The Greta Effect? A Thematic Analysis of the Influence of Youth Climate Change Activism on Energy Investors' Decisions

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ABSTRACT

This research deals with the observation and examination of energy investors' feelings, thoughts, and attitudes in respect of young climate change activists such as Greta Thunberg. A theoretical thematic analysis is carried out in order to ascertain whether these investors are influenced in their investment behaviour by the awareness raised by the activists. The theoretical background for the study is behavioural finance. This discipline contradicts the notion of the investor as a rational actor, which is an assumption of traditional theories based on the concept of efficient markets. Instead, it assumes that investors are apt to be motivated by various non-financial influences.

In the last two years Greta Thunberg has become a cultural phenomenon and important voice for the climate change movement. She has taken direct aim at the fossil fuel industry and her words and actions may prove a real threat. This study seeks to better understand the impact that she has had on energy investors.

Four overarching themes within the data were identified: Money, Money, Money; Emotional Investment; Knowledge and Experience; and The Bigger Picture. The main findings of the study relate to the polarization of the climate change debate, responsibility and blame, misunderstanding, and sympathy and commitment. The data collected confirms that energy investors are often influenced by non-financial factors in their investment decisions, including environmental awareness.

This study aims to contribute to filling a gap in the existing behavioural finance literature in relation to the influence of youth climate change activism on energy investment. It is hoped that further exploration of the issue from all perspectives will lead to better outcomes, including the creation of effective policies to encourage more sustainable energy investment choices.

DECLARATION

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INTRODUCTION

This dissertation is concerned with examining the feelings, thoughts, and attitudes of energy investors in respect of young climate change activists such as Greta Thunberg. A thematic analysis was carried out to explore any influence the activists have had on their investment decisions, grounded in the theories of behavioural finance. Behavioural finance attempts to explain the psychological aspect of the investment decision-making process. Investment decisions are not always made with the sole motivation of financial profit (Bergset, 2015) and can be subject to the "emotional inclination, ingrained thought patterns, and the psychological biases of different human beings" (Sultana *et al.*, 2018, p. 4).

Environmentalist Bill McKibben defines climate change as the “greatest challenge humans have ever faced” and the fossil fuel industry as “Public Enemy Number One” (McKibben, 2012). In turn, Mohammed Barkindo, Secretary-General of OPEC, has described climate activists as “perhaps the greatest threat to our industry going forward” (McGinn, 2019 as cited in Death, 2019, p. 47).

Greta Thunberg, a 17-year-old environmental activist, is currently a cultural phenomenon and the poster-girl of a global youth movement, forcing those with influence to examine their behaviours and personifying the collective conscience of humanity. In less than two years she has become a powerful, influential force, named *Time* Person of the Year in 2019 and twice nominated for the Nobel Peace Prize. Her unorthodox manner of challenging the status quo tends to elicit an emotional reaction, particularly from men. She has been criticised by Donald Trump, Vladimir Putin, and Steven Mnuchin, amongst others (Marshall, 2019; Jung et al, 2020; Mayes, 2020). Thunberg joined Twitter in June 2018 and currently has 4.1 million followers. She has been described as “the most compelling voice on the most important issue facing the planet” (Alter et al, 2019, p. 54). Her global influence has become known as the “Greta Effect”, described as both sustainable and disruptive, which few before her were capable of achieving (Jung *et al.*, 2020).

Speaking at the World Economic Forum in 2019, Thunberg remarked, “At places like Davos, people like to tell success stories. But their financial success has come with an unthinkable

price-tag" (Thunberg, 2019, p. 38). Thunberg has directly targeted the fossil fuel industry and called for total divestment (Carrington, 2020). Former CEO of BP, John Browne, argues that "Many people have vested interests in keeping the past going because they make money with it" (Browne and Vidal, 2019) and Worland describes those "who want to squeeze out the last few dollars in the fossil-fuel era" (Worland, 2020, p. 18).

In order to tackle climate change, huge financial investment is needed from both public and private sources. For example, according to Hilliard, "Ireland's renewable energy targets will require about €10 billion to finance infrastructural needs" (Hilliard, 2018). These targets have been set by the European Union and heavy fines will be imposed if they are not reached.

LITERATURE REVIEW

This research takes a thematic analysis approach to examining the feelings, thoughts, and attitudes of energy investors in respect of young climate change activists such as Greta Thunberg. The study is carried out on the basis that there currently exists a gap in the field of behavioural finance in relation to youth climate change activism and any influence it may have over actual investment decisions within the energy industry. It is also being carried at a time of global economic uncertainty, during the Covid-19 pandemic in the summer of 2020 while parts of the world were in lockdown.

It is important to undertake research relating to climate finance. A 2017 study highlights the shortage of research in this area in elite business and finance journals, stating that "this research gap is a major issue for advancing theory and practice in climate finance" (Diaz-Rainey *et al.*, 2017, p. 244). A potential explanation for this scarcity is that these topics could be considered "overly politicised" (Goodall, 2008 as cited in Diaz-Rainey *et al.*, 2017, p. 254). Analysing the motivations and barriers to energy investment will help in the creation of policies which encourage clean energy investments and that will be effective in the real world.

Theoretical Framework

The theoretical framework for this research has its origins in behavioural economics, which is a discipline that applies ideas and concepts from psychology to the field of economics. This study is more specifically grounded in the literature of behavioural finance, which developed out of the application of behavioural economics to investments made within the financial markets. In the present study, behavioural finance theories are applied more broadly to include all kinds of alternative investment types. This is consistent with the work of other research in this area, for example Masini and Menichetti (2012) and Bergset (2015).

Theories underlying behavioural finance literature are based on the assumption that investors are influenced by psychological factors when making financial decisions. This

contradicts traditional economic theory which assumes that investors are rational. Economic man (or *homo oeconomicus*) can be defined as “a perfectly informed actor who rationally calculates the cost and benefit of different choice options and chooses the alternative that maximizes his utility” (Rinscheid and Wüstenhagen, 2018, p. 52).

Robert Shiller refers to the extensive body of literature of behavioural finance, growing rapidly since the 1990s, as a “revolution in finance” (Shiller, 2003, p. 91). It represents a “sharp contradiction” (*ibid.,* p. 83) of the efficient markets theory. The efficient market hypothesis states that the price of a security fully reflects all of the available information about it (Fama, 1970), a concept which is dependent on the investors acting rationally. Fama argues that “most of behavioral finance is just a criticism of the theory of efficient markets” (Fama and Stern, 2016, p. 12).

The behavioural finance literature points to stock market anomalies, such as speculative bubbles, to refute this theory (e.g. Shiller, 2003). It proposes that psychological factors influence investors’ decisions and that they do not always act rationally, as assumed. Shiller calls the models of efficient markets mere “illustrations or characterisations of an ideal world” (Shiller, 2003, p. 102) while Fama himself refers to his theory as “an approximation of economic reality” (Fama and Stern, 2016, p. 13).

According to Richard Thaler, the 1974 paper of Tversky and Kahneman created the possibility of adding “psychological realism” to economics (Thaler, 2018, p. 1267). Thaler believes that neoclassical theories should not be discarded but that new theories were needed that “apply to Humans, not just Econs” (*ibid.,* p. 1285). Thaler explains how Kahneman and Tversky’s 1979 ‘prospect theory’ (a model for making decisions under uncertain conditions) illustrates the requirement in economics for both normative and descriptive theories. That is, in the first instance, a theory on the meaning of rational choice, and secondly, further theories which predict human behaviour in different situations (*ibid.*).

Rational Choice

The present study sits within the field of behavioural finance, relying on the assumption of psychological realism that exists therein. It assumes that energy investors are not

necessarily perfectly informed actors who consistently maximise their utility. Rather, they are human beings who are subject to biases, mistakes, misunderstandings, ignorance, and inexperience. They are apt to make investment decisions based on various cognitive and emotional factors, their desired goal is not always exclusively financial reward, and their motivation is not always selfish.

Herbert Simon wrote in 1955 about developments within the study of economics that cast doubt over the concept of economic man as a theoretical foundation. He declared economic man "in need of fairly drastic revision" (Simon, 1955, p. 99). Simon later discussed the "interwoven fabric of influences" that are involved in making a decision, stating that real decisions involve "some goals or values, some facts about the environment, and some inferences drawn from the values and facts" (Simon, 1959, p. 273). Simon challenges the "dominant, but empirically unfounded and Utopian, neoclassical theory of utility maximisation" (Simon, 2001, p. 309) with the alternative concept of 'bounded rationality', where the rationality of humans is limited by certain factors. Although economic gain has traditionally been considered the primary motive in economic theory, Simon argues that other motives, such as altruism, should be assigned a comparable weight. He further states that such motives are changeable and responsive to experience and the "surprises of history"; and that individual preferences form in response to public events and information (Simon, 1993, p. 160). The present study is reliant on the work of Simon for its theoretical framework.

Amartya Sen also rejects the traditional concept of economic man. His seminal 1977 paper describes economic man as "close to being a social moron" and argues that 'rationality' has been equated with consistency (Sen, 1977 as cited in Bergset, 2015, p. 276). Bergset explains how Sen introduced the concepts of sympathy and commitment as motivating factors in decision making, which is compatible with his observation that individuals do not exclusively act in their own self-interest. However, he did not consider altruistic motivations to constitute irrational behaviour (*ibid.*). Bergset challenges the behavioural finance assumption of the understanding of rationality itself, stating that a "radical departure" and "fundamental reconsideration" is needed (Bergset, 2015, p. 279). These motivating factors of sympathy and commitment are further underlying assumptions of the present study. The

researcher also considers that an investor who is solely motivated by money does not exemplify rational behaviour and, consequently, that the antipode, irrational, does not adequately describe the behaviour of an investor acting altruistically.

Further Theories

Together, Amos Tversky and Daniel Kahneman made important breakthroughs in this area. The first related to the use of heuristics (rules of thumb) by decision makers under uncertain conditions that lead to various biases and errors that can be predicted (Tversky and Kahneman, 1974 as cited in Thaler, 2018). If misjudgements and mistakes can be predicted, then it demonstrates that they are not random.

Rinscheid and Wüstenhagen place their 2018 research in relation to divestment from nuclear energy in the midst of a "lively debate" (Rinschedid and Wüstenhagen, 2018, p. 52) on various aspects of decision-making within the energy industry. They discuss the interaction of cognitive and affective factors that influence choices, which Slovic *et al.* refer to as the "dance of affect and reason" (Slovic *et al.*, 2004 as cited in Rinscheid and Wüstenhagen, 2018, p. 53). The affect heuristic model proposes that decisions flow from both positive and negative feelings (Finucane *et al.*, 2000; Slovic *et al.*, 2004 as cited in Rinscheid and Wüstenhagen, 2018). The present study also assumes that investors are influenced by the affect heuristic when making decisions.

