

We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

6,900

Open access books available

185,000

International authors and editors

200M

Downloads

Our authors are among the

154

Countries delivered to

TOP 1%

most cited scientists

12.2%

Contributors from top 500 universities



WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?
Contact book.department@intechopen.com

Numbers displayed above are based on latest data collected.
For more information visit www.intechopen.com



The Increasing Importance of Environmental, Social and Governance (ESG) Investing in Combating Climate Change

Percy Jinga

Abstract

The current climate change is significantly caused by anthropogenic greenhouse gases, particularly CO₂ released by burning of fossil fuels. Climate change is predicted to disrupt production systems and supply chains of businesses, potentially affecting their financial performance. ESG investing, the consideration of environmental, social and governance factors by asset managers will likely play a crucial role in combating climate change. To attract ESG funds, companies will have to reduce their carbon footprint, among other actions. When companies reduce scope emissions, they help achieve a goal of the Paris Agreement of limiting average global temperature increase to below 2°C above pre-industrial level. The aim is to identify factors that are likely to increase uptake of ESG investing. The increase in number of ESG investors and their assets, higher financial performance of ESG-linked investments, and increasing regulatory and investor initiatives are likely to increase the impact of ESG investing in reducing greenhouse gas emissions. In addition, investors are becoming more environmentally conscious when making investment decisions. Although some challenges persist, including inconsistency in terminology, huge amount of data to analyze and heterogenous rating standards, ESG investing is likely to play an important role in influencing entities to reduce their carbon footprint.

Keywords: Biodiversity, Climate change, ESG rating, ESG strategy, Financial performance, Greenhouse gas, Scope emission

1. Introduction

Climate change is the shift in the state of climate that can be observed through variability of its components and lasts for a relatively long period of time, typically decades [1]. Long-term changes in climate are caused by natural factors, such as modulations of the solar cycle, as well as human factors. The current climate change is largely attributed to the high concentration of anthropogenically generated CO₂ in the atmosphere. As at September 2020, the atmospheric CO₂ concentration was around 414 ppm, a concentration way above a historic maximum of 300 ppm estimated at around 300 000 years ago [2]. The burning of fossil fuels and deforestation have accelerated the concentration of CO₂ and other greenhouse gases in the

atmosphere. The increasing human population may result in more deforestation to establish farmland and human settlements. In the near term, the concentration of atmospheric CO₂ is expected to continue rising, together with the resultant consequences of climate change.

A warming climate has undesirable consequences for biodiversity in many ecosystems and negatively impacts livelihoods, especially in developing countries with less resilient systems. Polar ice is melting at a rapid rate, increasing sea level that threatens to flood coastal communities and small islands. In the Arctic, summer sea ice extent has declined by 45% over the last 30 years, glaciers have lost their protective cap of perennial ice, permafrost is thawing rapidly and coastlines are experiencing high wave action and erosion [3]. Climate change may increase frequency and severity of pest and disease outbreaks [4]. Extreme weather events, such as floods, storms, hurricanes, droughts, wild fires and heatwaves are being frequently experienced with devastating consequences on livelihoods and ecosystems [5]. Severe and more frequent droughts in Zimbabwe and the increasing incidences of malaria, a disease that affects about 50% of the world's population, have all been attributed to climate change [5, 6]. In addition to impacting livelihoods at personal, family and community levels, climate change also impacts business activities.

International, regional and national actions, conventions, agreements and policies have been drafted to reverse and mitigate risks and impacts of climate change. Over 180 countries which form parties of the United Nations Convention on Climate Change (UNCCC) drafted the Paris Agreement in 2015 to tackle climate change. One of the objectives of the Paris Agreement is to hold the increase in global average temperature below 2°C above preindustrial levels [7]. All parties agreed to determine national contributions to reduce emission of greenhouse gases that will help achieve the objective. The nationally and voluntarily determined targets are renewed incrementally after five years. Limiting global average temperature increase to below 2°C above preindustrial level is strongly predicted to significantly reduce risks and impacts of climate change.

Regionally, under the EU's European green deal, the European climate law sets a goal of achieving carbon neutrality by 2050. The European climate pact encourages governments and local authorities to engage all citizens in climate change action, while the 2030 target plan aims to reduce greenhouse gas emissions by at least 55% by 2030 [8]. Other regional and continental organizations, such as the African Union, the Arab states and the Organization of American States, have similar plans to curb emission of greenhouse gases [9–11]. Nationally, governments are implementing different measures, including giving tax credits to companies that switch to clean energy, such as wind and solar energy. Countries are also tightening regulations on deforestation and vehicle fuel standards. International, regional and national not-for-profit organizations and civil society groups are aggressively involved in diverse activities to combat climate change, including advocacy, education and litigation.

