets are sine qua non to the realisation of climate actions given that they assist greatly toward the provision of the enabling green finance for pragmatic climate action. This paper thus evaluated the effect of climate action on renewable energy stock performance. Unlike other previous papers, the paper used the climate action indexes provided by MSCI and renewable energy historical stock price. The results show that stock market may show initial jittery and may react negatively to climate action (within the boundaries of this study). This finding supports some previous research findings and also goes contrary to some other research findings. The paper therefore provides an agenda for further research to use and expand the data applied in this research to many other indexes and renewable energy groups to ascertain whether the results may differ and the implication thus for clean energy stock investors and industries.

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