There are many theories underlying behavioural finance that are also relevant to the present research. Two related theories are the theory of reasoned action and the theory of planned behaviour. The theory of reasoned action was introduced by Ajzen and Fishbeen and it assumes that decisions flow from intention, which itself evolves out of both subjective norms and the individual's attitude (Ajzen and Fishbeen, 1980, as cited in Saha and Holden, 2014). Ajzen later followed on with the theory of planned behaviour in 1991 which is a model used to analyse various factors in the decision-making process (Ajzen, 1991 as cited in Saha and Holden, 2014). The present study is informed by both theories as they demonstrate that choices result from an individual's perception of the world. They have previously been used

in studies which also relate to the effect of environmental attitudes on the making of decisions.

Morten *et al.* (2018) used the theory of planned behaviour in their research in order to ascertain whether this model could be applied to identify motivations in reducing the number of flights taken by consumers. The study confirmed that attitudes and subjective norms were predictors (Morten *et al.*, 2018).

Saha and Holden (2014) developed a model based on the effects of motivation, opportunity and ability on investors' decisions which was underpinned by the theory of reasoned action and the theory of planned behaviour. This study explores the barriers to investing in renewable energy, rather than the incentives. However, they have not tested their model using a sample.

Sultana *et al.* (2018) use the theory of planned behaviour in their analysis of ESG (Environmental, Social and Governance) investment decisions using a sample of stock market investors in Bangladesh. They tested the willingness of the investors to sacrifice returns for the sake of sustainability. The model of the theory of planned behaviour that they use only utilises one of the factors, which is attitude, in predicting the investors' intentions. They conclude that investors will consider social issues once they are accompanied by good returns. They also found that the investors' preferences for issues concerning the environment were likely a result of awareness of the issues. However, they did not go as far as analysing the participants' primary motivations for investing in ESG (Sultana *et al.*, 2018). The present study thematically analyses investors' primary motivations for investing in the energy industry.

Some other theories considered during the course of this research in relation to energy investors' decision-making process are commonly relied upon within the field of behavioural finance. In this context, herd behaviour deals with the phenomenon of investors acting in unison. Status quo bias relates to the reluctance of investors to change strategy. Both of these theories have previously been described as barriers to investing in green start-ups (Bergset, 2015) and this study aims to identify whether they appear to be relevant to the energy investment or divestment decisions taken by its survey participants.

Energy Investment

The present research deals specifically with investments in the energy industry. Examples of decisions by investors that could be influenced by emotions or attitudes include whether to invest in (or divest from) energy produced from renewable or non-renewable sources; from carbon-neutral or carbon-heavy fuels; and using sustainable or non-sustainable methods. It has been well established in the behavioural finance literature relating to energy investment that there exists non-financial motivations and barriers to investment. The concept of Socially Responsible Investing (investments guided in part by social principles) originated in the early nineteenth century within religious movements but popularity has grown in the last few decades (Berry and Junkus, 2013).

A study involving 725 German participants found that private individuals' preference to invest in wind energy was affected by, inter alia, their attitude to the environment and that they were willing to sacrifice financial gain for sustainability (Gamel *et al.*, 2016). Although adaptive choice-based conjoint analysis (a hybrid method used in marketing research) was used, it was still found that it was impossible to analyse actual investment decisions because of "methodological issues, practical hindrances and reasons of private policy" (*ibid.,* p. 30). This demonstrates how questionnaires can be an overly simplistic instrument for examining deep and complex psychological behaviour. In the present study, a qualitative approach is taken and participants' responses are thematically analysed.

A recent Irish study by Curtin *et al.* (2019) focused on the motivations behind citizen investment into renewable energy and the researchers conducted a questionnaire with a sample size of 1,280. An adaptive choice-based conjoint experiment was used, as in the case of the Gamel *et al.* (2016) study outlined above. Practical considerations to investment such as money and location were considered, rather than any psychological stimuli. They conclude that the main motivating factor for citizens to invest is 'personal gain' but that there are also secondary elements at play. It is again noted by the authors that the study is limited because the participants' answers were hypothetical rather than based on actual investments (Curtin *et al.*, 2019).

Research by Karasmanaki *et al.* (2019) into the willingness to invest in renewable energy restricts its investigation into the attitudes of environmental students in Greece. It was found that the overwhelming majority of the participants intended to invest in renewable energy in the future (Karasmanaki *et al.*, 2019). Although studying a related subject, environmental students are not necessarily bound to become investors. Again, the responses are hypothetical.

As well as economic factors, Bauwens (2019) considers social, environmental and institutional factors in his study. However, this research relates specifically to community projects and its 4,061 participants are renewable energy cooperative members.

In contrast to the examples outlined above, the data collected relates to actual investment decisions that they have already made by energy investors.

In their study grounded in behavioural finance, Masini and Menichetti (2012) analyse investors' decisions specifically in relation to renewable energy technologies. They emphasise the perspective of the investor when faced with technological risk. Factors which are taken into account are a priori beliefs, policy preferences, and attitudes in respect of technological risk. They consider that personal history, education, and experience lead to the a priori beliefs. Their work identifies a correlation between an investor's attitude and the proportion of renewables included within their investment portfolio. They state that understanding psychological influences on investors and market acceptance of renewable energy technology is important in the construction of policies. This work was carried out in summer 2009 during the global recession when the primary concern for many was the economy rather than the environment. The present work may also be comparable in this regard due to the current global economic uncertainty resulting from the Covid-19 pandemic. Although Masini and Menichetti included a range of investor types (e.g. venture capitalists, energy companies etc.), they restricted their sample to European investors. The present study is not as restrictive in its sample, including non-renewable energy investors as well as investors resident outside Europe. The aim of their research is to fill a gap in the knowledge about investors' attitudes which the present study aims to continue using a thematic analysis approach rather than the adaptive conjoint analysis that Masini and Menichetti use. It also

differs in that it focuses specifically on the influence exerted by young climate change activists on investors' decisions.

Apart from influences, there are also barriers to renewable energy investment. Painuly (2001) identifies barriers to renewable energy [investment] that include, alongside market and economic factors, social, cultural, and behavioural factors (as cited in Saha and Holden, 2014). Further, Martin and Rice (2012) include information, education and renewable energy awareness as barriers (as cited in Saha and Holden, 2014).

Activism

Carl Death (2019) discusses the activist campaign for fossil fuel divestment. He states that environmental activists have been making a difference since the 1970s, changing the values of society and transforming what was once considered acceptable "into illegitimate violations of social norms" (Death, 2019, p. 40). Death comments on the comparison of fossil fuel divestment to the Anti-Apartheid Movement often used by activists and how the strong resistance to this by the industry illustrates the power of this image. He describes how the fossil fuel industry's reputation has been tarnished and framed as immoral (*ibid.*).The present study relies on the idea apparent in Death's article that environmental activism not only raises awareness about issues but can also change society's opinions and feelings about certain types of energy sources. This research attempts to ascertain the success of the young climate change activists in changing the views and attitudes of the people who invest in the energy industry and, by extension, their actual financial investments.

Much of the literature relating to activism in respect of investments focuses on shareholder activism. In one such study, King and Gish (2015) discuss how shareholder activists combine social responsibility with making profit but "find themselves pulled and pushed between the competing logics of activist ideals and investment finance" and that it is typically "market and profit logic" that dominates (King and Gish, 2015, p. 711; p. 725). This type of activism is carried out by the actual investors themselves and takes place at the very heart of the company. By contrast, the present study deals with the effects, if any, of outside forces of activism on the actions of investors.

In a case study relating to a Tasmanian corporation, Lewis *et al.* (2017) investigated the impact of environmental activism and found that it "can have a real effect on long-run firm market value and the probability of its continued existence" (Lewis et al, 2017, p. 473). This demonstrates the effectiveness of activism. The present study also analyses the effectiveness of activism but from the perspective of the investors rather than from the impact on a particular company.

The Norm Activation Model indicates that altruistic behaviour follows from awareness and from feelings of responsibility (Schwartz, 1977 as cited in Paço and Gouveia Rodrigues, 2016). A 2019 study found that individuals' feelings of responsibility for the environment were weak, despite greater awareness and knowledge about the problems, because individuals are inclined to blame their governments and a lack of environmental policies (Lee, 2019 as cited in Paço and Gouveia Rodrigues, 2016). This study also observes that although many of the consumers declared that they were concerned about the environment, they did not always act accordingly (*ibid.*). The present paper analyses the relationship between environmental awareness and decisions made by energy investors, rather than consumers.

A theory that has previously been applied to this area, social identity theory, serves to explain the interaction of social groups and individuals' identification with belonging to those groups (Tajfel, 1978 as cited in Bauwens, 2019). For example, identification with environmental consumers can predict pro-environmental consumer behaviour, according to Bauwens (2019), citing examples of Sparks and Shepherd, 1992; and Whitmarsh and O'Neill, 2010. Bauwens analyses motivating factors for investing in renewable energy using the perspective of social identity theory (Bauwens, 2019). According to Hart and Nisbet (2012), polarisation in relation to climate change amongst the public is increasing despite communication on the subject also increasing. An assumption inherent in the deficit-model of science communication is that the opposite would be true (Hart and Nisbet, 2012). They utilise theories from the areas of "motivated reasoning, social identity and persuasion" in order to examine this phenomenon (*ibid.,* p. 701).

In the United States, Newman *et al.* (2018) make use of cultural cognition theory in their analysis of citizens' opinions about climate change and find that these opinions are driven by

deep cultural worldviews (Newman *et al.*, 2018). This theory holds that opinions about controversial issues like climate change develop out of a sense of cultural belonging and are moulded in order to align with the perceived opinions of others in that culture (*ibid.*).

Greta Thunberg and Climate Change

To date, there has been very little research carried out in respect of the influence of Greta Thunberg, popularly referred to as the "Greta Effect". This is evidently due to the fact that she has only become active in the last few years. In 2018 Thunberg went on strike from school in protested against climate change inaction, inspiring young people all over the world to do the same (Marquardt, 2020). She has repeatedly called on an end to investment in fossil fuels, in order to meet the goals set by the Paris Agreement (Thunberg, 2019, p. 9). The present paper aims to fill a gap in the behavioural finance literature relating to energy investment in terms of the influence of young climate change activists such as Thunberg. Marquardt notes that "academic contributions dealing with the particular role of youth in climate politics are still rare" (Marquardt, 2020, p. 3).

Semedov and Sukhareva (2020) have described the "phenomenon" of Thunberg as, inter alia, a "lever pressure on big politics" and a "tool for managing mass consciousness" (Semedov and Sukhareva, 2020). Jung *et al.* (2020) analysed the role of social media in the strengthening of Greta Thunberg's influence, describing the "Greta effect" as sustainable and disruptive. They discuss the issue of polarization in relation to climate change, which is becoming linked more and more to policies and politics (Jung *et al.*, 2020). The authors used both quantitative and qualitative methods to analyse a total of 1,744,446 tweets that related to Thunberg. By using sentiment analysis, "a computational approach to assessing the opinions and emotions revealed in texts" (*ibid.,* p. 2), they found that 44% of these tweets were positive, 19% were negative, and the remainder were neutral. In the course of their research, they found that Thunberg was praised on Twitter for her inspirational bravery but that she and her supporters were criticised in relation to their appearance, gender, ethnicity, and age. In contrast, her opponents were criticised for their lack of knowledge and responsibility (*ibid.*). The present study uses these findings in its analysis of investors'

feelings towards Thunberg and whether they are related to actual energy investments decisions.