Socially responsible investing (SRI) is a theme that advances investor morals and values. SRI is not necessarily a new theme as it can be traced back centuries ago. SRI is integrating personal values and societal concerns with investment decisions [12–14]. Restrictions to investing, called negative screening, in companies linked to weapons, tobacco, alcohol, gambling and slavery imposed by the church during the middle ages marked the early roots of SRI [15]. Under SRI, an investor intentionally invests to effect desirable social change. In recent history, investment restrictions were imposed on companies linked to colonialism, the Vietnam war, pornography and racism, among other issues [16]. It is emerging, though, that although negative screening can be useful to express ethical, religious or moral values of investors through their investment portfolios, for many, it may prove to be too restrictive [17].

Closely aligned with SRI is environmental, social and governance (ESG) investing, which involves integrating environmental, social and governance factors into fundamental investment analysis with the belief that the factors are material to financial performance. ESG investing takes a broader view than SRI by examining whether environmental, social and governance factors are important to performance, and therefore to the investment performance of a long-term portfolio [17]. In 1996, after recognizing the importance of ESG investing, the UN launched the United Nations Principles for Responsible Investment (UNPRI). The UNPRI is an investor led initiative to support investors when incorporating environmental, social and governance (ESG) factors into their investment decisions [18].

The aim of the chapter is to describe factors that are likely to elevate ESG investing in reducing greenhouse gas emissions. Due to its growing acceptance among investors, ESG investing should be recognized, just like international, regional and national initiatives, as vital to reduce risks and impacts of climate change. The objectives of the chapter are to (i) describe the concept of ESG investing, (ii) describe factors increasing the contribution of ESG investing in reducing emission of greenhouse gases, and (iii) discuss challenges of ESG investing. With rising consumer activism among a world population that is getting increasingly younger on average and more environmentally conscious, investors are likely to be under growing pressure to invest responsibly.

2. What is ESG investing?

ESG investing is the consideration of environmental, social and governance factors (**Table 1**), alongside financial factors, when evaluating risks, opportunities and sustainability of investments [20, 21]. ESG investors believe that ESG factors are drivers of a company’s long-term value, risk and return, and the factors indicate long-term sustainability [21].

Environmental	Social	Governance
Air emissions	Adequate housing	Antitrust violations
Air quality	Abortion services	Auditor independence
Biodiversity protection	Child labor	Board independence
Community health	Consumer privacy	Board diversity
Community safety	Minorities employment	Disclosure of risk
Community security	Human rights	Executive compensation
Energy conservation	Indigenous people rights	Oversight strategy
Fossil fuels	Income equality	Reporting transparency
Hazardous materials use	Slavery	Voting rights
Land contamination	Unionism	
Natural resources use		
Renewable energy use		
Waste generation		
Waste recycling		

Table 1.
List of potential environmental, social and governance (ESG) factors considered under ESG investing [19].

2.1 Environmental factors

The “E” in ESG investing considers how a company takes care of the natural or physical environment. Environmental factors (**Table 1**) consider a company’s utilization of natural resources and impacts of its direct operations and supply chains on the environment. The environmental factors examine a company’s environmental disclosure, impact and efforts to reduce carbon emissions, issues which represent risks and opportunities for a company [22]. Conservation of biodiversity, pollution, waste generation and community health are common environmental factors that pose risks and opportunities. For example, companies that violate waste disposal regulations are prone to costly litigation and criminal prosecution while those implicated in biodiversity loss may experience negative publicity and customer backlash. The 2010 BP oil spill in the Gulf of Mexico brought a record fine and furious negative publicity to the company. Investors may choose to avoid oil and gas companies altogether because of such environmental risks associated with their operations.

Reduction of greenhouse gas emissions is becoming a significant positive screening environmental factor in light of the current climate change. Climate change is expected to increase the occurrence of catastrophic events and, therefore, it imposes a realistic financial risk, especially to companies that are inadequately prepared and poorly resourced [22]. Carbon emissions have been categorized into scopes 1–3. Scope 1 are carbon emissions directly linked to the activities of a company and they mostly occur at premises of the company [23]. For example, carbon emissions resulting from baking of bread at a bakery or burning of coal at a power plant constitute scope 1 emissions for the bakery and power plant. Emissions associated with the supply of electricity are scope 2. All other indirect emissions not associated with electricity constitute scope 3 [23]. Scope 3 may emanate from downstream (consumers) and or upstream activities (suppliers). Since on average more than 75% of an industry sector’s carbon footprint is from scope 3 sources, companies are now being encouraged to target this scope across their supply chain [24]. Overall, a company’s strategy to reduce carbon emission depends on the targeted scope.

2.2 Social factors

Social factors (**Table 1**) relate to how a company manages relationships with its workforce, suppliers, customers, communities and political environment it operates under. Human rights, community outreach, diversity policies, modern slavery, child labor, working conditions and racial disparities are some of the social factors important to a company’s long-term performance [25]. Investors may be influenced by whether a company provides safe and healthy working conditions, or if it donates time, money or other resources to communities where it operates. Unsafe working conditions or a disregard for community or customer concerns are potential grave financial risks. In contrast, companies that treat employees well and donate to communities are judged as less risky and they can benefit from higher productivity and attraction of top talent.

The UN’s International Bill of Human Rights (IBHR) and the International Labor Organization (ILO) Core Conventions set out social factors that are important for long-term financial performance. The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) helps companies to avoid conflict with indigenous populations. The seemingly unending birth pangs of the Keystone XL pipeline in the US and the incessant negative publicity directed at Rio Tinto after the company blew up ancient caves in western Australia despite opposition from Aboriginal communities may be consequences of overlooking indigenous peoples’ rights. Such disregard of social factors may turn out to be financially costly to investors.

2.3 Governance factors

Governance factors (**Table 1**) are concerned with a company's decision-making, from policymaking to the distribution of rights and responsibilities among different participants, including the board of directors, managers and shareholders. Governance factors indicate the rules and procedures for companies, and allow investors to screen for appropriate governance practices as they would for environmental and social factors. A corporation's purpose, the role and makeup of boards of directors, shareholder rights and how corporate performance is measured are core elements of corporate governance structures [26]. Gender diversity and equity are becoming important to investors who are increasingly demanding better representation of women and people of color on corporate boards and in executive ranks, as well as equal compensation and promotion prospects.

A company that has robust governance structures is transparent and fair, and it operates within regulations and policies. Good governance mitigates risks of mismanagement, corruption and regulatory penalties. The Volkswagen emission cheating scandal that was revealed in 2015 in the US may be a result of governance failure. Volkswagen installed a software that was programmed to allow their vehicles to pass testing performed by the Environmental Protection Agency (EPA) but pollute up to 40x the federal maximum when on the road [27]. The governance failure of the company potentially had a negative effect on its stock price and financial performance, on top of reputational damage [28].

3. ESG strategies

Investors and asset managers use seven strategies to integrate ESG factors in their investments. Selection of the strategies is influenced by investor objectives. The strategies are Best-in-class, Exclusions, ESG integration, Impact investing, Norms-based screening, Sustainability-themed and Engagement and voting [29]. Descriptions of the strategies below are largely according to [29], although there are other bodies that use slightly different nomenclature.

3.1 Best-in-class

Best-in-class involves the selection of companies with the best ESG practices. The best companies are identified by ESG analysis, and they are usually selected by comparing ESG ratings provided by different rating agencies. Asset managers invest in companies with the best ESG ratings.

3.2 Exclusions

This is an approach where companies are excluded based on the values of an investor. Companies engaging in activities deemed negative to society are excluded. Activities and or products that may result in exclusion include controversial weapons, pornography, tobacco and alcohol, fossil fuel extraction and nuclear energy. In the past, there were divestment from companies involved in the Vietnam war, colonialism, slavery, apartheid as well as those that were complicit in racism.

3.3 ESG integration

ESG integration in the sense of ESG strategies is the consideration of ESG factors alongside financial factors, in the analysis of investments. The integration

process is influenced by the potential impact of ESG factors on financial performance. The investor believes that a company will have good financial returns if it has high ESG ratings.

3.4 Impact investing

Impact investments are made into companies with a clear intention to generate an ESG impact alongside a financial return. A major characteristic is the intention of the investor to have measurable ESG impacts from the investment. The financial return ranges from below-market to market rate.

3.5 Norms-based screening

Norms-based screening is an approach that involves excluding companies that violate international norms and conventions. These norms and conventions are defined by international organizations. They include the UN Global Compact Principles, the Universal Declaration of Human Rights, ILO Declaration on Fundamental Principles and Rights at Work, and the United Nations Convention against Corruption.

3.6 Sustainability-themed

Themed investing is the selection of companies involved in sustainable development challenges. Sustainability themes include renewable energy, waste recycling, clean water provision and human health.

3.7 Engagement and voting

Engagement refers to all interactions between an investor and investee to address ESG issues and business strategy. The objective of engagement is to exert influence on ESG issues. Voting is the investor's practice of exerting voting rights at annual general meetings, where commonly ESG issues are taken into consideration. Engagement and voting is a long-term strategy seeking to influence corporate culture and increase disclosure.

4. ESG investing in combating climate change

ESG investing is likely to contribute significantly to steering companies to reduce their carbon footprint. There is increasing evidence that companies which incorporate ESG factors are likely to have higher financial performance, climate change issues are becoming popular among younger investors, the number of investors pledging to evaluate ESG factors when making investment decisions is increasing, and investor and regulatory ESG promoting initiatives are increasing. Taken collectively, these observations are likely to elevate the impact of ESG investing in combating climate change.