In a study relating to the dynamics of different generations within the context of climate change activism, Chazan and Baldwin (2020) discuss the depiction of teenage leaders and activists as "lone revolutionaries or as pawns of adult organisations" (Chazan and Baldwin, 2020, p. 244). They describe their research as "crucial to counteract rhetoric of generational divides" and state that the concept of polarization based on generation is overly simplified and harmful (*ibid.,* p. 258). Their research involved the thematic reading of a panel discussion transcript which was informed by media coverage and participant observation. The subjects of analysis were the 'Raging Grannies' a Seattle-based group of older activists. The present study is informed by these findings in its analysis of the potential generational divide between the energy investors and the child activists.

This study uses a thematic analysis approach to explore the feelings and attitudes of investors in the energy industry. Holmberg and Alvinius (2020) also use thematic analysis to examine the case of Thunberg, letting her represent what they call "abstract progressive resistance", which is a "new form of resistance pursued by children" (Holmberg and Alvinius, 2020, p. 78). The present paper uses a similar approach in that Thunberg is a metonym for climate change activism. The authors use a thematic analysis technique that is exploratory and inductive to analyse five of Thunberg's speeches. The study found children to be knowledgeable, engaged and empowered in relation to the environment and climate change. However, this finding was not consistent with the earlier finding of Corner *et al.* (2015) who stated that adults were more knowledgeable (Corner *et al.*, 2015 as cited in Holmberg and Alvinius, 2020). Themes analysed in this study include: targeting the domination of power; domination of capitalist ideologies; and generational dominance (Holmberg and Alvinius, 2020). The authors note that there has been "very little research on children's resistance in relation to global issues" and state that they are motivated by the "scarce knowledge" in this area (*ibid.,* p. 79; p. 83). The present study is similar to this one in its approach to using thematic analysis, its topic of Greta Thunberg and the climate emergency, and also its use of Thunberg as a representation. However, Holmberg and Alvinius's study is focused on child activism itself whereas the present study focuses on the perspective of energy investors as

influenced by the words and actions of the child activists. It also differs in that the present study uses a theoretical, rather than inductive analysis technique.

A recent study claims that funding for climate research is disproportionately allocated to the natural sciences, rather than the social sciences, despite the fact that dealing with this emergency "will require rapid and deep alteration of attitudes, norms, incentives and politics" (Overland and Sovacool, 2020, p. 1).

Galvin (2020) also calls for more social science research in this area, describing "the world's thirst for energy" as "one of the main roots" of the climate change crisis (Galvin, 2020, p. 1). He discusses the work of Giddens, notably in respect of structuration theory and the "duality of structure" (*ibid*., p. 2) whereby social structures are established by individual behaviour but simultaneously serve to enable or hinder that behaviour (Giddens, 1979, 1984 as cited in Galvin, 2020). This informs the present research as it deals with the concept of responsibility and free will in terms of investment decisions. Galvin further explains how Giddens argued that the "power to alter and to act within social structure" is dependent on an individual's resources (Giddens, 1984 as cited in Galvin, 2020, p. 2). This theory illustrates how the energy investors' financial resources afford them the power to make a choice, and how they "have the potential to change social structures, or to keep them in the form they want" (Galvin, 2020, p. 2).

RESEARCH QUESTION

There has been previous research into non-financial influences and barriers to renewable energy investment (Masini and Menichetti, 2012; Gamel *et al.*, 2016; Curtin *et al.*, 2019). There has been research conducted into fossil fuel divestment activism (Death, 2019); shareholder activism (King and Gish, 2015); and the effects of environmental activism on a company (Lewis *et al.*, 2017). There have also been recent studies relating to the phenomenon of Greta Thunberg (Semedov and Sukhareva, 2020; Jung *et al.*, 2020; Holmberg and Alvinius, 2020). However, to the author's knowledge, there have been no previous studies specifically examining the influence of Greta Thunberg and other young climate change activists on the investment decisions of energy investors.

Previous studies have commented on the dearth of research into climate change from a social science perspective (Overland and Sovacool, 2020; Galvin, 2020) rather than a natural science angle. The pertinence and increasing urgency of the topic of climate change demands further analysis in this area, especially in relation to understanding the reasons why "humanity continues to plunge toward climate catastrophe despite heightened scientific knowledge and moral awareness" (Galvin, 2020, p. 1). This study attempts to contribute to the existing body of literature, particularly at the point of intersection between environmental activism, the energy industry, and behavioural finance.

The objective of this research is to use thematic analysis to examine the feelings, thoughts, and attitudes of a group of energy investors in relation to Greta Thunberg and other young climate change activists during the summer of 2020. This snapshot of the current thinking, views, and ideologies of energy investors' residing in different parts of the world will shed light on the most important and relevant issues in relation to investment as it links to and interconnects with the global problem of climate change. The perspective of the investor is taken into consideration. Further, this research aims to analyse the diversity of thought and understanding across all areas of energy investment, for example, with the inclusion of both renewable and non-renewable investors.

The solitary protest of Thunberg led to the creation of groups such as School Strikes 4 Climate and Fridays for Future, and inspired a global school strike attended by 1.6 million people (Holmberg and Alvinius, 2020, p. 79). She became a “worldwide phenomenon” and a “global icon of the climate movement” (Jung *et al.*, 2020, p. 1). For the purpose of this study, therefore, the author assumes that Thunberg can represent and symbolise contemporary youth climate change activism and lets her serve as a metonym or personification thereof. The researcher also makes the assumption that an effective strategy for drawing out relevant information about the energy investors’ position on climate change issues is to enquire about their feelings about Thunberg. It has become apparent through media coverage that she tends to elicit polarized reactions (Jung *et al.*, 2020).

The research aims to investigate whether any relationship exists between these energy investors’ actual investment decisions and the feelings of hope, passion, enthusiasm, or sympathy that may be inspired by youth activism. Conversely, it also investigates the possibility of a negative impact caused by feelings such as disdain, scorn, frustration and anger and whether the activism serves only to create a deeper divide through misunderstanding, miscommunication, intolerance, and alienation. Finally, there is also the prospect that the climate change activists are not taken into account and have no influence over energy investment decisions whatsoever.

This study also explores broader issues, such as the question of morality and ethics, as well as duty and responsibility, in relation to intensifying or creating solutions to the climate change crisis. Do investors have a conscience? The role of rhetoric in the media and politics in influencing behaviour is also examined together with questions of identity and culture. A fundamental question is whether the capitalist system can adapt to allow environmental and corporate actors to work together effectively and cooperate in order to find solutions. This study examines if they even have the same goals in the first place.

This study does not attempt to provide answers to all of the most profound and important questions currently challenging mankind and human existence, but simply strives to make a small contribution to the conversation. It hopes to assist in the understanding of the impact of activism and in finding real solutions that will work for all of the parties involved.

METHODOLOGY

The aim of the research is to explore the perceptions and feelings of a specific group of people: energy investors. It seeks to attain deeper insights and understandings of the current situation from the perspective of these particular investors. Non-probability sampling was used, hence the results of the research cannot be generalised to represent the responses of all energy investors.

The study is a qualitative, cross-sectional thematic analysis as is the researcher found it to be the most appropriate to the subject matter as well as the desired outcomes. The data gathered is subjective in the first instance. It is subsequently analysed subjectively. There is an endeavour to interpret the individual and collective meaning of this subjective data.

Data Collection

A survey was conducted using Google Forms and was entitled 'Climate Change & Energy Investment'. The criteria for participants was only that they be energy investors, defined as "*people who make the conscious decision to invest their own money or money they manage for others within the energy industry, regardless of energy type, investment vehicle or investment method*". The questionnaire took place between 27 June and 1 August 2020. This was during the Covid-19 pandemic when significant parts of the world had recently experienced a lockdown situation.

Participants were primarily recruited through LinkedIn. Links to the survey were posted to various energy, investment, and energy investment groups, and sent to a selection of their members. The groups were related to, for example: renewable energy; oil and gas; biodiesel; solar; and nuclear energy. A small number of participants were also recruited using the snowballing method, that was initiated through a personal contact with a background in geology who is located in the United Kingdom and has contacts involved in the energy industry.

The aim of the survey was to get further insight into the reasoning behind investment behaviour. It endeavoured to ascertain feelings about climate change and the environment. The questions asked were:

1. Please explain your motivations for choosing to invest in energy rather than another industry.
2. How do you feel about Greta Thunberg and other young climate change activists?
3. With respect to the environment, what do you think about the phrase 'no one is too small to make a difference'? Does this ideology influence the type of investments you choose to make?
4. Would you say that your investment decisions have changed as a result of increasing awareness and media coverage of climate change issues in recent years? If so, in what way?
5. Any other comments or observations in relation to climate change activism or energy investment?

There were 82 valid responses. There were 19 invalid responses (either not fitting the criteria, not consenting, duplicates or blank responses). The participants were asked which category best describes the type of energy you invest in? Initially, there was a choice of three categories (renewable, non-renewable or both). However, it was drawn to the researcher's attention that this categorisation was arbitrary as there are some types of energy that are technically renewable but not considered to be good for the environment in terms of carbon intensity. Equally, there are 'non-renewable' energy types that actually produce a low amount of carbon. Therefore, two more categories were added. The relevant category of each respondent provided context when analysing the data. However, there was no analysis undertaken which directly compared the responses from each group.

Breakdown of Sample by Energy Type	Participants
Renewable energy	34
Non-renewable energy	15
Both	29
Non-renewable low carbon clean energy technologies	4

Renewable carbon intensive technologies	0

Table 1: Breakdown of Sample by Energy Type

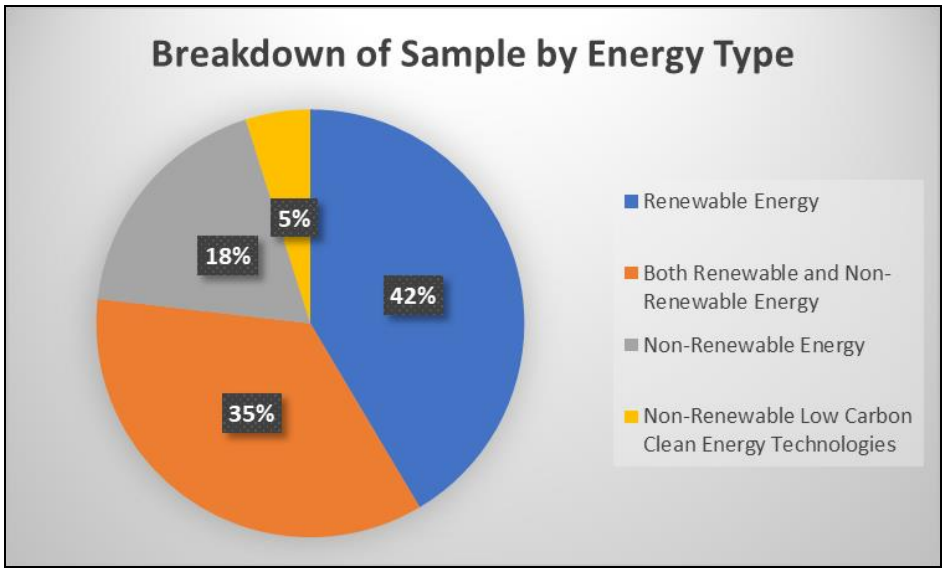

Figure 1: Breakdown of Sample by Energy Type

Participants resided all over the world, with the majority in the United States (thirty-two participants). Sixteen participants resided in the United Kingdom; there were four in Nigeria and three each in France, Germany and India. There were a further twenty-one participants residing in twenty other countries (across Europe, Asia, South America, North America, Africa and the Middle East).

The sample was skewed towards residents of the United States and the United Kingdom. This may have been expected as the survey was conducted through English. The United States is also the country with the most LinkedIn members as of July 2020 (Clement, 2020). A further breakdown of the sample of United States residents shows that this itself was skewed towards investors of non-renewable energy.

Again, the country of residence provided context in the course of the analysis and no comparison was carried out based on this demographic.

Country of Residence	Participants
United States of America	32
United Kingdom	16
Nigeria	4

France	3
Germany	3
India	3
Dominican Republic	2
Austria	1
Brazil	1
Bulgaria	1
Canada	1
Colombia	1
Denmark	1
Egypt	1
Greece	1
Hungary	1
Ireland	1
Luxembourg	1
Mexico	1
Nepal	1
Netherlands	1
Norway	1
Republic of Belarus	1
Spain	1
Turkey	1
United Arab Emirates	1

Table 2: Breakdown of Sample by Country of Residence

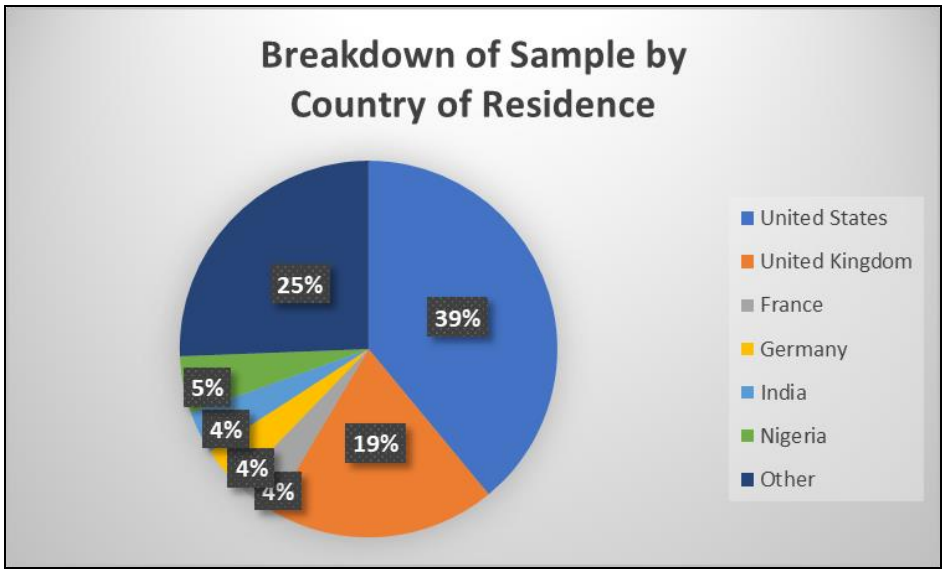

Figure 2: Breakdown of Sample by Country of Residence

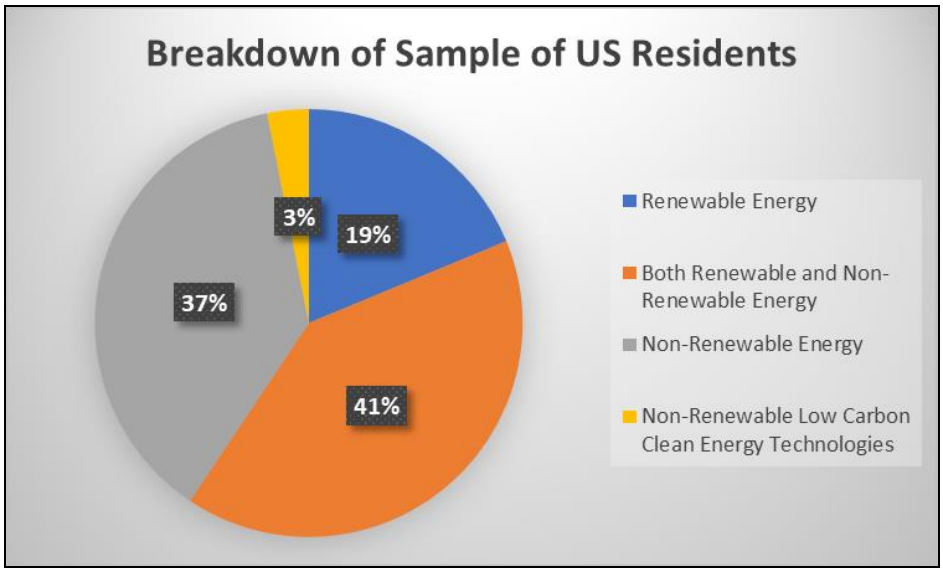

Figure 3: Breakdown of Sample of U.S. Residents

The survey was voluntary and anonymous. There was no identification of participants collected. The nature of the study was explained, and consent was received from each participant before they completed the survey.

There was no reward, monetary or otherwise, offered for taking part. The sample can only be viewed as potentially skewed for this reason. It is assumed that respondents were interested in the topic and wanted to contribute to further research on it. This might imply that they believe in climate change as a concept and as a real problem. It may also be possible that the participants have an altruistic nature as they were willing to take the time to help a student complete their dissertation, receiving nothing in return.

Following receipt of sufficient responses, the researcher considered focusing on just one of the categories of energy investor. However, it was decided that it would be preferable to use all of the responses for the following reasons:

- 35% of participants invested in both renewable and non-renewable energy. In these cases, it was not a mutually exclusive choice.
- Two additional categories had been added halfway through the process. Therefore, the categories were not exact in any case.
- It was considered preferable to analyse the perspectives of energy investors as an entire group rather than assume inherent differences depending on category.

- From a review of the data, it was indeed found to be more interesting with a wider range of viewpoints expressed. The concept of polarisation that is so evident in the climate change debate also became more apparent in the data with the inclusion of different categories.
- The concept of a paradox, misunderstanding and other contradictions (and unexpected similarities) within the data would have also been potentially lost without inclusion of all categories of energy included.
- It was a more interesting story, with richer description and of greater advancement to the literature.

Further, the researcher found that there was an even balance across categories. Those that invest in both renewable and non-renewable energy can be considered non-adverse to non-renewable energy and contrasted with those that only invest in renewable or clean energy technologies. Therefore, 53% of participants invest in some form of non-renewable energy whereas 47% *only* invest in renewable or clean energy.

Masini and Menichetti's 2012 study specifically related to renewable energy investment. However, of their sample of 93 European investors, only 67% invested in renewables at the time of the survey. 16% had no experience of investing in renewables and 27% only invested in renewables. They also admit that their sample is skewed as they had "targeted a diversified group of investors" with over half working for venture capitalist or private equity funds (Masini and Menichetti, 2012, p. 32). Their similar 2013 study found that their results were limited by the restriction of their sample to European investors, and that this may have caused the inclusion of a renewable energy bias in the data (Masini and Menichetti, 2013). In addition, Gamel *et al.*'s 2016 study relating to wind energy investment sample consisted of 725 respondents who *intended* to invest in wind energy in the following three years and had investment portfolios at the time of the survey. Other studies using thematic analysis employ an extremely broad spectrum of participants. For example, Frith and Gleeson (2004) used a sample of 75 men for their study; while Maguire and Delahunt (2017) describe a study involving undergrad students.

Thematic Analysis

This study takes the form of a theoretical thematic analysis which is "driven by the researcher's theoretic or analytic interest in the area" (Braun and Clarke, 2006, p. 83). A contextualist approach to the analysis was taken, incorporating elements of both the essentialist and constructionist methods. According to Braun and Clarke, the underlying theories of this method "acknowledge the ways individuals make meaning of their experience, and, in turn, the ways the broader social context impinges on those meanings, while retaining focus on the material and other limits of 'reality'" (*ibid.,* p.81). This approach corresponds to and compliments the core issue being investigated in this study.

The climate change crisis can be explained scientifically by observed data. It is a concrete, physical problem. However, human activity is responsible for causing this problem. This activity is a direct result of economic pursuits and growth which accompany a capitalist society mindset that is prevalent across the world. In the same way, the solution to the problem must begin with addressing the societal issue in order to reverse the physical damage that has arisen. Therefore, it is appropriate for the data to be analysed using both realist and constructionist methods in order to correspond with the scientific, factual reality as well as the perceptions and experiences of society it deals with. The relevant approach was dependent on the context of the particular data in question.

The framework consisting of six phases of thematic analysis that is identified in Braun and Clarke (2006) were followed as a guiding method. These phases are summarised as follows: (1) become familiar with the data; (2) generate initial codes; (3) search for themes; (4) review themes; (5) define and name themes; and (6) produce the report.

Upon receipt of a sufficient number of responses, the researcher familiarised themselves with the data. Many of the responses were short, sometimes one-word answers. It was rare for an answer to exceed one hundred words, and the majority consisted of one or two sentences. There were quite a lot of yes / no answers given and these were ignored other than to provide context to the respondent's other answers. The final question in the survey was unstructured, simply asking for any other comments in relation to the topic. There was a surprising amount of complete responses given to this question. There had been an

expectation that most participants would not have any further comments but approximately 80% did.

The researcher experimented with NVivo software but ultimately opted for a manual approach to coding. An open-coding method, as described by Maguire and Delahunt (2017), was used with modification and development of the codes as the process continued. There was a preliminary coding of the entire data set and then the researcher conducted a secondary coding of the material. This aided in the process as details may have been missed in the initial turn and it became apparent that some codes were redundant, overly vague, or badly articulated.

The data was coded with respect to the specific research question in accordance with a top-down, theoretical thematic analysis. Patterns of meaning, through repetition or contradiction, within the data were identified. Particular attention was paid to repetition that occurred when it happened spontaneously, and the concept had not been introduced in the survey questions. Conversely, if the concept had been present and was simply repeated in the response, it was not considered to be as relevant. The more striking answers took precedence. Codes reflected the subject matter, tone, or summarised the meaning of the words or the concepts underlying them.

In the first instance, the data was considered at a primarily semantic level and taken literally. However, further interpretation of the latent meaning was at times necessary, particularly in relation to emotional responses. The latent meaning was thought to have a greater significance in terms of the participants' opinions, beliefs, and ideologies. Possibly due to the broad nature of participants in terms of energy type and country of residence, many contradictions in the data became apparent.