4.1 ESG investing and financial performance

There are competing views on the impact of ESG investing on financial performance. One view is that companies incur costs from socially responsible actions that put them at an economic disadvantage compared to other firms that are less socially responsible. A second, contrasting view is that costs associated with ESG factors are necessary because companies overall benefit through high employee morale and productivity [30]. The pioneering studies of the impact of ESG investing, then

SRI, on financial performance can be traced to [31]. In the study by [31], fourteen companies were selected based on their social responsibility credentials, and the rate of their return on common stock was calculated [31]. The stocks of the selected companies appreciated at a higher rate compared to major market indices [32]. This difference in performance was attributed to responsible investing [32]. A number of subsequent studies have validated the positive correlation between social responsibility and financial performance.

In a review of 2 200 studies on effect of ESG investing on corporate financial performance, 90% concluded a positive correlation [33]. The positive correlation was observed to be stable over time, especially in North America and emerging markets [33]. Age of a company is an important variable since old equipment and buildings might incur more expenses in making them environmentally and socially compatible with modern regulatory standards. After correcting for age of a company, a positive relationship was observed between social responsibility and financial performance [34]. When a Morgan Stanley Capital International (MSCI) ESG rating was applied to study corporate returns over a 10-year period, 2007–2017, it was observed that ESG-rated companies paid higher dividends and showed higher valuation levels [21, 35]. Among 100 American companies, employee satisfaction was associated with positive risk-adjusted returns at a statistically significant level [36]. Similarly, an evaluation of two equity portfolios that differed in eco-efficiency showed that the high-ranked portfolio provided substantially higher average returns than its low-ranked counterpart over the 1995–2003 period [37].

Although there are also some studies refuting the non-negative correlation between ESG investing and financial performance [38–40], orientation towards long-term ESG investing is important for investors to fulfill their fiduciary duties and achieving objectives of society [41]. Companies can build goodwill through ESG investing which can protect against reputational damage from catastrophic occurrences. The widely reported positive financial performance will likely influence more asset managers and investors to consider ESG factors, thereby becoming material in combating climate change.

4.2 Investor participation in ESG investing

Companies are under pressure from shareholders to maximize productivity, and from consumers, workers and communities at large to consider ESG factors [39]. Consumers are increasingly becoming conscious of environmental issues, and are showing preferences for environmentally friendly products. Companies are, therefore, not only concerned about financial performance, but also impact of their activities on the environment, social wellbeing of workers and the broader community. The concern is reflected by the increasing number of companies that are publicly declaring their commitment to ESG investing [16]. In 2019, ESG-themed mutual funds had a net inflow of US \$20 billion, an increase from the previous year by a factor of four [42]. Since the formation of UNPRI, the number of signatories has increased to over 3 000 at the end of 2020, with their assets under management at US \$103.4 trillion (**Figure 1**).

As at January 2021, 61 large companies from diverse sectors had committed to stakeholder capitalism metrics (SCI), a set of environmental, social and governance metrics and disclosures released by the World Economic Forum (WFP) and its international business council (IBC) that measure long-term value creation for stakeholders [43, 44]. In making these commitments, influential companies signaled that ESG factors are increasingly becoming important to success and long-term viability. The commitments to SCI and UNPRI represent the intent of leading global companies to integrate ESG factors into their core strategy and operations

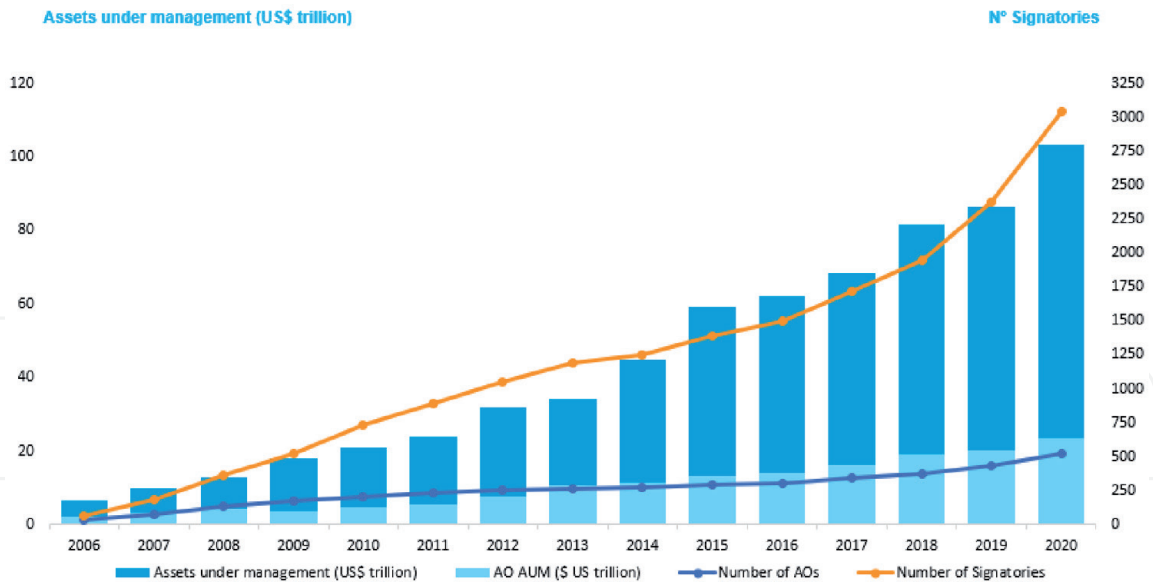


Figure 1. Increase in number of signatories to the United Nations principles for responsible investment (UNPRI) and assets under management (source: UNPRI).

which is likely to result in tangible action towards reduction of their carbon footprint.