The initial codes were listed and codes with the same or similar meanings were amalgamated. They were then reviewed and organised into groups of key words based on their relationship to one another. Each group was given a heading that summarised the overall content and represented a potential theme, with the key words becoming subthemes. A table was created in a Word document in order to set out all of the potential themes and observe where they belonged in relation to each other. The corresponding extracts were

incorporated into the table. This provided a sense of the importance and size of each of the themes and subthemes, and how they would fit together. Less relevant themes and subthemes were then excluded or became amalgamated.

The themes of most interest in relation to the research question and the theoretical framework of the existing literature were then selected. For example, the theme of 'money' was not apparent in any of the survey questions. However, this concept was prevalent across the data and is fundamental to the research question. It was therefore interpreted as a theme as it represented an important consideration to the energy investors in their investment decisions. The themes became more defined and were ordered into a logical story. They corresponded to the main research question and literature review – financial considerations, emotional influences, cognitive influences, attitudes and where energy investors fit in in the bigger picture. Five themes were settled upon. However, two of these themes ultimately became merged, leaving just four.

Each theme and subtheme was then summarised into bullet points setting out the relevance of the group, important or interesting points, and how it related to the research question and theories. A preliminary review of the existing literature had been carried out prior to the thematic analysis and a second review was carried out afterwards. The four themes were set out in the Findings section, giving a detailed description of the data set including many citations. These findings were subsequently analysed in respect of the existing literature in the Discussion section. The researcher aimed to tell a story about the data in a narrative that goes "beyond description", making an argument in relation to the research question (Braun and Clarke, 2006, p. 93).

FINDINGS

From a thematic analysis of the questionnaire responses, four major themes were found. These themes are: *Money, Money, Money*; *Emotional Investment*; *Knowledge and Experience;* and *The Bigger Picture*. The findings relating to each theme are set out below.

Money, Money, Money

The first theme is the most predictable to be drawn from the responses of a sample of investors. Money. The energy investors were not specifically asked about money at any point. They were asked about changes to their investment decisions, and investment ideologies and motivations. However, topics such as money; finance; business; or economics were mentioned at some point in many cases.

Money was mentioned in terms of safety, stability, and returns. For example, "*High returns*" (R23), "*Safe returns*" (R15), and "*good returns*" (R32) are all provided as motivating factors for investing in the energy industry. One non-renewable investor justifies their investment decisions:

> "*I make the investments I do to feed my family*" (N28).

Equally pragmatic responses were given by some renewable energy investors:

> "*Investing is to make money*" (R31).

Other financial considerations made by the participants are Opex costs and cost of capital (R2); cash flow perpetuity (N21; and dividends (N9, N11).

The concept of a mutually exclusive relationship between making money and being idealistic is brought up by some of the non-renewable energy investors:

> "*Their* [activists] *aspirations are noble but people still have to make money*" (N24); and
>
> "*Most ideological* [sic] *investments are not consistent with proper fiduciary responsibility of wealth preservation and accumulation*" (N26).

One non-renewable investor rejects the importance of ESG:

> "*Companies that focus on generating cashflows with return to shareholders will succeed*" (N39).

Other participants convey a sense of balance or compromise between money and ESG concerns:

> "*Investments are mostly based on economics, hardly ever solely based on idealism*" (N4).

One participant asked, "*Are investors who want ESG accepting lower risk-adjusted returns?*" (R3). However, others conveyed a sense that they believed financial and non-financial factors (such as ESG) to be compatible.

> "*… projects… which yield both environmental and desired financial results influence overall investment philosophy*" (N21),

writes one participant who invests in both renewable and non-renewable energy. A renewable energy investor commented that the energy market has "*major environmental and economic ROI*" (R10), while a non-renewable investor reasoned that they would invest in a project that had "*a clear justification for the benefits (not only financial)… supported by calculations"* (N32).

In relation to money, the investors also note the importance of government subsidies and support e.g. tax incentives, in relation to investing in cleaner energy projects (N11, R20). A non-renewable investor wrote that the funding side of the oil and gas industry has been impacted by climate change awareness (N41) while a renewable energy investor argues that "*The world should channel more funding towards renewable energy investment*" (R7).

One participant sees money as an important factor in bringing about change for the environment, writing that

> "*The economics, cost of capital, and long term policies will be the factors driving change*" (R2).

Some investors describe the energy industry as profitable (N12, N24); a "*huge market*" (R10); and having an "*appropriate risk-return balance*" (R31). The energy industry is seen by some as growing, or providing opportunities for growth, and as important within the whole economy (R24, N41, N12),

Emotional Investment

The second theme to be found in the data is *Emotional Investment*. This analysis can contrast directly with the previous *Money, Money, Money* theme. It deals with the part that emotions play in the investment decision-making process and the (ir)rationality of such decisions. This theme has been divided into two subthemes: (1) *Feelings about Greta Thunberg;* and (2) *Sympathy and Commitment*.

Feelings about Greta Thunberg

In the questionnaire, participants were asked how they felt about Greta Thunberg and other young climate change activists. In response, one non-renewable investor wrote:

> "*I'm too polite to put that in writing*" (N28).

Others referred to them as "*idiot's* [sic]" (N37); "*stupid*" (N40); and "*complainers*" (N11). They are a "*ridiculous joke*" (N11) and "*an absolute joke*" (N39).

However, negative comments were more than balanced by their positive counterparts, which were in the majority. For example, "*Greta is super*" (R6); "*Doing a great job*" (R15); and "*We need more of them*" (R32).

These investors emphasized the importance of the role Thunberg and other climate change activists are playing. They express a sense of gratitude (N10); admiration (N48); support (N19); and respect (R18). Adjectives used to describe them are "*courageous*" (N25); "*impressive*" (N9); "*helpful*" (R3) and they have a "*determination, sense of duty, and maturity*" (N48).

A third category of feelings toward the young activists evident in the data was a lack thereof – some investors expressed their indifference. They stated, "*I am neutral*" (R18); "*No feelings*" (N30); and "*un-affected*" (N36). One non-renewable investor wrote that they "*choose to ignore it*" (N47). She is irrelevant to them and her actions or words have no influence on them whatsoever. Three other participants stated that they did not know who Thunberg was, "*No idea who Greta Thunberg is*" (N7).

One investor pointed out that the appeal of Greta and the other young climate change activists is "from an emotional perspective" (N16). Quite a few others brought up the idea of passion, sometimes with connotations of irrelevance or inadequacy. "*I appreciate passionate thought, but…"* (N41); "*Extremely passionate but arguments are emotional*" (N20); and also "*It is easy to point fingers and wave arms"* (N16).

Others appreciate and commend this passion (N2), saying that it is "*great to see*" (R24).

The importance of inspiring others is an issue that can be found in the data, "…*they are inspiring many people"* (R27).

The fact that Greta is female was only alluded to twice by the participants (R6, N29).

Sympathy and Commitment

The second subtheme within *Emotional Investment* relates to feelings of sympathy and commitment. These are non-financial motivational factors to making certain investment decisions.

Some energy investors were concerned with morality and the ethical implications of energy investment. One states that the energy industry is "*in scrutiny for carbon footprint*" (R1). Another lists "*moral compass*" (N6) as one of their motivations for investing in the industry while another calls it a "*more redeeming sector of finance*" (R3).

Expressions of concern about humanity and the existence of a higher purpose were also evident:

> "*I am trying to minimize humanity's footprint on this planet*" (R30).

One of the energy investors expresses concern about the disproportionate harm that a renewable energy transition as well as pollution caused by non-renewable energy inflicts on poor people.

Another aspect of this subtheme is idealism. For example, a participant stated that "*Idealists are a necessary part of change*" (N4). The climate change activists are considered idealists by some of the participants. In some cases, this appears to have negative connotations and represent something irrelevant or insufficient. One investor stated, "*The focus for energy investment may never be idealism*" (R12); and another wrote about the need for activists to have "*ideas that can actually be accomplished not just dreams or theories"* (N12).

The other part of this subtheme is commitment. The participants expressed sentiments of duty to take action in addressing climate change and help the planet. They recognised that there is a problem. They write, "*We all need to commit ourselves more and more*" (R17); "*Everyone needs to do their part*" (N47); and "*Everybody should understand and take part in this*" (R4).

Some of the participants describe their motivation for investing in renewable energy as a duty or means of making a positive contribution. At times, the sense of duty and responsibility are individualised:

> "It is my… obligation because of past errors with polluting tech" (R6).
>
> "*I believe it is my role as an educated person to use my knowledge to improve my people's life*" (R26).

However, it is more commonly the case that the first person plural is used, conveying a sense of community or common humanity, "*We have to address the future of our planet*" (N1); "*We need to do better*" (N48); and "*We need to keep 1.5 degree temperatures*" (N19).

In further cases, the generic 'people' is used, for example,

> "*People must be more responsible human beings*" (R1).

Interestingly, one participant writes that although people are now more aware about the concept of climate change, they are still "*not feeling responsible*" (R34).

Knowledge and Experience

The third theme found within the data is Knowledge and Experience. This theme relates to both the areas of (1) knowledge, information, and the media, and (2) experience, age, and transience.

Knowledge

The central aim of activism is to promote action through increased awareness and understanding of the topic. This occurs through communication. The primary role of Thunberg and the other young activists as communicators is highlighted together with the role of their audience in actively listening:

> "*I feel that humans should listen to them*" (R7).

They are also described as "*giving voice to some popular sentiment*" (N34) and Thunberg is praised for the effectiveness of her approach in attracting attention and persuading:

> "*She is aggressive in putting climate change agendas in notice*" (R11).

Some of the investors are critical of the activists as communicators, acknowledging them as powerful, emotive, and passionate speakers but also questioning their underlying knowledge, information, and (lack of) solutions:

> "*For me to listen to an activist they need to be well informed… I don't think Greta qualifies*." (N12), and
>
> "*They speak powerfully although I am not clear about what are their specific policy proposals*" (N8).

Other investors are critical of the methodology used by some activists:

> "*I would rather have more proactive, effective and educated discussions*" (N31).

One investor states, "*I see it as broader than visible personalities and hashtags*" (N2), implying that Thunberg's type of activism is shallow and obvious.

A need for advocation and leadership is expressed by the participants as well as the importance of expression:

> "*Strong movements and bold leaders are needed*" (R19).

The validity of all voices is acknowledged:

> "*No person is too small to speak their mind and slowly begin to teach others to do the same*" (R28).

Some of the participants extend the idea of communicating about climate change to themselves, identifying with the activists.

> "*I've always been an advocate and somewhat a voice for promoting low / zero carbon technologies*" (N6), and

> "*We have to use our personal pages to support them and spotlight on their work*" (R26).

One renewable energy investor states, "*I personally like to be the underdog*" (R28), whilst another identifies themself as a member of 'Greenpeace climate change activists' (R25).

There were no specific references to knowledge in the questions asked of the participants but it has emerged as a significant aspect. Quite a few of the investors criticise the extent of the knowledge of Thunberg and the other young activists.

They are "*uninformed*" (N11); "*poorly informed*" (N26); "*unencumbered with the knowledge*" (N16); and "*without adequate knowledge of subject matter sometimes*" (N41).

One investor states:

> "*She does not understand what and why she is making speeches. Let's leave expert assessments to the professionals, and return Greta to school, let her study*" (N32).

Another writes, "*She may be better getting some proper education first*" (N22).

Conversely, other participants believe that Greta "*seems to be very well informed*" (N46).

The science that the climate change activists rely on is disputed by the investors. One states:

> "*I support Greta and all science based climate activists 100%"* (R10).

However, another investor writes:

> "*As a scientist, to observe an outcome and attribute it to circumstantial evidence is a flawed approach and is mostly used to support an agenda*" (N17).

One of the investors observes that "*There is a lot of conflicting information on climate change*" (N12).

Some investors recognise their own education, professional experience and common sense as the source of their knowledge, as opposed to the media or activists:

> "*I learned about greenhouse gas effect over 20 years ago in science class*" (N23),
>
> "*My professional experience in power generation, allows me to see the difference between low carbon emission technology vs conventional power generation technology, from an environmental standpoint*" (N18), and
>
> "*It's only common sense*" (R32).

Thunberg uses social media as a vehicle and it is the means through which she has become so well known.

The participants were asked if their investment decisions had changed as a result of increasing awareness and media coverage of climate change issues in recent years. Some of the investors indicated that they do not allow the media to influence their investment decisions, inferring that it is untrustworthy or inaccurate, because of political influences:

> "*I try not to base my decisions on Media coverage so much today is driven on political narrative*" (N35).

Other investors are more positive and hopeful about the role of media:

> "*I am delighted to see that at last the media is beginning give [sic] the environment and climate change more coverage*" (R10).

Other participants highlight the media as a resource or support to them as energy investors:

> "*We are aware that there is increased support from the media for the type of investments we make*" (R27).

It should be noted that the negative comments about the media were made by investors that reside in the United States (N35, N46, R18, N41). However, one investor, resident in the United Kingdom also wrote:

> "*The media would rather talk about soap operas, football and celebrity gossip*" (R10).

This highlights the fact that people's relationship with the media is affected by or possibly a product of their location. This also appears to be a factor in the type of energy they invest in and their attitudes to same. For example, an investor resident in Nepal writes:

> "*My country has tremendous potential of clean energy*" (R11).

Another issue within this theme is misunderstanding. Some of the participants suggest that by misapprehending the real problems, people who are trying to fix them only make things worse.

One investor writes that "*climate change activism does more harm than good*" (N22) while another writes "*Some seem to be too small to understand unintended consequences*" (N23).

When asked what they think about the phrase 'No one is too small to make a difference', which is the title of Thunberg's book, one investor responded:

> "*The phrase is an empty slogan which sounds good but is meaningless*" (N26).

Some of the investors indicate that the activists misunderstand the very nature of energy types that they approve or disapprove of:

> "*The activism groups don't really see the full cycle in terms of energy usage and end up promoting "green" energies that actually are very resource intensive to set up and maintain*" (N24), and

> "*There is a lot of hate and negativity in regard to fossil fuels and I believe many of these opinions are due to ignorance and misinformation*" (N12).

An associated concept is that of reality or truth. Some of the investors assert that climate change is real, alluding to the existence of climate change deniers. "*Climate crisis is real*" (N10); "*Climate change is real*" (R28, R48); and "*The threat of Co2 is real*" (R7). One investor writes:

> "*Climate change was a hoax in the US a few years ago. It's definitely not the case anymore here*" (N25).

This response might suggest that the climate change activists are succeeding in getting their message across. Others are more critical:

> "*Climate change activism has lost all credibility due to exposure of data manipulation and all of the dire predictions which continually fail to materialize*" (N26).

One investor states, "*It's hard to know what the real truth is*" (N12), and another, who identifies themself as a scientist, asserts that "*The truth lies somewhere inbetween*" (N23).

The idea of scepticism or distrust flows from this questioning of reality. Some of the investors express scepticism about Thunberg and the other young activists. In response to the question about how they feel about them, one investor simply wrote "*All rubbish*" (N3), and another "*No believe* [sic]" (N14).

Many of the investors opine that Thunberg is not acting independently. They write that she is "*a tool used by some*" (R20); "*allowing herself to be used by others*" (N22); and "*just a puppet on a string right now*" (N29). The puppet master is identified as: the media (N17); other activists (N11); "*agenda driven adults who should be ashamed for doing this*" (N26); and "*others (and her parents) for commercial ends*" (N22)

One investor believes that "she is paid to talk about this" (N5) and some think that she is "misguided" (N27, N48). One non-renewable investor describes climate change itself as "a tool of the liberals in an attempt to destroy western civilization" (N40).

Some investors acknowledge that they have always been aware of these issues:

"*Became 'aware' of cc* [climate change] *as a child*" (N45).

Investors' responses continue to contradict, however. One participant writes, "*Increasingly global awareness is growing*" (N44), whilst another states they would:

"challenge your [the researcher's] assertion that awareness has increased" (N48).

Experience

The subtheme of Experience is important as it relates to the concept of a generational divide.

A fundamental part of Thunberg's campaign, her emotional appeal, and her effectiveness as a leader comes from the fact that she is so young.

The energy investors are appreciative of the youth of Greta and the other activists. There are many examples of this within the data:

"…*the energy and passion of youth, as exemplified by Greta*…" (N1), and

"*It is great to see such passion from the youngsters*" (R24).

The generational issue is explicitly referred to. One investor writes, "*To change to clean energy is generational*" (N37).

Some of the investors see Greta and other young people as the teachers:

"*They are doing a great job of educating the older generations*" (R10), and

"*It is great that youngest generations are showing us what we should have done years ago*" (N43).

There is also hope expressed for what the next generation can do:

"*Our generation (I was born in 1979) could not achieve enough*" (R19).

One investor also writes that they are "*incredibly grateful for the younger generation and their awakening"* (N10). This might imply that young people are seen to be responsible for saving the older generation.

However, there is also a conflicting view apparent in the data. For example, one investor states that they do not agree with involving children in matters that require an expert approach (N32). Another writes that Greta is "*far too young to completely understand…*" (N42).

One investor refers to "*our coming generations*" (R23) while another states that their motivation for investing in energy is to do "*the right thing for future generations*" (R2). This idea of the future being shaped by our choice of action today is also apparent in the data:

> "*This is the future and whatever we do today (small or big) will make an impact tomorrow*" (R24).

Concern and uncertainty about the future is apparent in many of the responses:

> "*Who knows what the future looks like after oil and natural gas*" (N29).

The possibility of changing or having an influence on the potential path of the planet through their role as energy investors is in evidence here. One investor states that their motivation for investing in energy is to "*contribute to a low carbon future*" (R22). Another states:

> "*Climate change is the most important challenge we are facing. It is the battle for the livable future of our planet*" (R10).

The experience of the participants in the energy industry is highlighted by many of them, mainly in response to the questions about their motivations and potential changes resulting from activism. They choose to invest in energy because that is where their experience lies. More than a dozen participants state how long they have been involved in the industry, though this information was not explicitly requested:

> "*Been in oil and gas security for 30 years*" (N28),
>
> "*Been in the energy industry since 1982*" (N27), and
>
> "*Investing since 20 years in RE*" (R15).

An investor states that one of their motivations for investing in energy is the "*great people that work in the oil and gas industry*" (N39). Another "*grew up in the industry*" (N36).

Even renewable energy investors write:

> "*We have been investing in renewable energies for over a decade*" (R13).

The Bigger Picture

The final theme evident in the data is The Bigger Picture.

This theme illustrates the interconnectedness of the various disciplines, industries, and stakeholders in addressing the climate change issue.

It is evident that energy investors are part of a 'bigger picture' which encompasses all of society.

Climate change activism can be controversial as it has become politicised. It threatens livelihoods and ways of life. This is reflected in the data by the diverse and contradictory responses. The participants explicitly acknowledge this conflict and polarization, with some positioning themselves in the middle:

> "*I try and read opinions on both sides of the matter*" (N12), and
>
> "*There are two sides to every argument*" (N35).

Some also focus on the danger and ineffectiveness of such conflict:

> "*I believe both sides are too extreme on the political front. She is alarmist and her opponents are obstructionist*" (N23).

Thunberg tends to target politicians as the makers of change. For example, one investor writes that increasing awareness of climate change has impacted funding in the oil and gas industry, which has resulted in a change to their investment decisions. It causes them "*to be more aware of potential laws limiting the extraction of oil and gas*" (N41). Another example of this is given:

> "*The Hungarian government based its carbon reduction plan on people's expectations towards climate action. So this is extremely important that the population pushed the government*" (R19).

The young climate change activists "*have helped create momentum and political pressure*" (N43). This influence of individuals or 'people power' is highlighted:

> "*People should not vote to leaders [sic] who are unaware of the climate problems*" (N13).

Others argue that the power to deal with the issue is in the hands of the governments with public policy (N21, R21) and that the power of the individual is limited:

> "*It* [activism] *should be directed towards governments*" (N25), and

"*Unless the government or intergovernmental organisations lead, individuals can only slow the damage but not cure it*" (N13). Others are critical of government responses:

> "*The political response is misguided*" (N48).

Another investor recognises the importance of governmental action but also that politicians often have other priorities. The investor alludes to the perceived conflict between the economy and the environment:

> "*Hope the economic shock due to COVID doesn't derail or slow the necessary regulatory and political momentum*" (N45).

The energy investors are situated in the midst of an entire economic system governed by the law of supply and demand.

> "*Since there is demand we are trying to be part of the supply*" (N25).

As one investor points out, "*If you dislike oil, gas, coal, etc., simply stop using it*" (N41).

The consumer is a key player in the energy transition. The importance of their actions is highlighted here.

One investor writes of the hypocrisy of certain consumers:

> "*People who demand an end to fossil fuels drive to protests, heat and cool their homes with oil, gas, petroleum products.*" (N33).

Others see the issue as being societal:

"*Environmental issues are not personal but social problems*" (N13), and

"*Big changes like this require a society to change as a whole, everyone has a role to play*" (N31).

The energy industry itself is part of the bigger picture. Energy is described as a "*critical commodity*" (N2); "*basic need*" (N4); and as "*essential for our development*" (R5). The industry is "*permanent*" (N17); "*fundamental*" (N45); and "*the largest industry in the world*" (N25).

There are contradictory feelings expressed in relation to fossil fuels. A renewable energy investor writes:

"*Restoring our atmospheric and oceanic balance can only be accomplished if the world transitions to a green hydrogen based economy and ends all fossil fuel energy use urgently*" (R10).

However, others explain the unfeasibility of the entire world population switching from fossil fuels to cleaner alternatives instantly:

"*I believe that there is a need for all types of energy. Oil and natural gas are not going to just disappear overnight*" (N29).

Humans are currently dependent on energy from fossil fuels so they cannot just be ignored by investors. One participant writes:

"*All solutions need to be included to get where we need to be. This even includes fossil fuels*" (N10).

Another investor writes that:

"…*a global transition to 100% renewable energy is just one piece of the jigsaw"* (R10).

Changes that can be made within the industry to make it more environmentally friendly are highlighted:

"*There are smart ways to extract oil and gas*" (N28).