4.3 Regulatory initiatives

The number of policy initiatives to encourage ESG investing has also increased in tandem with the number of investors and assets. For example, the sustainable banking network (SBN) was formed in 2012 by financial sector regulatory agencies and banks in emerging market economies (EME). The aims of the SBN are to support companies to adapt to environmental and social sustainability and to contribute to national development goals [21]. In 2015, the taskforce on climate-related financial disclosures (TCFD) was formed by the G20. The task of TCFD is to identify information needed by investors to assess climate-related risks, among other sustainability issues. The TCFD drafted recommendations on climate-related financial disclosures which have been widely adopted [45]. The high-level expert group (HLEG) on sustainable finance was formed by the European Commission in 2016 to channel public and private capital flows towards sustainable investments and to protect stability of financial systems from climate change related risks [21]. These and other policy initiatives are likely to influence more asset managers and investors towards ESG investing.

4.4 Popularity of environmental factors among investors

Environmental factors topped the list of individual investors as far back as 1991 [46]. A 1991 survey of 4 000 individual investors in two mutual funds that incorporate ESG factors in investment decisions established that environmental and labor issues were a top priority [46]. The majority of the investors were generally young (below 44 years of age) and better educated, with at least a college degree. In a similar study among members of the American Association of Individual Investors (AAII), it was observed that environmental factors dominate in their decision making [14]. A company’s environmental performance and the environmental impacts of its products are important considerations for ESG investors. With the continued increase in the concentration of atmospheric greenhouse gases, environmental factors, particularly climate change, are likely to attract most investor concern [47, 48].

Climate change activism, especially among the younger population, is making international headlines. Climate change threatens both financial performance of companies and social well-being of communities. Rising sea level will impact nearly 40% of the US population and other coastal communities around the world [48]. Hurricanes, storms, heat waves and floods will disrupt company activities and community cohesion. Investors and asset managers are likely to continue reducing climate change risk in their portfolios, especially with carbon-intensive companies [48].

4.5 Investor initiatives

Investors worried about impacts of climate change are taking their own initiatives to reduce greenhouse gas emissions. Climate Action 100+ is an investor-led initiative to ensure the world's largest corporate greenhouse gas emitters take necessary actions to reduce emissions. The Investor Agenda aims to accelerate actions that are critical to tackling climate change and achieving goals of the Paris Agreement. The Investor Agenda encourages investors to set science-based portfolio emissions reduction targets that allow global net-zero emissions by 2050 or sooner, with credible intermediate targets. It provides actions to meet the emissions reduction targets that align with the goals of the Paris Agreement. The investor led initiatives and the resultant decarbonation actions by companies are vital in reducing climate change risks and exposure.

5. Challenges of ESG investing

ESG investing has been fraught with challenges since its early days. The lack of common terms, huge volumes of data to be processed from company reports and other sources, and heterogeneity of rating methods are noteworthy drawbacks.

5.1 Terminology variability

The variety of terms that are used under ESG investing may create confusion among investors. For example, the term “environment” to describe a fund with positive environmental impact may alternatively be substituted with “sustainable”, “green” and “eco” [16]. There are also terms that are sometimes used interchangeably with ESG investing, such as SRI, responsible investment, sustainable investment, impact investing and ethical investing [16]. There is need to resolve such terminology variability so that evaluation can be more consistent. Apart from terminology ambiguities, scoring some ESG factors may be highly influenced by context. For example, a company that accords its workers a worshipping hour may score highly under social factors in a predominantly religious society than in an atheistic one. A company may be negatively screened in one community while positively screened in another due to cultural, religious, ideological and ethical differences.

5.2 Huge volume of data

To score ESG factors, huge volume of data needs to be processed. These data may be mined from company reports, regulatory agencies' reports and other mandatory and or non-obligatory disclosures, a very laborious and cumbersome process for investors. Scoring of factors is to some extent subjective. Some investors may score environmental factors highly compared to social factors while others score

vice versa. An environmentally-friendly company could mistreat workers [42], and thus it is challenging to balance such factors when evaluating the company. There is also a risk of evaluating greenwashed and impact-washed data. Greenwashing is a false claim to deceive consumers into believing that a company's products and actions are environmentally friendly [48]. Impact washing is promoting the positive impact of a company to society while it engages in other damaging activities [48]. For example, a mining company may tout how its solar power plant will result in decarbonation, while simultaneously the company will be releasing toxic chemicals that cause deforestation. To circumvent the problem of scouring over enormous amount of data, asset managers and investors usually rely on ESG indices prepared by vendors. There is a possibility in future of using artificial intelligence and machine learning methods to score the huge volume of ESG data [48].