The investors indicate that they take environmental issues into account when making their investments or implementing projects:

> "*We utilize the latest technology to reduce our carbon footprint if we can*…" (N29),

and

> "*We try to avoid coal fired power generation where possible*" (N3).

A participant provides an example to explain:

> "*Vietnam is a coal energy economy. So leapfrogging them to LNG [liquefied natural gas] would represent victory*" (N10).

Some non-renewable energy investors reiterate this point:

> "*Oil and gas energy investments are focused on better HSE practices to ensure the reduction of green house gases*" (N38).

The investors highlight the fact that it is not a black and white issue. One investor writes:

> "*In reality markets and economies still massively in the conventional energy*" (R20).

The contrast between types of energy is highlighted when one participant, asked if their investment choices had changed as a result of increasing awareness of climate change issues, replied "…I would never invest into oil or gas" (R32).

The energy investors also acknowledge the necessity for change and the danger and urgency to the situation. They describe the climate change emergency as "*the most important challenge… it is a battle"* (N10); "*very serious and it is happening at a very alarming pace*" (R24); and state that "*the other alternative* [to decreasing climate change] *is continuing down the path of self destruction*" (R28).

Finally, the investors express an interest in and affect for sustainability and environmental matters. For a start, it is good for business: "*Investors like ESG*" (R3).

Some indicate a preference for cleaner energy investments:

> "*My emphasis is in projects which promote "green" agendas*" (N16).

One investor points out that the "*major Oil companies have been major investors in alternative energy for years"* (N20).

There is an indication from some participants that energy investments are changing:

"*growing trend in renewables as the world becomes more environmentally conscious"* (R14).

Other investors show some form of compromise. Because of increasing awareness of climate change, one investor is "*less inclined to make long-term commitments to oil and gas projects*" (N33).

Another states:

> "*Given two equal investments I will always choose the one better for the environment, or people affected, but it is not the primary driver*" (N48).

Finally, a renewable energy investor concedes:

> "…*the focus needs to be on a good investment. Doing something against climate change is a positive add on*" (R12).

DISCUSSION

This study examined the influence of youth climate change activism on energy investment decisions in 82 participants, including both renewable and non-renewable energy investors. The author identified four overarching themes: Money, Money, Money; Emotional Investment; Knowledge and Experience; and The Bigger Picture. Each theme will now be discussed in further detail, in the context of the research question and in comparison to previous literature in this area.

The data analysed presented many contradictions, possibly due to the heterogenous nature of the participants. However, this polarization is also demonstrative of the fact that climate change is a controversial topic and aligns with attitudes to Thunberg on social media. For example, through a sentiment analysis study of tweets, Jung *et al.* (2020) found both positive and negative feelings about Thunberg expressed, illustrating a divide in opinion in relation to her activities. They also found that the tweets about her were permeated with "political polarization" (Jung *et al.*, 2020, p. 2). In the current data, participants provide contradictory accounts of the situation, which appear to be the result of misunderstanding or incorrect information.

Some of the survey participants explain the complexity of the climate change problem and believe that Thunberg and the other young climate change activists do not understand this. Thunberg has acknowledged that the crisis is "the most complex issue that we have ever faced" but that the solution (ending the greenhouse gas emissions) "is black and white" (Thunberg, 2019, p. 49). This paradox is apparent in the responses of the participants.

Money, Money, Money

The concept of money was present in many of the investors' responses. In the traditional economic literature, money as a motivating factor fits the description of 'rational'. It cannot be denied that money is an important part of investing and an obvious motivation. The desire to make profitable returns as the primary goal of investing aligns with the Efficient Market Hypothesis as well as such behavioural finance theories as the theory of planned behaviour

and the theory of reasoned action. Financial reward as a motivating factor in investing is an assumption that forms part of the behavioural finance literature. The research question relates to querying whether money is the *only* consideration, or the only *rational* consideration. According to Thunberg, “It seems that money and growth are our only main concerns” (Thunberg, 2019, p. 39).

Gamel *et al.* found that “typical capital investment criteria”, (Gamel et al., 2016, p. 26) such as investment amount and return on investment, were ranked as most important to their participants. Their study also indicated that individuals with positive environmental attitudes are more willing to invest in wind energy and also seem prepared to be suffer financially because of it. Furthermore, they point out that this aligns with a previous study on European individual investors (Nilsson, 2008 as cited in Gamel *et al.*, 2016).

The responses vary in the degree to which the participants consider money as the only or the most important factor in investing within the energy industry. Making money or managing others’ money is conveyed as a serious responsibility. Some of the energy investors’ responses could be described as attempts to defend or justify their investment decisions with practical explanations, for example the need to feed their family.

Sultana *et al.* found that income level and investment amount were significant factors in ESG investment decisions of stock market investors in Bangladesh. However, their findings also indicated that the investors considered firms that were not environmentally-friendly to be more risky (Sultana *et al.*, 2019).

Emotional Investment

Greta Thunberg’s arguments are logical but her appeal is emotional. The essence of the issue being addressed in this study is whether the emotion elicited by Thunberg and the climate change activists influences the energy investors’ decisions. The existing behavioural finance literature in respect of the connection between emotions and subsequent choices is extensive. In particular, the affect heuristic, sympathy and commitment, and the theories of reasoned action and planned behaviour demonstrate how this relationship functions. It is important for literature advancement to understand if business and financial considerations

have a tendency to be compartmentalised and separated from feelings, thereby preventing these feelings from influencing investment decisions. It is also significant if personal and immediate responsibilities trump societal and environmental obligations and if this represents an inner conflict or crisis of conscience for energy investors. Masini and Menichetti's study found evidence of a causal relationship between the attitude of investors and the proportion of renewables they invested in (Masini and Menichetti, 2012).

Feelings about Greta

Thunberg tends to elicit strong responses, particularly from men. Therefore, the researcher believes that it is important and relevant to ascertain the feelings of energy investors towards her and her cohort. The diversity of responses align with the strongly polarized views on social media from her opponents and supporters (Jung *et al.*, 2020). The negative comments, which mostly emanated from the non-renewable energy investors, seem to evoke feelings of anger, annoyance and frustration. None of the participants who only invest in renewable energy spoke negatively about Thunberg or the other young activists in their response to how they feel about them.

It is important to note that the energy investors do not seem to attack Thunberg as a person. There are references to her age but this element had been specifically referred to in one of the researcher's questions. Any criticism of her appears to relate directly to the climate change problem - her activism methodologies and her perceived lack of knowledge, education, and experience. There were no references to Thunberg's appearance, ethnicity, personality, or diagnosis of Asperger's Syndrome throughout the data. This can be clearly contrasted with the study of Jung *et al.* which found that, in addition to age, Thunberg and her supporters were criticised for their gender, appearance, and ethnicity (Jung *et al.*, 2020). They provide an example of a popular tweet, "Guys, it is not okay to want Greta Thunberg to 'lead' us." which is demonstrative of social conflict relating to gender (*ibid.,* p.14). Thunberg's gender is referred to a couple of times in the investors' responses but without negative connotations.

The emotiveness of Greta's thoughts, words, and actions seems to contrast in the data with the some of the investors' own stance. There is a suggestion that emotion is extraneous to the world of business and finance. This would align with traditional economic theory and contradict behavioural finance theory.

Sympathy and Commitment

Some of the energy investors express feelings of sympathy and commitment in their responses. Amartya Sen argued that these are "drivers of behaviour" (Sen, 1977 as cited in Bergset, 2015, p. 276). For example, one investor expresses concern about the disproportionate harm that a renewable energy transition as well as pollution caused by non-renewable energy inflicts on poor people. It also threatens livelihoods and ways of life. For example, according to one researcher, "the ramifications of fossil fuel divestment strategies could have implications for energy access in emerging markets, as well as jobs in some sectors" (Death, 2019, p. 46).

The participants express feelings of hope, encouragement and inspiration evoked by the words and actions of Thunberg. However, Thunberg herself has stated "I don't want your hope… I want you to act as you would in a crisis" (Thunberg, 2019, p. 40).

Knowledge

There is long-standing evidence in the literature that the goals involved in the decision-making process can "be simple or complex, consistent or contradictory; the facts may be real or supposed, based on observation or the reports of others; the inferences may be valid or spurious" (Simon, 1959, p. 273). Cognitive, as well as emotional, influences and perceptions are important factors in the decision-making process. This is grounded in the literature of behavioural finance (e.g. Slovic *et al.*, 2004 as cited in Rinscheid and Wüstenhagen, 2018).

Knowledge is a key factor in the climate change debate as it is primarily a scientific issue. The energy industry's response to this problem demands complicated, technical, and

multidisciplinary input. In addition to science, engineering, technology, and finance, there is also a requirement to understand social issues, development, and politics.

Steven Mnuchin reportedly remarked of Thunberg, “After she goes and studies economics in college, she can go back and explain that to us” (Mayes, 2020). Some of the investors’ comments highlight the fact that Thunberg has not yet completed her second-level education and so is branded ill-placed to lecture the experts and professionals about scientific matters that she has not formally studied. However, Thunberg has previously responded to this sort of criticism, “Some people say that I should study to become a climate scientist so that I can ‘solve the climate crisis’. But the climate crisis has already been solved” (Thunberg, 2019, p. 20).

Greta has made high-profile speeches, for example, addressing the United Nations and the World Economic Forum in Davos (Thunberg, 2019). She also uses Instagram and Twitter to communicate with both her supporters and her opponents (Jung *et al.*, 2020). It is important for her cause that she communicates effectively in order to promote awareness and demand action from the people who can make real changes, e.g. politicians, business people and community leaders. It is equally important that she does not alienate others or create further polarization or political conflict and misunderstandings.

Effective communication does not occur when the audience is unclear about what is being said. Many people may be aware of Greta as a sort of celebrity figure and are witness to a certain drama that surrounds her, but this may not be effective for the occurrence of actual change. Emotive, plain and persuasive speaking is her strength. There are many scientists and other activists who have communicated on this topic, but they have not received equal attention. As Thunberg states, “I am not saying anything new, I am just saying what scientists have been saying for decades” (Thunberg, 2019, p. 50). Climate change activism “gives voice to poor people, endangered species and future generations” (Holmberg and Alvinius, 2020, p. 88).

Newman indicates that people holding strong opinions choose media where they expect similar views to be expressed and also that they “selectively process the arguments they encounter” and demonstrates that cultural cognition contributes to the polarization of opinion in relation to climate change (Newman, 2018, p. 985). An issue that is apparent in the data is

that different stakeholders are not working together or listening to each other. It is clear from the misunderstandings, or lack of understanding, that proper communication is not happening. Thunberg states “Now is the time to speak clearly” (Thunberg, 2019, p. 38) but it still seems that her message is getting lost or part of her audience is unreceptive to it. Elsewhere, Thunberg has been commended for “clarifying an abstract danger with piercing outrage” (Alter *et al.*, 2019, p. 54).

Some of the energy investors express feelings of distrust and suspicion about who Greta Thunberg really is and who is controlling her. This suggests that they will not be influenced directly in their investment choices by her speeches or appeals as they will not believe them or will suspect a hidden agenda. They also evidently do not agree with what she is saying or what she represents.