5.3 Heterogeneity of ESG rating methods

ESG rating agencies analyze publicly available data reported by a company, sector-specific NGOs, government agencies, trade unions and other sources to produce an ESG rating for a company. The rating agencies are paid by investors who use the ratings to evaluate investment decisions. Leading international ESG rating agencies include Vigeo Eiris, MSCI, ISS-oekom, Inrate and Sustainalytics. The rating criteria, however, differ among agencies and business sectors. As no common standard exists for ESG rating, each agency develops its own method, and as a result, ratings from different agencies sometimes disagree [42]. ESG investing is a rapidly evolving field, and rating agencies are adapting to the evolution by making continuous improvements and changes to their rating criteria.

There are ongoing efforts to create standards in ESG investing in order to have consistence and reliability. In Europe, the EU taxonomy was drafted to provide a list of environmentally sustainable economic activities. It is a classification system that enables grouping of economic activities that are crucial in climate change mitigation and adaptation [49]. The EU taxonomy is crucial in scaling up sustainable investment and implementation of the European green deal. It provides appropriate definitions to companies, investors and policymakers on which economic activities can be considered environmentally sustainable. It is, therefore, expected to protect investors from greenwashing and impact washing, help companies to transition to decarbonation, and move investments where they are most needed [49]. Internationally, the SCI is another important endeavor to create universal standards in ESG investing. The SCI are a set of 21 universal, comparable disclosures that were derived from voluntary standards and are focused on people, planet, prosperity and principles of governance that companies can report on regardless of sector or region [43, 44]. The regional and international standardization efforts will likely lead to convergence of ESG rating methods.

6. Conclusions

Environmental, social and governance factors are becoming vital determinants of investment decisions. It is apparent that environmental factors, especially climate change, pose a substantial financial risk to companies. Increasing frequency of extreme events, rising sea level and destruction of biodiversity are some consequences of climate change that impact financial performance. ESG investing is likely to influence more companies to implement strategies to reduce their carbon footprint. Reduction of scope emissions will contribute to holding the increase in average global temperatures to below 2°C above preindustrial levels, a goal of the Paris Agreement. Reduction of scope emissions will also help to achieve net

carbon neutrality by 2050, a target considered crucial to combat the current climate change. The high financial performance of ESG investing, increase in the number of ESG investors and financial assets, environmental consciousness among younger investors, and regulatory and investor ESG promoting initiatives are likely to influence more companies to implement strategies towards carbon neutrality. The lack of ESG scoring standards, terminology variability and enormous amount of data to process are some challenges of ESG investing. There are initiatives, however, to have standards in ESG rating, and attempts are also being made at using artificial intelligence to process huge volumes of data. Despite the challenges, and going forward, ESG investing is likely to play an important role in combating climate change.

Acknowledgements

Appreciation goes to Grim, D.M. of The Vanguard Group, and Barrett, J. of UNPRI for providing updated information and statistics.

Conflict of interest

The author declares no conflict of interest.

Author details

Percy Jinga^{1,2}

1 Swiss Federal Institute for Forest, Snow and Landscape Research WSL,
Dynamic Macroecology Group, Birmensdorf, Switzerland

2 Biological Sciences Department, Bindura University of Science Education,
Bindura, Zimbabwe

*Address all correspondence to: percy.jinga@fulbrightmail.org

IntechOpen

© 2021 The Author(s). Licensee IntechOpen. This chapter is distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. 

References

- [1] IPCC. Annex I: Glossary. In: Masson-Delmotte V, Zhai P, Portner H-O, Roberts D, Skea J, Shukla PR, Pirani A, Moufouma-Okia W, Pean C, Pidcock R, Connors S, Matthews JBR, Chen Y, Zhou X, Gomis MI, Lonnoy E, Maycock T, Tignor M, Waterfield T, editors. Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty Geneva: United Nations; 2018. p. 539-562
- [2] National Oceanic and Atmospheric Administration [Internet]. 2021. Available from: <https://www.climate.gov> [Accessed: 2021-01-23]
- [3] Vincent WF. Arctic climate change: Local impacts, global consequences, and policy implications. In: Coates K, Holroyd C, editors. The Palgrave Handbook of Arctic Policy and Politics. Cham: Palgrave Macmillan; 2020. p. 507-526. DOI: 10.1007/978-3-030-20557-7_31
- [4] Cilas C, Bastide P. Challenges to cocoa production in the face of climate change and the spread of pests and diseases. *Agronomy*. 2020; 10: 1232. DOI: 10.3390/agronomy10091232
- [5] Huckelba AL, Van Lange PAM. The silent killer: consequences of climate change and how to survive past the year 2050. *Sustainability*. 2020; 12: 3757. DOI: 10.3390/su12093757
- [6] Bartlett S. Climate change and urban children: Impacts and implications for adaptation in low- and middle-income countries. *Environment and Urbanization*. 2008; 20: 501-519. DOI: 10.1177/0956247808096125
- [7] United Nations Framework Convention on Climate Change. Paris Agreement. Bonn: United Nations; 2015.
- [8] The European Commission [Internet]. 2021. EU climate action and the European Green Deal. Available from: https://ec.europa.eu/clima/policies/eu-climate-action_en [Accessed: 2021-02-05]
- [9] The African Union [Internet]. 2021. Agriculture and environmental management treaties. Available from: <https://au.int/en/treaties/1160> [Accessed: 2021-01-25]
- [10] United Nations Development Programme. Climate change adaptation in the Arab states: Best practices and lessons learned. Bangkok: United Nations; 2018
- [11] Organization of American States [Internet]. 2021. Environment: Climate change. Available from: http://www.summit-america.org/sisca/env_climate.html [Accessed: 2021-01-25]
- [12] Schueth S. Socially responsible investing in the United States. *Journal of Business Ethics*. 2003; 43: 189-194. DOI: 10.1023/A:1022981828869
- [13] Shank TM, Manullang DK, Hill RP. Is it better to be naughty or nice? *Journal of Investing*. 2005; 14: 82-88. DOI: 10.3905/joi.2005.580553
- [14] Berry TC, Junkus JC. Socially responsible investing: an investor perspective. *Journal of Business Ethics*. 2013; 112: 707-720. DOI: 10.1007/s10551-012-1567-0
- [15] Schwartz MS. The 'ethics' of ethical investing. *Journal of Business Ethics*. 2003; 43: 195-213. DOI: 10.1023/A:1022933912939

- [16] Daugaard D. Emerging new themes in environmental, social and governance investing: a systematic literature review. *Accounting and Finance*. 2020; 60: 1501-1530. DOI: 10.1111/acfi.12479
- [17] Caplan L, Griswold JS, Jarvis WF. From SRI to ESG: the changing world of responsible investing. Wilton CT: Commonfund Institute; 2013
- [18] Sandberg JM, Juravle C, Hedesström TM, Hamilton I. The heterogeneity of socially responsible investment. *Journal of Business Ethics*. 2009; 87: 519-533. DOI: 10.1007/s10551-008-9956-0
- [19] Grim DM, Berkowitz DB. ESG, SRI, and impact investing: A primer for decision-making. *The Journal of Impact and ESG Investing*. 2020; 1: 1-19. DOI: 10.3905/jesg.2020.1.1.047
- [20] van Duuren E, Plantinga A, Scholtens B. ESG integration and the investment management process: fundamental investing reinvented. *Journal of Business Ethics*. 2016; 138: 525-533. DOI: 10.1007/s10551-015-2610-8
- [21] Elsenhuber U, Skenderasi A. ESG investing: the role of public investors in sustainable investing. *Evolving Practices in Public Asset Management*. In: *Proceedings of the Seventh Public Investors Conference*; 22-23 October 2018; Rome: p. 45-56
- [22] S&P Global [Internet]. 2019. Understanding the “E” in ESG. Available from: <https://www.spglobal.com/en/research-insights/articles/understanding-the-e-in-esg> [Accessed: 2021-01-27]
- [23] Hertwich EG, Wood R. The growing importance of scope 3 gas emissions from industry. *Environmental Research Letters*. 2018; 13: 104013. DOI: 10.1088/1748-9326/aae19a
- [24] Huang YA, Weber CL, Matthews HS. Categorization of scope 3 emissions for streamlined enterprise carbon footprinting. *Environmental Science and Technology*. 2009; 43: 8509-8515. DOI: 10.1021/es901643a
- [25] S&P Global [Internet]. 2020. What is the “S” in ESG? Available from: <https://www.spglobal.com/en/research-insights/articles/what-is-the-s-in-esg> [Accessed: 2021-01-27]
- [26] S&P Global [Internet]. 2020. What is the “G” in ESG? Available from: <https://www.spglobal.com/en/research-insights/articles/what-is-the-g-in-esg> [Accessed: 2021-01-27]
- [27] Mačaitytė I, Virbašiūtė G. Volkswagen emission scandal and corporate social responsibility– A case study. *Business Ethics and Leadership*. 2018; 2: 6-13. DOI: 10.21272/bel.2(1).6-13.2018
- [28] Jung JC, Sharon E. The Volkswagen emissions scandal and its aftermath. *Global Business and Organizational Excellence*. 2019; 38: 6-15. DOI: 10.1002/joe.21930
- [29] Eurosif. [Internet]. 2021. Responsible investment strategies. Available from: <http://www.eurosif.org/responsible-investment-strategies/> [Accessed: 2021-04-02]
- [30] McGuire JB, Sundgren A, Scheneeweis A. Corporate social responsibility and firm financial performance. *Academy of Management Journal*. 1988; 31: 854-872. DOI: 10.5465/256342
- [31] Moskowitz MR. Choosing socially responsible stocks. *Business and Society Review*. 1972; 1: 71-75
- [32] Alexander GJ, Buchholz RS. Corporate social responsibility and stock market performance. *Academy of Management Journal*. 1978; 21: 479-486