Experience

Thunberg’s age is significant as at the time of writing she is still a minor. She was fifteen years old when she first drew media attention. She uses her age to her advantage. She would not have had the success and attention that she did if she were an adult. Her original weapon of choice was to go on strike from school and her status as a child is a large part of her emotional appeal. She makes statements such as, “We children shouldn’t have to do this.” (Thunberg, 2019, p. 50) and “You say that you love your children above everything else. And yet you are stealing their future” (Thunberg, 2019, p. 28).

The results of previous studies have suggested that the willingness to invest in renewable energy decreases with age (Masini and Menichetti, 2013; Karasmanaki *et al.*, 2019). However, another study found that age and education level had no impact on a group of stock market investors’ decisions in relation to ESG concerns (Sultana *et al.*, 2018).

The depiction of climate change activism as a generational clash has been discussed in the literature and described as overly-simplistic and potentially dangerous (Chazan and Baldwin, 2020). The issue is also apparent in the data.

The perspective of investors of the generational perspective, or “generational battle” (Alter *et al.*, 2019, p. 54), can reveal their emotions or attitudes towards this activism and can be

viewed as a measure of its effectiveness. Thunberg is not deterred by the backlash against her as she states that it “shows we are actually making a difference and they see us as a threat” (Alter et al, 2019, p. 62).

Many of the investors are firmly placed within the energy industry through their studies, work experience, geographical location, and personal contacts. The longevity of the participants’ experience within the energy industry contrasts sharply with the youth and innocence of Greta. Their familiarity with this industry (both renewable and non-renewable sectors) appears to be a significant factor in many of their investment decisions. The majority of investors are firmly placed within this world through their work, studies, geographical location, and personal contacts. It is clear from some of these responses that the young climate change activists’ actions have had no influence on these investors’ decisions. The ex-CEO of BP, John Browne made similar comments about Thunberg in an interview, stating for example, “I have been at this for longer than you’ve been on the planet” (Browne and Vidal, 2019).

They imply that Thunberg and the other young activists do not understand the issues due to their age. However, existing literature suggests that children have environmental “knowledge, engagement and power” and that this knowledge and awareness is rapidly increasing (Holmberg and Alvinius, 2020, p. 88).

The participants’ experience relates to the underlying theories in existing behavioural finance literature such as the status quo bias, social identity, and cultural cognition. A previous study relating to the investment motivations of members of a renewable energy cooperative in Flanders found, to the author’s surprise, that environmental attitudes, including a “pro-environmental self-identity”, were not a major influence (Bauwens, 2019, p. 842). In contrast, Karasmanaki *et al.* found that their respondents were more likely to want to invest in renewable energy when pro-environmental behaviours were also evident (Karasmanaki *et al.*, 2019). Another study’s findings indicated that behaviour prediction could be improved by including a “measure of behaviour-specific self-identity” into the model (Morten *et al.*, 2018, p. 297), which implies that this is a factor in decision-making.

Some of the participants in the present study appear to identify with the activists, extending the idea of communicating about climate change to themselves; declaring that they are

members of Greenpeace; and describing themselves as the underdog. This illustrates that being environmentally conscious is part of their social identity.

Previous literature in the area has dealt with the idea of addiction being a factor in investment in the fossil fuel industry, referring to the concept of carbon lock-in (Rinscheid and Wüstenhagen, 2018, p. 52). It has also been argued that human dependence on information from social sources rather than person experience is a major factor in their decision-making (Simon, 1993).

The Bigger Picture

The energy investors were asked their opinion on the phrase 'No one is too small to make a difference' which is the title of Thunberg's book (a compilation of her speeches). The phrase conveys the image of Thunberg and other environmental activists as the underdog, trying to make a difference and it further conveys the idea that small changes and individual actions can create real change.

The question of responsibility arises in the data. According to the existing literature, individuals are failing to take personal responsibility for the environment, instead blaming the government (Lee, 2009, as cited in Paço and Gouveia Rodrigues, 2016) and this is evident here too. Youth-led climate change activism is contributing to the conversation about the responsibility "of the entire humanity" for tackling this crisis (Holmberg and Alvinius, 2020, p. 88).

So who is ultimately responsible? Is it the investors who finance the extraction of fossil fuels; the businesses that supply these products; the consumers who demand them; or the politicians who stand idly by? Thunberg blames the companies and decision-makers. She calls it a "convenient lie" to hold everybody responsible, explaining "…if everyone is guilty then no one is to blame" (Thunberg, 2019, p. 35).

In the context of climate action, David Labrador highlights the importance of "Shutting off investments in dirty fossil-fuelled assets and shutting down existing dirty assets" (Labrador, 2019). This argument implies that investors in non-renewable or carbon-heavy energy need to be convinced by the activists to change. Thunberg states "We must change almost

everything in our current societies" (Thunberg, 2019, p.40). However, this is not a popular proposition for the most wealthy and powerful.

Only one of the participants mentioned Covid-19 despite the survey taking place in the summer of 2020. Covid-19 has shown it is possible for society to change over a short period of time due to a crisis, although it is, at times, a painful and uncomfortable process. Masini and Menichetti's findings align with that another similar study (Fritz-Morgenthal *et al.*, 2009 as cited in Masini and Menichetti, 2012) in that most of the participants declared a preference for established, rather than innovative technologies, due to the financial crisis at the time they were carried out, indicating an aversion to risk. However, another study found that participants expressed a willingness to invest in renewable energy despite the fact that that survey was also carried out during a recession (Karasmanaki *et al.*, 2019).

The consumer is another key player in the energy transition. Investors respond to what consumers demand. The importance of the actions of consumers is highlighted in the data, together with the role of investors in responding to the system of supply and demand. Carl Death points out that "almost any activity within the global economy involves embedded greenhouse gas emissions" (Death, 2019, p. 45).

Policy is an important factor to be taken into consideration by energy investors. It can affect investment decisions because of the existence of subsidies, taxes, tax incentives, regulations, or laws banning certain types of energy type, method, or project. The conflicting priorities of politicians is referred to by one of the investors. The climate change debate and Thunberg's place in it have also become heavily politicised, with Twitter described as a "political battlefield for both sides" (Jung *et al.*, 2020, p. 15). Previous literature has found that both adults and young people are dissatisfied with political action in terms of the climate emergency (Corner *et al.*, 2015 as cited in Holmberg and Alvinius, 2020).

Many of the investors highlight the fact that changing habits and improving the environment will be a long, gradual process. This contrasts with Thunberg's sense of urgency and panic, and her famous "Our house is on fire" speech (Thunberg, 2019, p. 37).

Death discusses the stigmatization of the fossil fuel industry and the unfeasibility of an instant switch to the sole use of renewable energies, stating that the renewable sectors

would be unable to absorb the investments that are currently allocated to the fossil fuel industry if they were to be divested (Death, 2019). Some of the non-renewable investors expressed an interest in lowering their impact on the environment and explained the complex nature of the problem and of finding solutions to it.

Some of the comments are evidence of the environmental awareness of the energy investors and that there is a lot of thought and consideration applied to investment decisions on non-financial matters, as well as non-financial motivations, which aligns with the existing behavioural finance literature.

It is apparent from the data that the place of residence, or home country of the investor accounts for some of their feelings and opinions in relation to the energy industry. A previous study found that an important factor in willingness to invest in renewable energy is the energy independence of their home country (Karasmanaki *et al.*, 2019).

Limitations

The researcher became aware of their own various embedded assumptions, for example, that climate change is real, that it is having a negative effect, that over-reliance on fossil fuels is partly to blame, and that renewable energy is better for the environment and for society in general.

This study also assumes that that investment method (e.g. angel investing, stock market investing, project financing) is not a factor that will account for differences in feelings, attitudes, and beliefs. The intention to invest money in the energy industry was the only requirement to be included as a participant as it was considered that the method was irrelevant. However, differences in attitude between investor types could be explored in further studies.

Demographics have also not been considered. Similar studies have taken into account factors such as gender, age, marital status, levels of education, and work experience (Uslu Divanoglu and Bagci, 2018). Such studies have also noted the exact nature of the energy type, e.g. wind onshore, solar photovolataic, biomass etc. (Masini and Menichetti, 2012).

It is also noted that participants' reactions to Thunberg do not necessarily have a relationship with their feelings or opinions about the climate change crisis, the environment, activism, or clean energy.

The sample may have been skewed for the following reasons:

- Participants were willing to take part for nothing in return – out of interest in the topic or out of kindness.
- Participants may have suspected a bias on the part of the researcher due to the topic choice.
- Although participants were from all over the world, they all had the requisite level of English to complete the questionnaire which would imply a skewness to native English speakers or educated people.
- Most, if not all, participants had an active LinkedIn profile.
- Although the questionnaire did not account for gender, it was noted that the majority of members of the LinkedIn groups relating to investment and / or energy investment were male.

There were obvious contradictions in the data between renewable and non-renewable energy investors' responses. Further studies in this area could deal with these groups separately, including categories relating to non-renewable clean energy and renewable carbon-heavy energy. In addition, a quantitative analysis could be carried out to compare the data pertaining to investors of the different Categories.

CONCLUSION

This research was carried out on the basis that there appears to be a gap within behavioural finance studies in relation to youth climate change activism and any influence it may have over actual energy investment decisions. The research, although limited by scope and methodology, contributes to identifying real motivations and barriers to energy investment and divestment. It is hoped that this conversation could eventually lead to finding ways to encourage more sustainable investment as part of the global effort to combat climate change.

This research illustrates the issue of responsibility and blame, the difficulty of ending a dependence, and the reluctance to change. Thunberg has addressed those who ignore the problem, “To all of you who choose to look the other way every day… Your silence is almost worst of all” (Thunberg, 2019, p. 11).

This paper confirms previous studies which have found that motivations for investment are not purely financial and, therefore, not ‘rational’ according to the traditional theories on efficient markets. However, the author argues that it is indeed rational for an investor to be influenced by altruistic, societal, and environmental concerns. The data collected illustrates that energy investors are not robots. They are capable of deeply considering their role in the system and the impact their investment decisions can have beyond financial gain.

The study will ask these energy investors about their investment motivations; feelings about Greta Thunberg; beliefs in her ideology; and whether the activism has resulted in any changes to their investments.

The data shows that the young climate change activists can affect the energy investors’ investment decisions. Firstly, through inspiring hope for change and encouraging investment in more sustainable energy options, and secondly, by raising awareness of the failures and inadequacies of politicians and world leaders to implement the Paris Agreement. This creates the momentum and political pressure to introduce new policies and regulations, thereby indirectly affecting the energy investors’ decisions by jeopardising their financial gain.

The data provides insights into the opinions and views of energy investors in relation to the climate crisis. The fossil fuel industry has been vilified by activists and in the media. However, the data aligns with previous literature in this area (Death, 2020) to suggest that it is not that simple and that immediately cutting off supplies of oil and gas could create new problems for society.

The data also shows us the importance of becoming educated about the issues and listening to the other side of the argument. Because, in the end, we are all on the same side.

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