- [33] Friede G, Busch T, Bassen A. ESG and financial performance: aggregated evidence from more than 2000 empirical studies, *Journal of Sustainable Finance and Investment*. 2015; 5: 210-233. DOI: 10.1080/20430795.2015.1118917
- [34] Cochran PL, Wood RA. Corporate social responsibility and financial performance. *Academy of Management Journal*. 1984; 27: 42-56
- [35] Giese G, Lee L-E, Melas D, Nagy Z, Nishikawa L. Foundations of ESG investing: how ESG affects equity valuation, risk and performance. *The Journal of Portfolio Management*. 2019; 45: 69-83. DOI: 10.3905/jpm.2019.45.5.069
- [36] Edmans A. Does stock market fully value tangibles? Employee satisfaction and equity prices. *Journal of Financial Economics*. 2011; 101: 621-640. DOI: 10.1016/j.jfineco.2011.03.021
- [37] Derwall J, Guenster N, Bauer R, Koedijk K. The eco-efficiency premium puzzle. *Financial Analysts Journal*. 2005; 61: 51-63. DOI: 10.2469/faj.v61.n2.2716
- [38] Atan R, Alam MM, Said J, Zamri M. The impacts of environmental, social and governance factors on firm performance: panel study of Malaysian companies. *Management of Environmental Quality*. 2018; 29: 182-194. DOI: 10.1108/MEQ-03-2017-0033
- [39] Duque-Grisales E, Aguilera-Caracuel J. Environmental, social and governance (ESG) scores and financial performance of multilatinas: moderating effects of geographic international diversification and financial slack. *Journal of Business Ethics*. 2021; 168: 315-334. DOI: 10.1007/s10551-019-04177-w
- [40] Torre ML, Mango F, Cafaro A, Leo S. Does the ESG index affect stock return? Evidence from the Eurostoxx50. *Sustainability*. 2020; 12: 6387. DOI: 10.3390/su12166387
- [41] Khan MN, Serafeim G, Yoon A. Corporate sustainability: first evidence on materiality. Harvard Business School Working Paper No. 15-073. Boston: Harvard Business School; 2015
- [42] Schanzenbach MM, Sitkoff RH. ESG investing: Theory, evidence and fiduciary principles. *Journal of Financial Planning*. 2020; 42-50
- [43] Modern Diplomacy [Internet]. 2021. Global business leaders committing to stakeholder capitalism metrics. Available from: <https://moderndiplomacy.eu/2021/01/27/global-business-leaders-committing-to-stakeholder-capitalism-metrics/> [Accessed: 2021-01-30]
- [44] World Economic Forum [Internet]. 2020. Measuring stakeholder capitalism: Towards common metrics and consistent reporting of sustainable value creation. Available from: <https://www.weforum.org/reports/measuring-stakeholder-capitalism-towards-common-metrics-and-consistent-reporting-of-sustainable-value-creation> [Accessed: 2021-01-30]
- [45] TCFD [Internet]. 2017. Recommendations of the task force on climate-related financial disclosures. Final Report. Available from: <https://www.fsb-tcfd.org/recommendations/> [Accessed:2021-01-30]
- [46] Rosen BN, Sandler DM, Shani D. Social issues and socially responsible investment behavior: A preliminary empirical investigation. *The Journal of Consumer Affairs*. 1991; 25: 221-234. DOI: 10.1111/j.1745-6606.1991.tb00003.x

[47] Reynolds F [Internet]. 2019. Climate change tops the list of ESG concerns for investors in 2019. Principles of Responsible Investment. Available from: <https://www.unpri.org/pri-blogs/climate-change-tops-the-list-of-esg-concerns-for-investors-in-2019/4163>. article [Accessed: 2021-02-02]

[48] Mascotto G [Internet]. 2020. ESG outlook: Five key trends are driving momentum in 2020. American Century Investments. Available from: <https://ipro.americancentury.com/content/ipro/en/insights/key-topics/esg-sustainable-investing/esg-outlook.html> [Accessed: 2021-02-02]

[49] European Commission [Internet]. 2020. EU taxonomy for sustainable activities. Available from: https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/eu-taxonomy-sustainable-activities_en [Accessed: 2021-02-04]